



ADAR POONAWALLA CLEAN CITY INITIATIVE



Sustainability Excellence Report 2020-21

LEADING INNOVATION FOR TECHNOLOGY DRIVEN AND
SUSTAINABLE WASTE MANAGEMENT IN PUNE

Key Highlights



Clean City

- Benefitted 60% of the Pune city's population, and 5 % of Mumbai City's population
- Operative in Pune and Mumbai
- Covering over 1000+ chronic waste spots
- Optimizing over 1,300 fleet routes
- Using over 260 low-carbon and advanced fleet-machines
- Installed and operating over 3000 litter bins at strategic locations
- Safe pure water free for 3000+ families round the year through 39 water ATMs



Citizens Engagement

- My APCCI mobile app has 11137 downloads
 - Resolved 3179 waste pickup concerns raised by citizens
- Various Behavior Change Communication (BCC) events
- 30 awareness campaigns carried out in 2020-21
 - 1693 active volunteers enrolled
 - 2613 feedback letters received from citizens and students appreciating the efforts



Model Of Public-private Partnership

- Corporates joined hands with essential services provided by the Government
- Initially ₹100 crore pledged by Mr. Adar C. Poonawalla as a part of social responsibility included waste management, safe drinking water, pothole-free roads



Bringing Dignity to Public Cleaning Jobs through Technology

Waste warriors are our on-the-ground employees. We seek to make their work safe and hygienic, their lives healthy and dignified.

The waste warriors:

- have no physical contact with the garbage
- are continuously given on-the-job training by OEMs
- are trained in safety, BOP, and security functions
- receive Personal protection equipment (PPE)

Beyond these direct actions, the APCCI

- conducted 24 weekly cleaning audits for all activities of on-road machines fleets
- generated 10 daily reports for better communication and further improvements
- followed all solid waste management (SWM2016) guidelines
- assign 2 waste warriors per machine



Financial Sustainability

- The operating expenses are financed by Mr. Adar C. Poonawalla's pledge
- Sponsorship for sports events to promote a healthy lifestyle and cleaning activities
- Plans to scale to other parts of Pune and put circular economy framework in place
- Plans to work on long-term goals like a waste-to-energy plant



Environmental Performance

- 46% of the fleet machinery operated on electricity
- The other 54% of the fleet machinery is BS-IV compliant, conforming to the latest emission norms
- Mechanical road sweepers are compliant with PM10 emissions norms of global standards
- Reduction of PM in the air. The fleet machines do not pollute the air. The entire operation is dust-free
- 22.4% reduction in emissions



Our People - Waste Warriors

- More than 525 skilled jobs created in the waste management sector
- Well-trained manpower across jobs
- More than ₹4746 safety budget per waste warrior, annually
- 8 safety items for every waste warrior
- 0% injury rate (accidents)
- 96% retention
- No vehicles met with accidents
- BOP available in Marathi and English



Safe Drinking Water for Community

- 48000 litre/Day, filtered drinking water capacity
- 40000 litre, filtered drinking water per day delivered
- 39 water ATMs
- 3000+ active user households



Pothole Free Roads for Citizens

- State-of-the-art, pothole machines used for the first time in India
- Potholes repaired: 60 square-meters per day
- 4-stage van occupies 2.5 meters of the road without hindering traffic
- The low emission machine recycles old material to repair potholes



Message from
Mr. Adar C. Poonawalla,
Founder



Building on success

Urban Local Bodies (ULBs) are considered as responsible authority for cleanliness of public places. They are doing remarkable work in spite of many challenges, they face. We, Serum Institute of India, sincerely believe in our role to help ULBs in completing their tasks and responsibilities. We believe, technological interventions will first and foremost bring dignity and build efficiency for the much-neglected job of public cleaning.

We, Serum Institute of India, an Indian corporate, started APCCI in January 2016 as a part of its CSR initiative for intervention in public cleaning. The insights from the lessons learnt during this initiative are helping us to expand existing activities as well as in replicating similar initiatives all over India as per our belief.

We are satisfied on publishing third edition of Sustainability Excellence Report for year 2020-21. This transparent report focuses on APCCI's performance based on economic, environmental, and social parameters.

This report depicts APCCI's performance across all the dimensions of triple-bottom-line over eight to ten months. This sustainability report reaches to the highest levels of scrutiny through voluntary disclosure.

Use of technology and public-private cooperation to add dignity to the manual work of street cleaning is the central theme of this initiative.



Public-Private collaboration

Despite the overall perception that such large-scale interventions with the government in the public space can be complicated and unsuccessful; this initiative puts forth a very good example of how public and private collaboration can work successfully for the benefit of the citizens.

Dignity

In Indian Society, Cleanliness of personal and private areas is valuable and thus responsibly cleaned. In contrast, public areas are ignored in terms of cleanliness. The task of cleaning public areas is considered humiliating and there lies a social stigma about it. This results into the population from lowest income strata who is economically weak carry out this menial task.

We believe APCCI's social engineering efforts will bring an attitudinal shift in people, and menial task of cleaning public spaces shall become dignified as a result of spirit of collaboration, technology and sustainability coming together.

Technology

Every sphere of human life has been touched by technology and innovation, still the task of keeping our public places clean is literally in the hands of our city cleaners.

Handling garbage with bare hands is hazardous to health and poses a risk of injury. It is not only harmful and unhygienic mechanism but also it does not comply with the Municipal Solid Waste Management Rules. Manually picking up of waste or being transporting in old and dilapidated vehicles is very commonly seen in Indian Cities. Through APCCI initiatives, we are changing all these dimensions with the use of technology, automation and Government collaboration.



Rekindling Hope for a Visibly Cleaner City

Any street corner in an Indian City is an eyesore. This is not an unusual sight either in Pune. These pictures are showing the situation of streets.





Thus most feasible aspect of cleanliness is focused by APCCI. Hon. Prime Minister Narendra Modi started the 'Swachh Bharat 'Mission—the most ambitious national civic movement for cleanliness. Taking this step forward APCCI started the activity of cleanliness.

APCCI has collected street waste, cleaned streets, and transported waste from chronic garbage spots to the transfer stations of ULBs. These activities result in visibly clean roads that are no longer an eyesore. Photographs are showing result of our efforts.

At the beginning, a few machines were deployed. Today more than 243 fleet machines operate daily on streets across Pune city, while 19 machines have been deployed in Mumbai, South G ward, so, total machines deployed in this project for 2020-21 will be 262. There are 3310 litter bins and state-of-the-art machines like Electric Vacuum Street Litter Picker (Model Electric Glutton), Electric Auto Tipper, Vacuum Litter Picker Mounted on Vehicles (Model Trilo and HYVA), Vacuum Assisted Truck Mounted Road Sweeper (Model Johnston Road Sweeper), Compactor, Jetting Machine, E-Cart, Water Tanker, Xenon Crew Cab and Auto Tippers. Waste collected by these equipment's is transferred to various ULB transfer stations. Other activities of APCCI include repairing potholes using the latest equipment and providing safe drinking water to local neighborhood's in Fursungi area of Pune City.

Initiative can be successful only when its people contribute. Employees are provided with training and skill development sessions by APCCI. Taking content with what we have achieved and learnings from the roadblocks is taken into consideration along the way, we believe that APCCI model is replicable and can be used across the country to bring in culture of scientific disposal of waste in every citizen.



Litter picking machine



Litter picking machine at work



Chronic spot cleaning by Truck mounted vacuum cleaner



Shifting of collected litter in Tipper



Mechanical road sweeper at work



Road side litterbins are cleaned regularly



Citizens giving household waste to Electric auto tipper



Waste being transported through Compactor



Pothole repair in progress



Message from
Mr Krishnan Komandur,
CEO



Collaboration is the key

APCCI, functions as per the vision shared by Mr. Adar C. Poonawalla of improving the environment and waste management in Pune City. These efforts are in line with the thought laid by Hon. Prime Minister Mr. Narendra Modi, who said, we should move away from PPP (Public Private Partnership) to PPPP (People-Public-Private Partnership)¹

As envisioned by Mr. Poonawalla, APCCI is a successful model of public cleanliness run collectively by private, public participation and people's involvement.



The Public-Private-People Partnership

APCCI is a close collaborative collaboration of following four partners:

- The APCCI team
- The ULB teams
- NGO partners like Janwani, Poornam Ecovision Foundation
- Volunteers–Citizens and Corporate

APCCI involves equal contribution from the CEO and Commissioner of ULB to the project coordinators and most importantly, the citizens of the City. This leads to the most creative ways of finding solutions to some of the most complicated and deep-rooted problems as it creates a structure for planning, dialogue, and ongoing engagement.

Due to this collaborative work, three problems are solved:

- Identification of critical chronic waste spots and
- Co-ordination at various garbage transfer stations.
- Making litter free roads across Pune city



Meeting at ULB office



Creating the Partnership for Tomorrow

From the early days APCCI has come a long way but has set its sight on ambitious goals for the future:

- To expand programmes to other municipal regions
- To bring more partners onboard
- To work towards more energy and climate efficiency
- To reduce per kilometre cost of street cleanliness through better technology and training
- To engage the community making the city more liveable.

Several new initiatives especially in the area of setting up waste-to-energy plants for self-sufficiency in waste management will be undertaken by APCCI additionally. More electric vehicles are also introduced in the fleet for energy efficiency.

The long-term vision is to lay the foundations for a circular economy built on the principle of Reduce-Retain-Repair-Reuse-Recycle.

Towards a Sustainable Future

This initiative and the success of its outcomes will build people's faith in the system and make them demand higher standards of public area cleanliness. It is rightly said by the famous British-American Physicist and Mathematician Freeman Dyson that the purpose of thinking about the future is not to predict it but to raise people's hopes. We know it is an onerous responsibility, and we take the sustainability of the initiative seriously.

From environment point of view cleaning our streets should not be the cause of damage. We track the technology for fuel efficiency and the emissions that it leaves behind. The annual kg CO₂ per kilometer is one of the best parameters and our efforts to maintain this parameter are consistently thought of in planning. Efforts have

brought it down to 0.23 kg CO₂ per kilometer per annum. Financial sustainability is as important as environmental sustainability. The programme continues to run with strong philanthropic commitment from Mr. Adar Poonawalla.

Photographs of unclean spots can be uploaded by citizens on myAPCC App. There have been more than 24,735 waste pickup concerns raised by citizens using the app till now, which have been resolved by the waste warriors² (employees). Various drives for creating awareness in schools and citizen groups have been also initiated by APCCI. A specially developed app hopes to achieve wider community engagement.



Citizen using myAPCC app



Citizen using myAPCC app

2: Waste warrior are our employees working on-the-ground employees



APCCI has also initiated supply of 40000 liters of clean and pure drinking water, for 3000+ families in Fursungi, Pune area where water shortage is at its peak. Now this Clean City activity has been extended to the City of Mumbai, in 1 ward, South G ward, for road cleaning and litter picking. There are 19 vehicles deployed to collect nearly 10 tons per day waste and to dispose it scientifically.



Cleanliness Drive



Active participation of volunteers in cleanliness drive

Contents

About the report	15	3. Planning: Engage, Optimise, Communicate, Implement, Analyse with the People	26
Approach and Collaboration	15	Stakeholders Engagement	26
Report Development Team	15	Fleet Route Optimisation	26
Contact Information	15	Behaviour Change Communication (BCC)	27
1. Purpose: A Cleaner City, A Healthier Citizen	16	Low Carbon Fleet Machines	29
Global View on Waste – A Dire Waste Situation	16	Number of fleet machines and kilometer street length coverage in Pune	33
Overview of Pune’s Waste	16	Economics of Waste Management Activities	34
About APCCI	17	Best Operating Procedures (BOPs)	35
Activities of APCCI	17	Analysis and Intelligence	36
Governance and Ethics	17	Waste warriors	37
Code of Ethics	19	Diversity	38
Testimonials from PMC, Corporators, Gram Panchayat Office & Transport Police Department	19	Personal Protection and Safety	39
2. Partnerships: Everyone Owns the Environment	20	Retention Policy	40
Stakeholders: For the people, by the people, of the people	20	4. Performance: Moments of Pride and Learning	41
Materiality: Who and what do we prioritise?	22	Street Cleaning: Flow Chart	41
Measuring ourselves: Sustainability Dashboard of APCCI – Year-on-year	25	Reporting and Communication	42
		Workplace	43
		Case Study: Hadapsar (Solapur Highway) Slum Project	46

Clean Water Supply project at Phursungi	49
Legal Compliance	51
Recognition–Awards and Appreciation	52
APCCI's Contribution to the nation's "Swachh Bharat Mission"	53
5. Planet	55
Low-Carbon Fleet Machines	55
Carbon Footprint of Fleet Machines	56
6. People	58
Citizens Outreach	58
Citizens connect through MyAPCC Mobile App	60
Citizen's feedback	60
Educating Future Generations	61
Waste warriors– Change Makers	61
Dignity through Technology	62
Mobile App technology	63
Economic Welfare	65
Society Contribution - Volunteers	65
Testimonials from Volunteers	66

7. Prospects	67
The way forward and sustainability targets	67
8. Circular economy in the waste sector will reduce the need for landfills	68
App–features and steps for users	70
Appendix	71
Mapping UN's Sustainable Development Goals (UN's SDG)	71
GRI Standards Content Index	73
Topic Specific Standards	75
List of Figures	79



About the Report

Waste Management solutions become successful when stakeholders and local communities are engaged. Adar Poonawalla Clean City Initiative's third sustainability report for the year 2020-21, following annual reporting cycle reflects exactly this belief. APCCI is being committed to foster public-private-partnerships and it is being showed through the achievements. This report has been prepared in accordance with the GRI Standards: Core option

APCCI's activities cover the economic, social and environmental parameters of the GRI Sustainability Reporting Standards 2016. The GRI Standards index is available in the GRI Content Index section of this report. The boundary of the report is the activities implemented in Pune and South G ward of Mumbai, Maharashtra for the period April 2020–March 2021 with 2018-19 as the baseline year.

The information in the 'Economic Performance' section is regarding Mr. Adar Poonawalla's pledge and APCCI's fleet machine procurement and payments to service providers. Independent internal and external auditors have audited the APCCI's financial statements. The data and information on the environment and social parameters are derived from APCCI's official documents.



Approach and Collaboration

Strategica,³ Pune was engaged to analyse the data and information, to develop the strategic intent, and to design a roadmap for its implementation. APCCI's project implementation and outreach partner, Janwani⁴ acted as the advisor and coordinator of this report. It also audited APCCI's activities. Strategica and Janwani, along with a cross-functional team from APCCI, worked with the data captured through our systems. This collaboration facilitated quick decision-making towards a sustainable effort of waste management

3: Strategica, Pune facilitates, engages and helps industries to adopt sustainability actions within their facility.

4: Janwani, a Pune-based NGO, advocates better solid waste management within the Pune Metropolitan Region. Janwani works towards identifying gaps in the development process, deciding priority areas and providing well-researched and implementable solutions to facilitate Zero-Garbage Wards, to change the view of waste as garbage to waste as a potentially valuable resource, to guarantee effective monitoring and replication of the new process and to inspire the stakeholders to scale up the activities.

services to improve the impact on life cycle and cleanliness in Pune and Ward No. South G9 of Mumbai.

Strategica has evaluated the calculation methodologies adopted and analysed the results to ensure that the report adheres to the principles of report contents–stakeholder inclusiveness, sustainability, context, materiality and completeness; and the principles of report quality–balance, comparability, accuracy, timeliness, clarity and reliability.



Report Development Team



Contact Information

The Sustainability Report and additional information on APCCI's role and activities in sustainable waste management services in Pune can be found at <http://www.adarpccleancity.com/about-us.html>.

The point of contact for the information in this report is Mr. Krishnan Komandur, Chief Executive Officer of APCCI. Any query or suggestions concerning this report may be addressed to him at the registered office address or via email to ceo@adarpccleancity.com.

APCCI is an initiative of Mr Adar Poonawalla, CEO, Serum Institute of India, Pune. APCCI's headquarters is located at Mittal Court A Wing, 3rd Floor, Off. Dr Ambedkar Road, Pune 411011, India.

1. Purpose: A Cleaner City, A Healthier Citizen



Global View on Waste – A Dire Waste Situation

As the urban population is growing globally, the waste generated by this population is piling up speedily. Projected waste generation by 2100, will be three times the waste generated today.

Today's Global solid waste generation annually is 2.01 million (World Bank, 2016) tons per day (TPD), while it is estimated that by 2050, worldwide municipal solid waste generation is expected to increase by roughly 70 percent to 3.4 billion metric tons.

In addition waste from cities is being transported to landfills without any treatment by trash trucks through travel of thousands of kilometres every day. Hence the cost of transportation is also increasing. The expenditure is expected to increase from \$205 billion in 2010 to \$375 billion in 2025, with maximum growth being observed in developing countries. The impact of waste generation is seen on the planet and its people in many ways. But only some attributes can be quantified. The entire pathway of generation, collection, processing and disposal pollutes the air, damages the environment, engulf valuable land resources being used for landfills. The obvious impact down the chain leads to physical and fiscal consequences for countries across the world. The increasing amount of waste translates to rising costs for governments and costs for environmental problems.

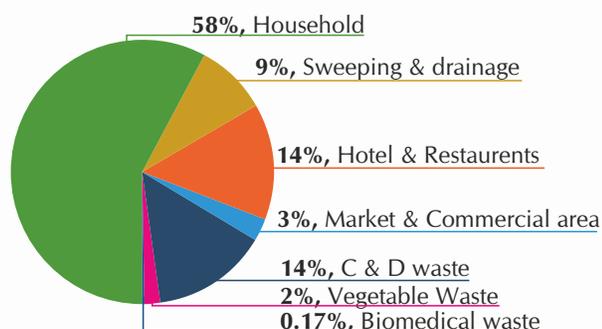


Overview of Pune's Waste

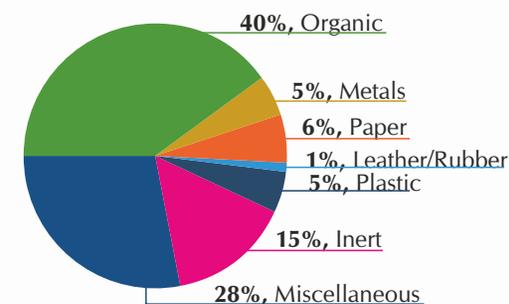
Solid waste management is of equal concern in Pune too. Currently, Pune generates about 1900 TPD of waste which is expected to increase by 1.4 times, in 2025⁵. Already the city is short of resources to collect, transport and treat the waste generated.

- Population of Pune: ~ 35 Lakhs spread across 41 Prabhags
- MSW per capita: 454.62 gm/day
- Dry to wet waste ratio: 41:59
- Total MSW per day: 1900 TPD
- Treatment being done on approximately 1750 TPD waste
- Still 150 TPD goes to landfill without processing
- Approximately 7-8% of waste generated is not getting collected from source and ends up on streets as chronic spots
- About 10% of waste going to landfill

Sources of solid waste generation in Pune



Percentage of various components of solid waste in Pune



5: World Bank Report
Solid waste management strategy plan 2017-2025 of Pune municipal corporation (PMC) - ULB
Environment Statement Report 2020-21 by Pune Municipal Corporation

Pune generates 1900 tonnes of garbage while per capita waste generation is 454.62 gm. Almost 58% of waste is generated at household while 14% of waste is generated through hotels and restaurants. Commercial establishments and market area generate 3% of total waste while 9% generated in sweeping & drainage. 14% of waste comes from C & D while 2% comes from vegetable waste. Source of remaining 0.17% waste is biomedical waste. The type of waste includes 40% organic waste, 5% metals, 6% papers, 5% plastic, 1% leather or rubber materials, 15% inert materials while remaining 28% is miscellaneous waste.

APCCI has started working in Mumbai South G9 ward, where waste collection and disposal is a major problem, due to dense population. South G9 ward has been focused for Brihan Mumbai Municipal Corporation (BMMC), for 2020-21, so as to run the project on pilot basis in the city of Mumbai. Present generation of MSW in MCGM is about 9000 Tons per day, while South G9 ward generates 20 tons of waste, which needs to be collected and disposed in scientific manner.



About APCCI

APCCI is the initiative undertaken by Mr. Adar C. Poonawalla, CEO, Serum Institute of India as a social responsibility and in addition it is an environment friendly initiative. So it is helping environment conservation along with social cause.

The initiative stands for cleaning the city, improving the environment and managing the waste on the streets. It is also helping to reduce chronic garbage spots by providing state of the art equipment/machines in Pune and South G9 ward of Mumbai.



Activities of APCCI

One of APCCI's priorities is to keep the city clean. The initiative uses Electric Vacuum Street Litter Picker (Model Electric Glutton), Electric Auto Tipper, Vacuum Litter Picker Mounted on Vehicles (Model

Trilo), Vacuum Assisted Truck Mounted Road Sweeper (Model Johnston Road Sweeper) and Auto Tippers. These machines are used to pick up and clear the waste from the streets and chronic garbage spots. Along with Pune, the initiative has started in Mumbai G south ward with 19 vehicles in February 2020.

Major stakeholders involved in this initiative are Urban Local Bodies (ULBs), citizens, resident welfare associations and NGOs. Approach of involving multi-stakeholders with active collaboration and cooperation is leading to a successful and unique, replicable model of private-public partnership for waste management.

This initiative is spreading the importance of waste segregation through awareness programs in schools, colleges and for the general public. These events have inspired other cities to implement such initiatives leading to an inclusive, sustainable and resilient future for the city, the nation and the globe.

The Hon Prime Minister of India, Mr Narendra Modi, under Swachh Bharat Mission nominated Mr. Adar Poonawalla, as the Swachh Bharat Ambassador in recognition of the significant work carried out by APCCI.



Governance and Ethics

APCCI is headed by the CEO and assisted by COO and Senior Managers of team. NGOs, Citizen Groups and ULB officials are engaged as supportive team.

The CEO takes lead implementing innovative perspectives and industry knowledge relevant to waste management in APCCI activities. He also leads the planning and collaboration activities with ULBs and other stakeholders in accordance with governance guidelines. Senior management effectively serves the long-term interest of stakeholders by continuously developing criteria for implementation of activities and adding value. These are evaluated for personal, professional integrity, skills, experience and judgment.

Functional structure

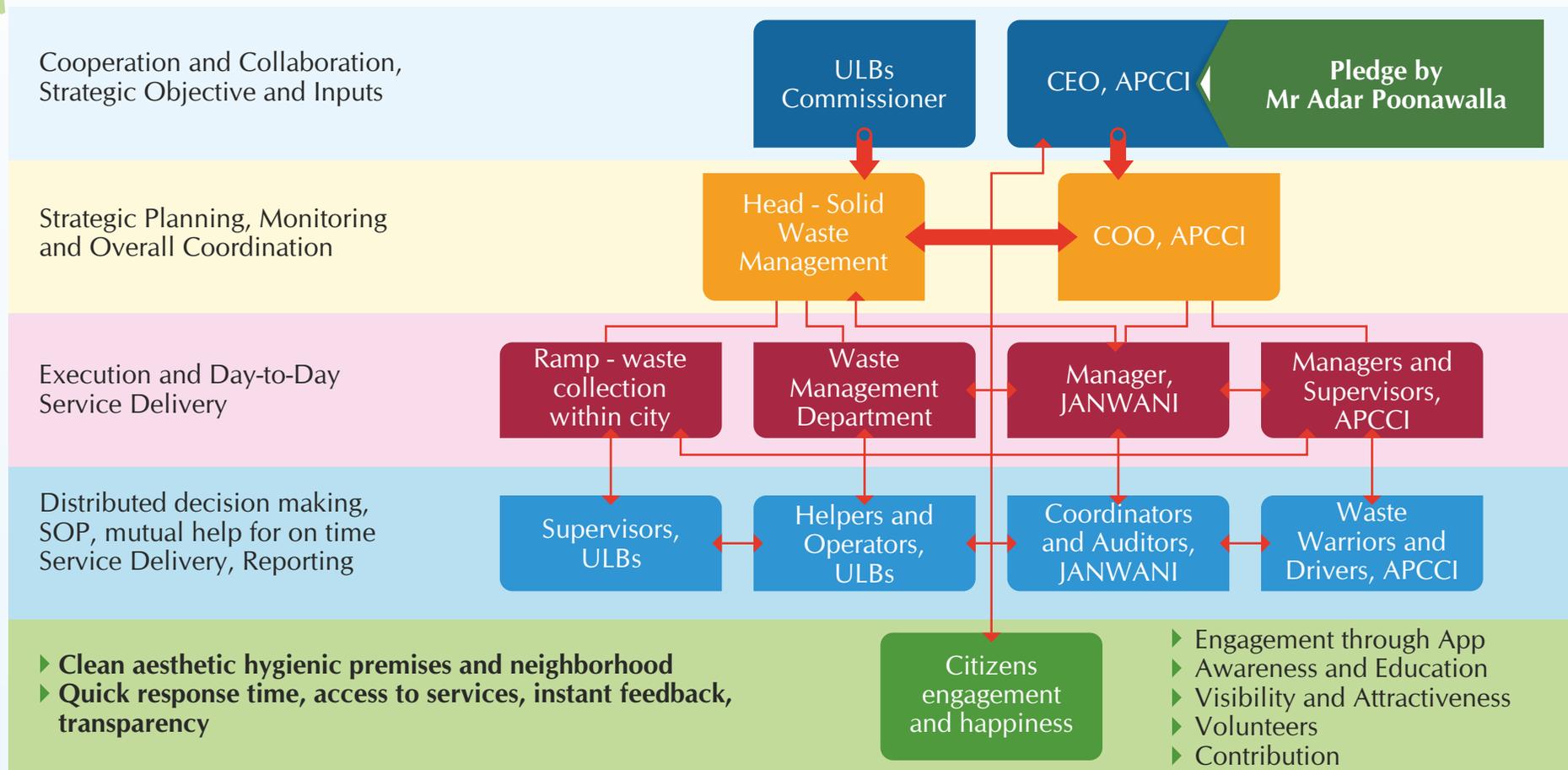


Figure 1 APCCI's Functional Structure



Code of Ethics

- Foster a sense of trust and pride as a 'waste warrior' amongst its employees
- Strive to ensure clean streets with the help of allotted machinery
- Ensure the safety of the personnel while on duty with the use of protective gears
- Ensure proper maintenance of machines for smooth functioning
- Attain a high level of integrity and refuse any forms of gifts—either cash or kind
- Adhere to the Standard Operating Procedure (SOP)
- Report/scale-up any serious incident to a higher authority



Testimonials from PMC, Corporators, Gram Panchayat Office & Transport Police Department

2. Partnerships: Everyone Owns the Environment

Any Indian city in India consists of its government and the people who appoint the government, and the people who are employed implement the decisions. Decisions are made for the city's infrastructure and its environment. Hence, each citizen is considered as a stakeholder in different capacities.

Stakeholders: For the people, by the people, of the people

Partnerships and stakeholder participation are the essential elements of the success of this initiative.

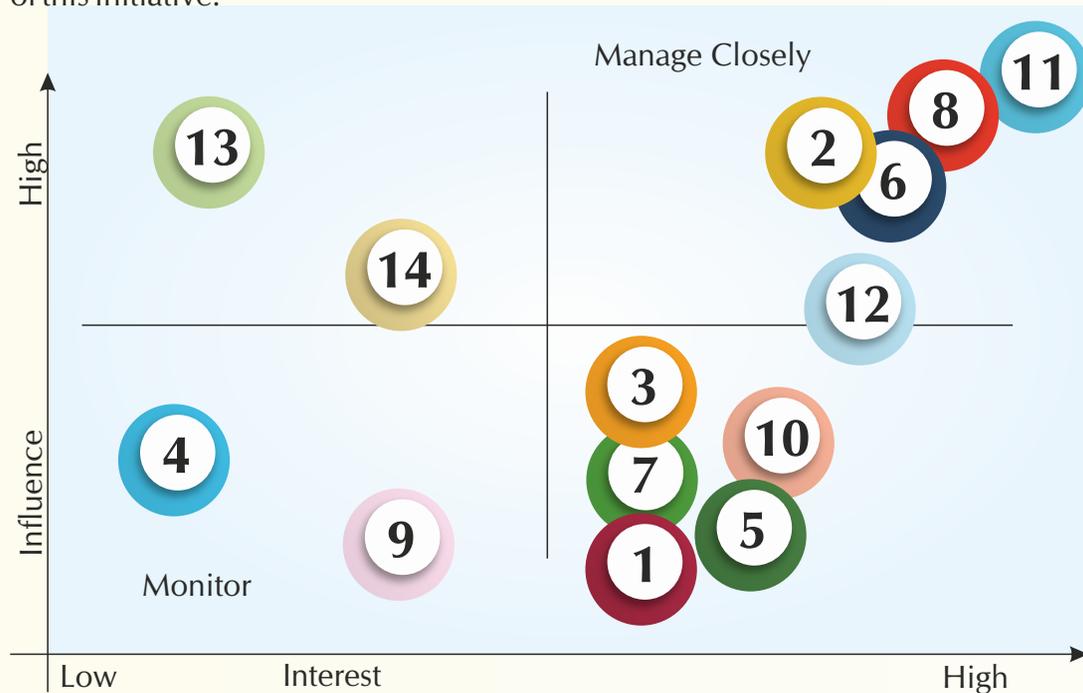


Figure 2: Stakeholders mapping

The stakeholder analysis helped APCCI to identify the key stakeholders based on their influence versus their interest.

Codes of the numbers are as depicted below.

##	Stakeholders
1	Service providers – Bharat Petroleum, Mtech (Tata), Aqusshield
2	ULBs–PMC/BMCC/PCB/KCB and 3 Gram panchayats
3	NGO – Janwani, Poornam Ecovision, Swachh
4	Educational Institutes
5	Prabhag communities
6	PR(Public relations)
7	Manpower service providers – Sumit Facility Ltd, ASR Services
8	Main Donor–Mr Adar Poonawalla
9	Technology suppliers – Satcop/Manya Tech, Changebhai
10	Volunteers
11	Citizens
12	Employees (Waste Warriors) and (water project employees)
13	Media
14	Schools, Colleges

Key stakeholders are those with high interest and influence:

Priority	Code	Key Stakeholders
1	11	Citizens
2	8	Main Donor
3	6	PR - Public Representatives
4	2	ULB-PMC/BMMC/PCB/KCB and 4 no. of Gram panchayats
5	12	Employees (Waste warriors)

1. As this initiative is for citizens, they top the list as stakeholders.
2. Mr. Adar C. Poonawalla has pledged ₹100crore during first year and continues to pledge further during progressive years for APCCI. APCCI would not have existed without his vision and support.
3. Public representatives help to smoothen the functioning of the initiative.
4. ULBs work on many fronts such as waste collection at transfer stations and route planning.
5. APCCI Employees are the backbone of these services.

The following table demonstrates the engagement process with the key stakeholders

Stakeholders	Significance	• Vehicle for Engagement	Frequency
Citizens	<ul style="list-style-type: none"> • Beneficiaries • Involvement in initiative 	<ul style="list-style-type: none"> • Take Feedback • Communicate waste pickup concerns • Volunteering opportunities • Awareness Drives 	Daily
Donor-Mr Adar Poonawalla	<ul style="list-style-type: none"> • Main Investor 	<ul style="list-style-type: none"> • Updates and reports • Meetings 	Daily
Public Relations	<ul style="list-style-type: none"> • Represents the city's civic body • Helps to smoothen the functioning 	<ul style="list-style-type: none"> • Meetings • Take Feedback • Address waste pickup concerns 	Monthly
ULBs	<ul style="list-style-type: none"> • Partner in waste management • Provision for waste collection at the transfer station 	<ul style="list-style-type: none"> • Meetings • Reports 	Daily
Employees (Waste Warriors)	<ul style="list-style-type: none"> • Mobilises initiative 	<ul style="list-style-type: none"> • Reports • Meetings • Take action on waste pickup concerns • Give feedback • Work performance audits 	Daily

Materiality: Who and what do we prioritise?

The initiative followed a 5-step process in detail to determine the materiality of issues:

1. Identifying material topics within each activity
2. Engaging with prioritised external as well as internal stakeholders relevant to the activities such as citizens, ULBs and donor
3. Prioritising and establishing co-relation of material topics on 'Importance as per external stakeholders' and 'Importance as per internal stakeholders'
4. Aligning the issue with the APCCI vision, charting a sustainability agenda and actionable milestones
5. Appointing executives responsible for the mitigation of identified topics and engaging cross-functional teams to deliver solutions and implementation.

No's	Internal stakeholders
7	Manpower service providers – Sumeet Facility Ltd, ASR Services
8	Main Donor–Mr Adar Poonawalla
12	Employees (Waste Warriors)

Sr.No.	Material Topics
1	Area/Population covered
2	Garbage collection Street cleaning/ Waste chronic spot cleaning
3	Manpower
4	Waste segregation
5	Public goodwill
6	Hygiene and city aesthetics
7	Training, Awareness, Engagement
8	Water
9	Energy/Fuel

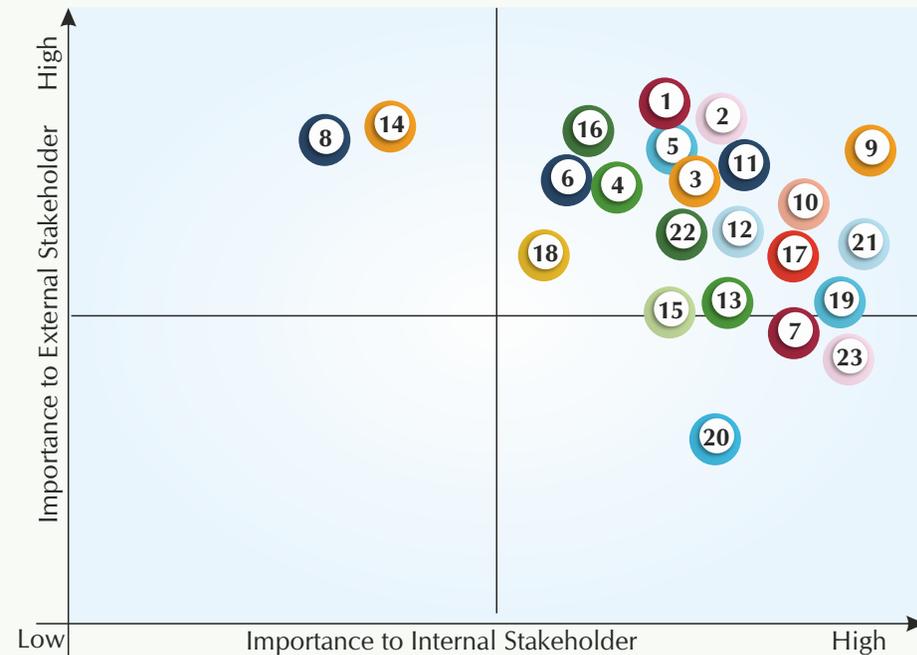


Figure 3: Materiality assessment

Sr.No.	Material Topics
10	Maintenance
11	Technology–state-of-the-art and IT
12	Best operating procedures
13	Low Carbon Technology (Machines)
14	Potholes
15	Environment-friendly operations
16	Health and safety of waste warriors
17	Communication channels
18	Litter bins
19	Public awareness and education
20	Compliance
21	Ethics, governance, code of conduct
22	Partnerships
23	Circular economy– a framework for citizens

Sr. No.	Material Topics	Importance to Internal Stakeholders	Importance to External Stakeholders
1	Area/Population covered	<ul style="list-style-type: none"> ■ Optimum capacity usage ■ To clean all area irrespective of administrative boundaries ■ More citizens are benefited 	<ul style="list-style-type: none"> ■ Clean streets ■ Aesthetic, hygienic premises and neighborhood
2	Garbage collection Street cleaning/Waste chronic spot cleaning	<ul style="list-style-type: none"> ■ Direct impact on performance ■ Timely cleaning of high waste generating spots ■ Visible waste chronic spot reduction leads to expansion of services 	<ul style="list-style-type: none"> ■ Cost savings for ULBs ■ Hygiene restoration through timely garbage collection ■ Healthy environment for citizens
3	Manpower	<ul style="list-style-type: none"> ■ Highest operational benefits ■ Well-trained manpower brings productive outcomes ■ Dignity of labor and loyal workforce 	<ul style="list-style-type: none"> ■ Better tangible performance ■ Regular and responsible cleaning service
4	Waste segregation	<ul style="list-style-type: none"> ■ Ease of waste-handling for employees ■ Ease of disposal in a formal setup ■ Lack of awareness and willingness in citizens ■ Restore value from waste ■ Waste segregation increases waste management efficiency ■ Increase hygiene 	<ul style="list-style-type: none"> ■ Behavior change in throwing waste ■ Environmentally-friendly practices ■ Reduce landfills required ■ Reduce processing costs ■ Increase in recycling productivity
5	Public goodwill	<ul style="list-style-type: none"> ■ Increased cooperation, hence a smooth operation ■ Acceptance by citizens and shared responsibility ■ Increased outreach ■ Improved civic sense ■ Dignity in garbage cleaning 	<ul style="list-style-type: none"> ■ Acceptance by citizens and shared responsibility ■ Visibility and respect
6	Hygiene and city aesthetics	<ul style="list-style-type: none"> ■ Increased morale and performance ■ Protection of nature and environment 	<ul style="list-style-type: none"> ■ A more livable city ■ Maintained beautification of street and nearby areas due to a reduction in waste
7	Training, awareness, engagement	<ul style="list-style-type: none"> ■ Better performance ■ Safe ■ Moral ■ Simplified work ■ Responsible work ethics ■ Better communication ■ Better judgment and decision making ■ Well maintained fleet machines ■ Increased productivity 	<ul style="list-style-type: none"> ■ Better performing assets ■ Increased response time ■ Ease to approach and access ■ Free connect ■ Smooth interaction ■ Perception change towards waste management
8	Water	<ul style="list-style-type: none"> ■ Add value through provision for filtered and treated water from watershed locations ■ Better connect to the community 	<ul style="list-style-type: none"> ■ Easy access to potable treated water
9	Energy/Fuel	<ul style="list-style-type: none"> ■ Optimum utilization to ensure better performance and less emissions ■ Cost-effective route-planning ■ Use of clean energy sources ■ Strategic parking locations 	<ul style="list-style-type: none"> ■ Less emissions
10	Maintenance	<ul style="list-style-type: none"> ■ Efficient fleet machinery ■ Reduced breakdown cost ■ Increased fleet machine lifecycle ■ Ease of functioning for employees 	<ul style="list-style-type: none"> ■ Visually attractive

Sr. No.	Material Topics	Importance to Internal Stakeholders	Importance to External Stakeholders
11	Technology—state-of-the-art and IT	<ul style="list-style-type: none"> ■ Optimized operations and ensured reliability ■ Quality reports ■ High response-time ■ Data driven decision-making ■ Ease of spot-identification ■ Fleet machine tracking ■ Maintain public health through cleaning without touching garbage by using best technology 	<ul style="list-style-type: none"> ■ Quick connect to waste warriors ■ Quick response time ■ Access to services ■ Instant feedback ■ Transparency ■ Helping to create green environment
12	Best operating procedures	<ul style="list-style-type: none"> ■ Standardized hence easy to expand and cover more areas, cities ■ Time saving ■ Cost saving ■ Habitual pattern of working style ■ Waste chronic spot coding ■ Increased skills ■ Clarity in role ■ Simplification of complex waste management practices 	<ul style="list-style-type: none"> ■ Efficiently cleaned streets ■ Visible cleanliness
13	Low Carbon Technology (Machines)	<ul style="list-style-type: none"> ■ Monitored and controlled costs ■ Less carbon emissions 	<ul style="list-style-type: none"> ■ Working against climate change ■ Less pollution
14	Potholes	<ul style="list-style-type: none"> ■ Pothole-free city roads ■ Beyond street cleaning 	<ul style="list-style-type: none"> ■ Higher mobility ■ Fewer accidents
15	Environment-friendly operations	<ul style="list-style-type: none"> ■ Increased brand value 	<ul style="list-style-type: none"> ■ Less pollution ■ Working against climate change
16	Health and safety of waste warriors	<ul style="list-style-type: none"> ■ Fewer leaves ■ Zero accidents ■ Improved productivity ■ Healthy working style 	<ul style="list-style-type: none"> ■ Timely and safe Service ■ Better hygiene restored
17	Communication channels	<ul style="list-style-type: none"> ■ Easily accessible support team 	<ul style="list-style-type: none"> ■ Ease of communication ■ Easy to approach
18	Litter bins	<ul style="list-style-type: none"> ■ Reduction in street waste ■ Segregated waste collection 	<ul style="list-style-type: none"> ■ Ease of access to bins ■ Encourages segregation at the time of disposal ■ Helps to contribute to clean city movement
19	Public awareness and education	<ul style="list-style-type: none"> ■ Helps to make and keep the city clean 	<ul style="list-style-type: none"> ■ Helps to contribute to clean city movement
20	Compliance	<ul style="list-style-type: none"> ■ Employee satisfaction 	<ul style="list-style-type: none"> ■ Undisputed service
21	Ethics, governance, code of conduct	<ul style="list-style-type: none"> ■ Smooth functioning ■ Happiness 	<ul style="list-style-type: none"> ■ Within the framework of ULBs ■ Satisfaction and happiness
22	Partnerships	<ul style="list-style-type: none"> ■ Gain expertise, cooperation and value addition ■ Excellent coordination 	<ul style="list-style-type: none"> ■ Volunteering opportunities
23	Circular economy— a framework for citizens	<ul style="list-style-type: none"> ■ Waste to wealth ■ Reduction in landfills 	<ul style="list-style-type: none"> ■ Contribution opportunity and value addition to challenges faced by the planet such as climate change



Measuring ourselves: Sustainability Dashboard of APCCI – Year-on-year

S.N.	Sustainability KPIs	Units of Measurement	2018-19	2019-20	2020-21
1	Improvement in the cleanliness of the city's streets compared to the baseline year	Factor (street kilometres cleaned per number of machines on the road)	23.6	31.05	25.53
2	Total Daily Waste collection	Tons/Day	Not Calculated	Not calculated	145
3	Carbon footprint per kilometre	Annual tCO ₂ per kilometre	0.110	0.23 kgCO ₂ per kilometer pa	0.23 kgCO ₂ per kilometer
4	Investment in Personnel Protective Equipment (PPE)	Annual Investment for PPE in ₹ per waste warrior	2387	2358	4758
5	The economy of street waste cleaning	Daily costs in ₹ per kilometre	75.5	92.3	90.3
6	Strengthening interactions on sustainability for stakeholders (employees, ULBs, NGOs/Service providers, etc.)	Person-hours per year invested by APCCI staff for key stakeholder	3052	3198	3133
7	Strengthening social capital (schools, citizens) for a healthy environment and holistic waste management	Person-hours per year invested by APCCI staff	441	353	345
8	Response to waste pickup concerns received through APCCI app resolved by waste warriors	The ratio of number of waste pickup concerns received to be resolved	1:1	1:1	1:1

3.Planning: Engage, Optimise, Communicate, Implement, Analyse with the People

APCCI activity has started from small fleet of 4 vehicles for developing proof of concept for the work. While expansion, we took the basic principles into consideration and engaged people while respecting the dignity of the labourer and the holiness of the environment.



Stakeholders Engagement

With meeting officials at ULBs in a spirit of cooperation and collaboration APCCI officials began the planning process in 2015. The head of the Solid Municipal Waste (SWM) department welcomed the initiative and was committed to partner with APCCI.

Together, APCCI and ULBs identified areas in Pune where they could begin operations. APCCI partnered with Janwani to conduct a survey of streets and chronic waste spots. APCCI identified main roads, critical waste spots, garbage points, commercial areas to be covered under the initiative with the help of data gathered by ULB officials and the Janwani survey. The survey also provided inputs for fleet machine management to connect with parking locations.



Fleet Route Optimisation

APCCI has optimised the on-road fleet's route through data on:

- fleet travel distance, areas with maximum waste collection spots
- peak and non-peak hour traffic for main roads and commercial areas
- unloading points such as transfer stations or compactors (ULBs bigger-sized vehicles)
- time and motion of fleet to reduce unproductive hours

This information enabled an assessment of the resources required for the various activities.



Behaviour Change Communication (BCC)

At the beginning phase of APCCI, smaller area from Salisbury Park was selected for a 3-month trial period. State-of-the-art fleet machines like Electric Gluttons and Trilos efficiently managed the street waste during his period. This pilot project boosted confidence to spread the initiative to other areas of the city. This initiative now covers 512 kilometres of roads in Pune and 36 kms of Roads in Mumbai South G ward.

This progress in activity required behavioural change at various levels. The communication of the necessary change occurs in four stages:

1. APCCI and Janwani:- APCCI and Janwani's team worked hard to expand the initiative and planned resource utilisation, work efficiency and behaviour change communication strategy.



Awareness on segregation of waste



Marathon Expo



Awareness drive by APCCI volunteers

2. ULB Prabhag representatives and Janwani coordinators: The Prabhag committee representatives and Janwani coordinators are responsible for planning the exact route and schedule. Fleet, Machinery and waste warriors are deployed accordingly.
3. Waste Warriors: New areas or streets are included based on resource utilization and optimization. This information is communicated to waste warriors, and effective changes are made.
4. Citizens: Citizens participation has increased significantly during the last four years due to various awareness programs and special events. This has resulted in a change in peoples' attitude towards street hygiene and waste segregation. More than 3,310 bins were placed at strategic locations along 73 main roads in the Pune city from APCCI initiative. The use of info-graphics and colour-coded litter bins—green for biodegradable and blue for recyclable, resulted in better waste segregation.



To watch above APCCI video scan below QR code



Awareness on segregation at slum

Low Carbon Fleet Machines

Technical specifications, sizes and procurement were based on the assessment of resources required for the activities.

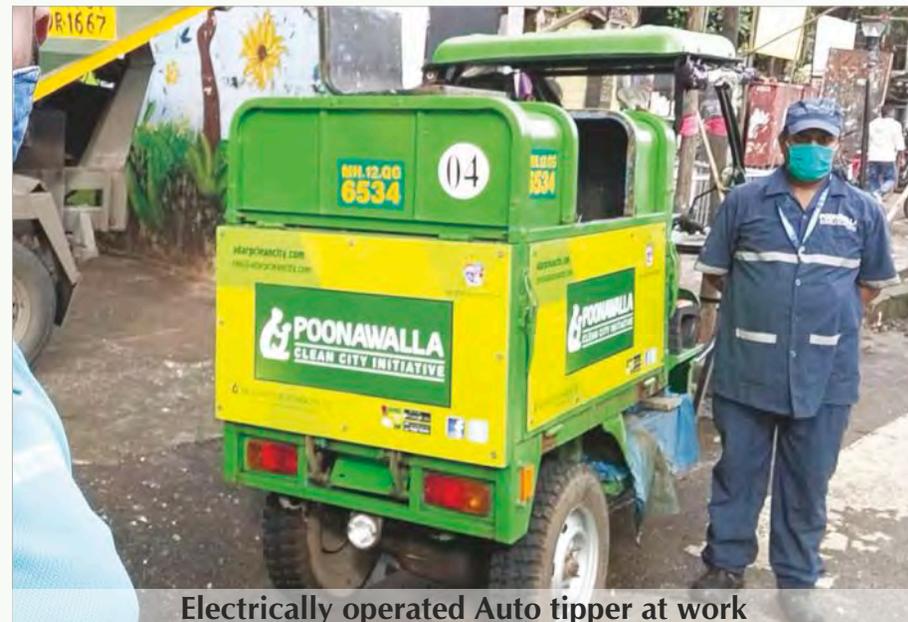
The project started with 1 Electric Gluttons, 2 Trilos and 1 Tipper. This gradually increased to 87, 33 and 24 respectively at the end of the baseline year 2016-17.

Today the fleet machines in operation are:

- 118 electric vacuum street litter pickers (Model Electric Glutton)
- 83 vacuum litter pickers mounted on vehicles (Model Trilo) conforming to BS-IV emission norms
- 2 vacuum-assisted, truck-mounted road sweepers (Model Johnston Sweeper) conforming to BS-IV emission norms
- 28 auto tippers conforming to BS-IV emission norms
- 6 electric auto tippers conforming to BS-IV emission norms
- 11 HYVA for waste collection
- 4 Compactors for waste transport
- 1 jetting machine for cleaning litter bins conforming to BS-IV emission norms
- APCCI has also acquired two imported state-of-the-art pothole repair machine mounted on an Indian van, which repairs potholes up to 0.8 square meters in 30 minutes.

Table: Number of on-road fleet machines year-on-year

Assets - fleet machines	2018-19	2019-20	2020-21
Glutton (Electric)	110	118	118
Big Trilo (Diesel)	46	50	50
Small Trilo (Diesel)	33	33	33
Tipper (Diesel)	28	28	28
Road Sweeper (Diesel)	2	2	2
Electric AutoTipper (Electric)	6	6	6
Compactor	-	4	4
Jetting Machine	1	-	1
Potholes Repair Machine	-	1	2
HYVA	-	11	11
Water Tanker	-	3	6



Electrically operated Auto tipper at work

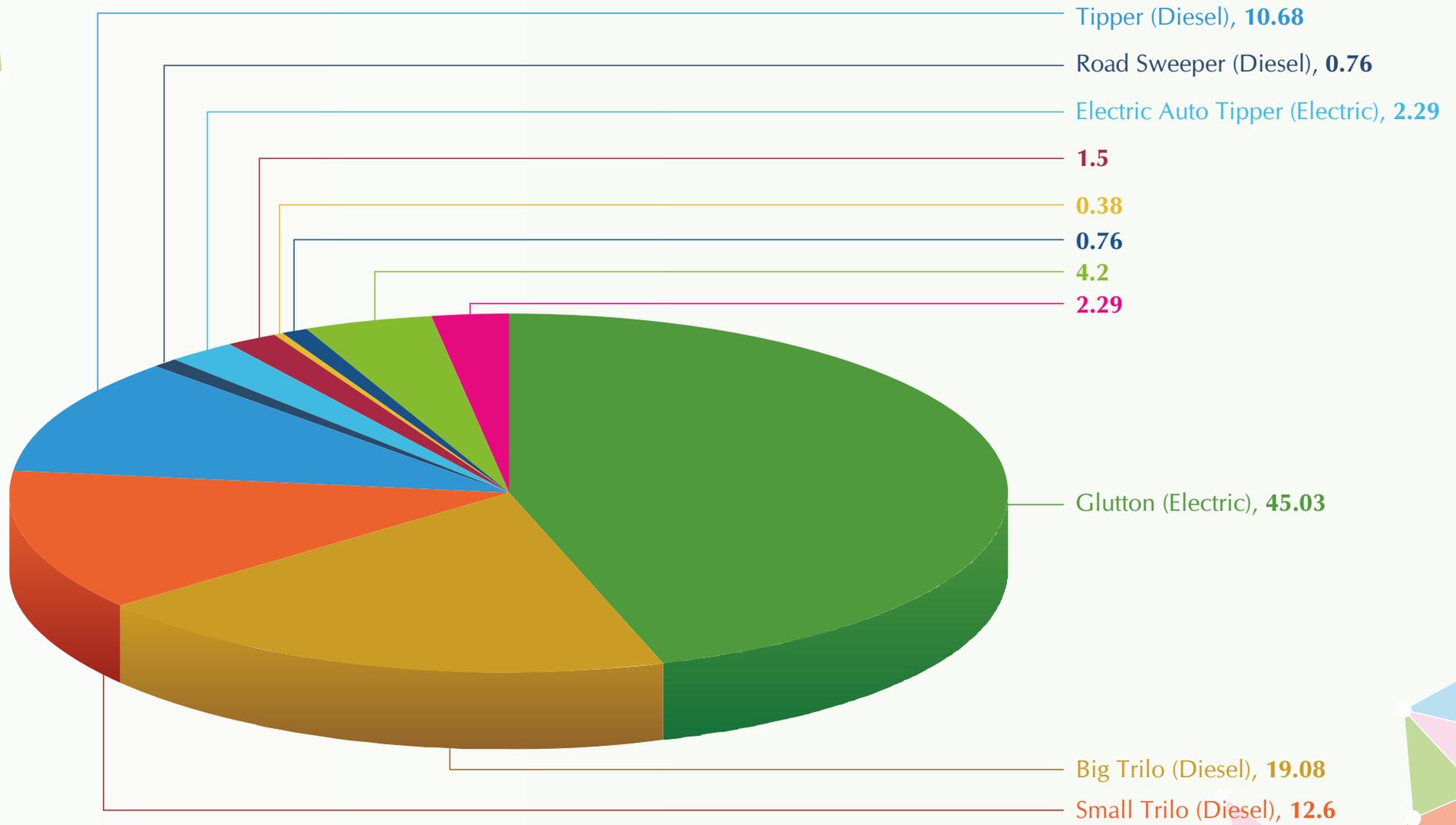
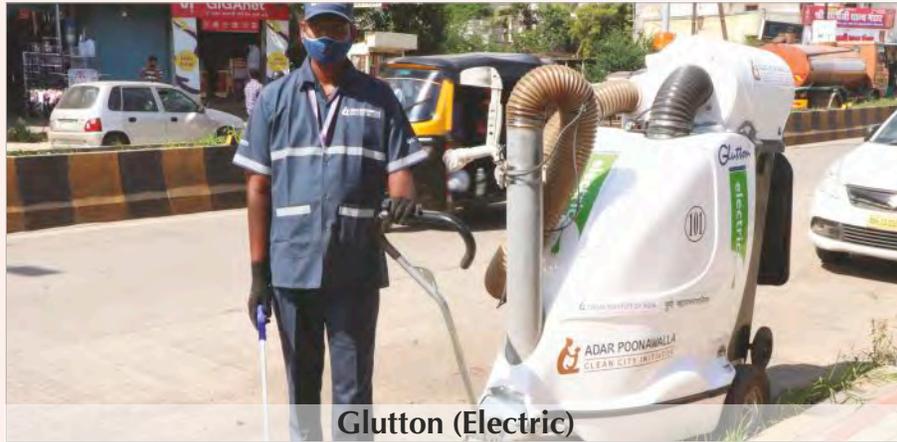


Figure 4: Number of on-road fleet machines



Glutton (Electric)



Small Trilo



Tipper



Big Trilo



Compactor



Road Sweeper



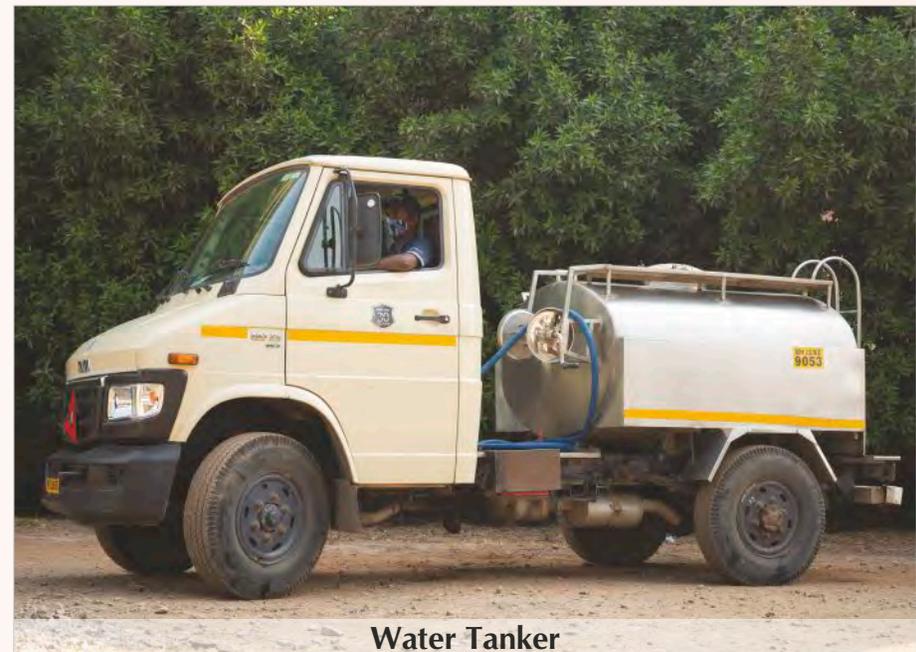
Electric Auto Tipper



Jetting Machine



Pothole Repair Van



Water Tanker



Number of fleet machines and kilometer street length coverage in Pune

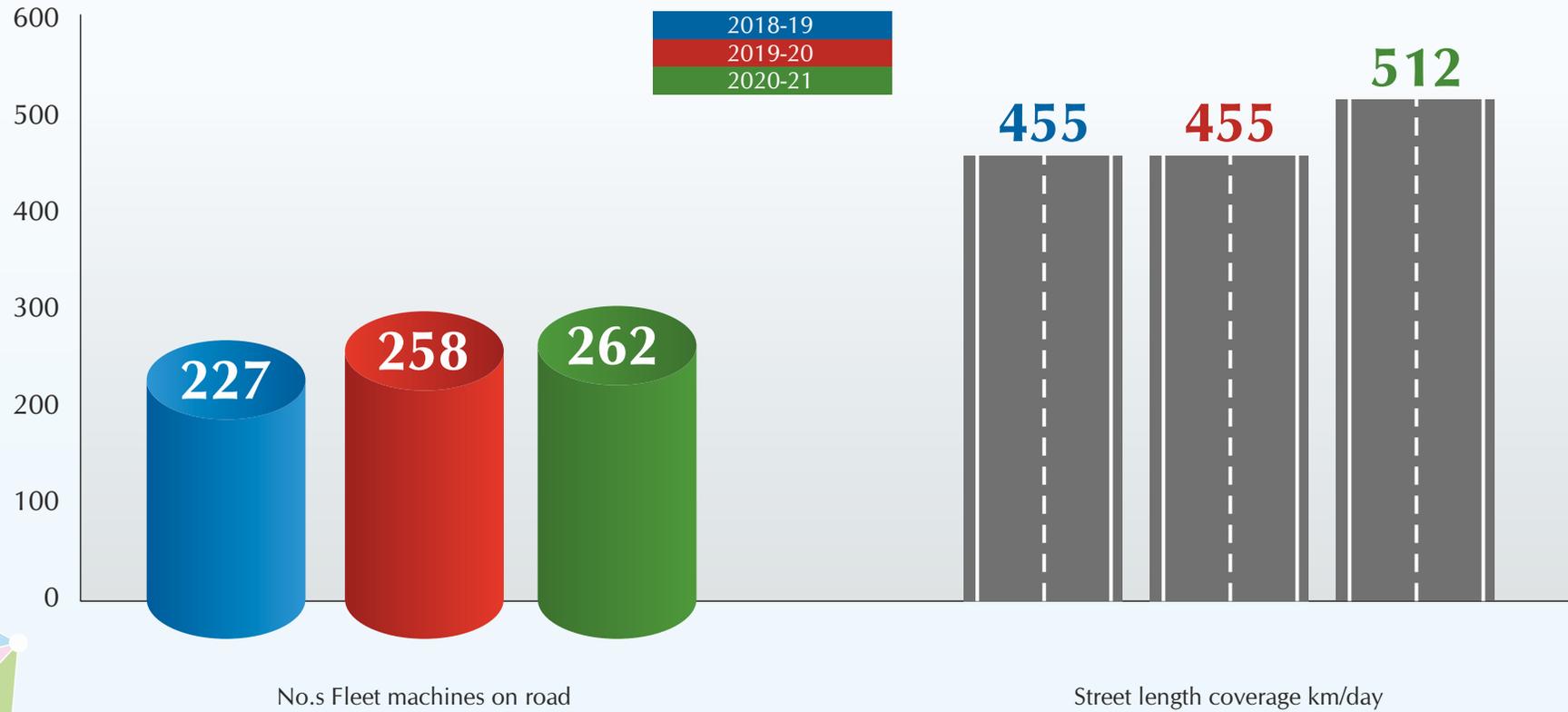


Figure 5: Year-on-Year streets length coverage

§ Economics of Waste Management Activities

These state-of-the-art fleet machines and IT support for operations has required substantial investments. The following table provides asset-wise capital:

All values in ₹lakhs

Capital for Assets	2018-19	2019-20	2020-21	TOTAL
Glutton (Electric)	180	103.04	103.04	1623
Big Trilo (Diesel)	285	77.64	77.64	1048.28
Small Trilo (Diesel)	-	-	-	524
Tipper (Diesel)	-	-	-	168
Road Sweeper (Diesel)	-	-	-	240
Electric Auto Tipper (Electric)	16	-	-	16
HYVA	-	66	66	132
Jetting Machine	6	-	-	6
Potholes Repair Machine	16	-	104.76	179.76
Litterbins	16	17	21.98	113.98
Container	21	-	-	49
Compactor	63	-	-	63
Water Tanker	-	27.96	37.77	65.73
Total investment in fleet assets	603	291.64	411.19	4230

The project has successfully resulted in building a large asset of fleet machines. The current operating expenses are being funded from Mr Poonawalla's pledge.

APCCI yearly Operating expenses to keep the city clean are as follows:

All values in ₹lakhs

Parameters	2018-19	2019-20	2020-21
Fuel cost (Diesel)	133.01	124.0850	136.26
Fuel cost (Petrol)	4.13	2.0	2.4
Fuel cost (Electricity)	5.36	5.36	5.74
Manpower Expenses	1,119.83	1387.57564	1625.280902
Maintenance Expenses	61.30	118.62391	180.9627062
Admin and Managerial Cost	120.29	-	-
Personal protection equipment (PPE) Cost	11.48	12.28	24.97
Total Cost	1,455.40	1,649.92	1,975.61



Best Operating Procedures (BOPs)

The best operating procedures (BOPs) for daily operations, ease of handling, safe waste collection and transport of waste were developed and put in place.

261 hours of training per month was imparted to 525 waste warriors.

Efficient house keeping techniques, weekly maintenance schedule and periodic servicing are followed to improve life-cycle impact and maintenance of the fleet.

Each BOP includes:

1. Proper technical understanding of the fleet machine from the suppliers
2. Safe driving
3. Efficient and safe use of fleet machines
4. Effective waste collection and cleaning activity
5. Supervision criteria
6. Safe fleet parking
7. Weekly audit check



Daily morning briefing of Waste Warriors by Supervisor



GPS tracking of vehicles at APCCI back office



Analysis and Intelligence

GPS-based mobile application tracks real-time operating status for all on-road fleet machines for better performance and further optimization. Data collected through mobile application includes:

- Attendance of waste warriors
- Timely service and safe transportation
- Response to citizen's waste pick up concerns
- Fuel performance
- Fleet tracking and route completion

In addition, customized software collects fleet machine breakdown instances. Daily and monthly summary data is analyzed for improvement in planning and performance.

The APCCI COO monitors the two-way communication between waste warriors and citizens who use the app. This ensures timely service.

Feedback analysis System

The feedback analysis system is well documented and planned. Feedbacks received from the citizens through the app, and other communication channels is evaluated for further improvements in the services. All feedbacks are archived for further references and continual improvement in the systems.



Waste warriors

Initially, 14 waste warriors and fleet machines that included 1 Electric Glutton, 1 Tipper and 2 Trilos were deployed to clean a small area in Salisbury Park. Today there are 525 waste warriors to maintain the fleet of 262 machines. APCCI has opted for third-party service providers to ensure the best operating procedures, optimum use of technology and maximum efficiency.

- Sumeet Facility Ltd and ASR Services work as partners providing uninterrupted manpower.
- Other service providers include consulting firms that provide training, health, safety, legal, and other aspects related to human resource management.
- All transaction receipts are maintained monthly for audit purposes.
- APCCI conducts quarterly checks to ensure legal compliance.

Basic thumb rule for fleet manpower planning are street kilometer-to-number of machine ratio (K: M ratio) and machine-to-operating person (M : O) ratio. K: M ratio for Glutton is 8 : 1 and M: O ratio for Glutton is 1:1. Similarly, for efficient operation, to clean twenty chronic waste spots, one Trilo requires two waste warriors.

Table: Fleet-wise manpower

Particulars	Unit	2018-19	2019-20	2020-21
Fleet machines on the road	Number	227	258	262
Street length coverage	kilometre/day	455	455	512
Actual kilometre/day travelled by all on road fleets	kilometre/day	5,353	6,226	6664
Waste chronic spots	Number/ day	1044	1084	1167
Waste warriors on job/year	Number	481	521	525



Disinfestation of chronic spot site after cleaning



Diversity

The key to the success of this initiative is skill diversity

Therefore, APCCI conducts regular training programs to sharpen and upgrade the skills of its employees. The curriculum is continually updated with new skills.

Skills diversity has been categorized as:

1. Operator/Drivers skills: Drivers (waste warriors) of the fleet machinery not only have to be skilled at driving, they also ought to have sound understanding of fleet maintenance and repairs, and daily housekeeping practices. They should also have sufficient knowledge of different types of waste, and be able to segregate them for better waste collection.
2. Supervisor's skills: The supervisor interacts with ULBs' staff at various levels starting from the ground level operators to the Sanitary Inspector and transfer station officials on a daily basis. Necessary skills include coordination, team management, analytical thinking, leadership and problem solving.
3. Executive Body: The executive body comprising of APCCI CEO, COO, coordinators and Janwani project manager manage the entire initiative. Most of the executive body members are residents of Pune. Planning, Monitoring, Quick decision-making, problem-solving skills are required to keep the initiative functional seamlessly. The Executive body guides the entire team on day-to-day operational challenges and provides solutions.



Soft skills training to Waste warriors



Personal Protection and Safety

An important hallmark of this initiative is being safety. Adequate personal protective equipment as mandated by law has been provided to all the personnel working in the field operations. In this year, COVID-19 related precautions were also considered and applied. This is in line with the safety health and environment standards prescribed by law. Due to rigour of APCCI on safety issue, no severe or minor accident was reported in FY20-21. The personal protection and safety equipment includes:

1. Safety Shoes
2. Safety Gloves
3. Respirator dust/COVID-19 protective Masks
4. Caps
5. Apron
6. Raincoats
7. Drinking water containers
8. Sanitizer Bottle



Use of PPEs by Waste warriors



Retention Policy

The entire team has inculcated with passion to keep the streets of the city clean. This firm belief is adopted as the Standard Operating Procedure which is respected and followed across the organization with pride. This has naturally transferred into sound retention policy resulting in low attrition rate which is below 5%.



Soft skills training to Waste warriors

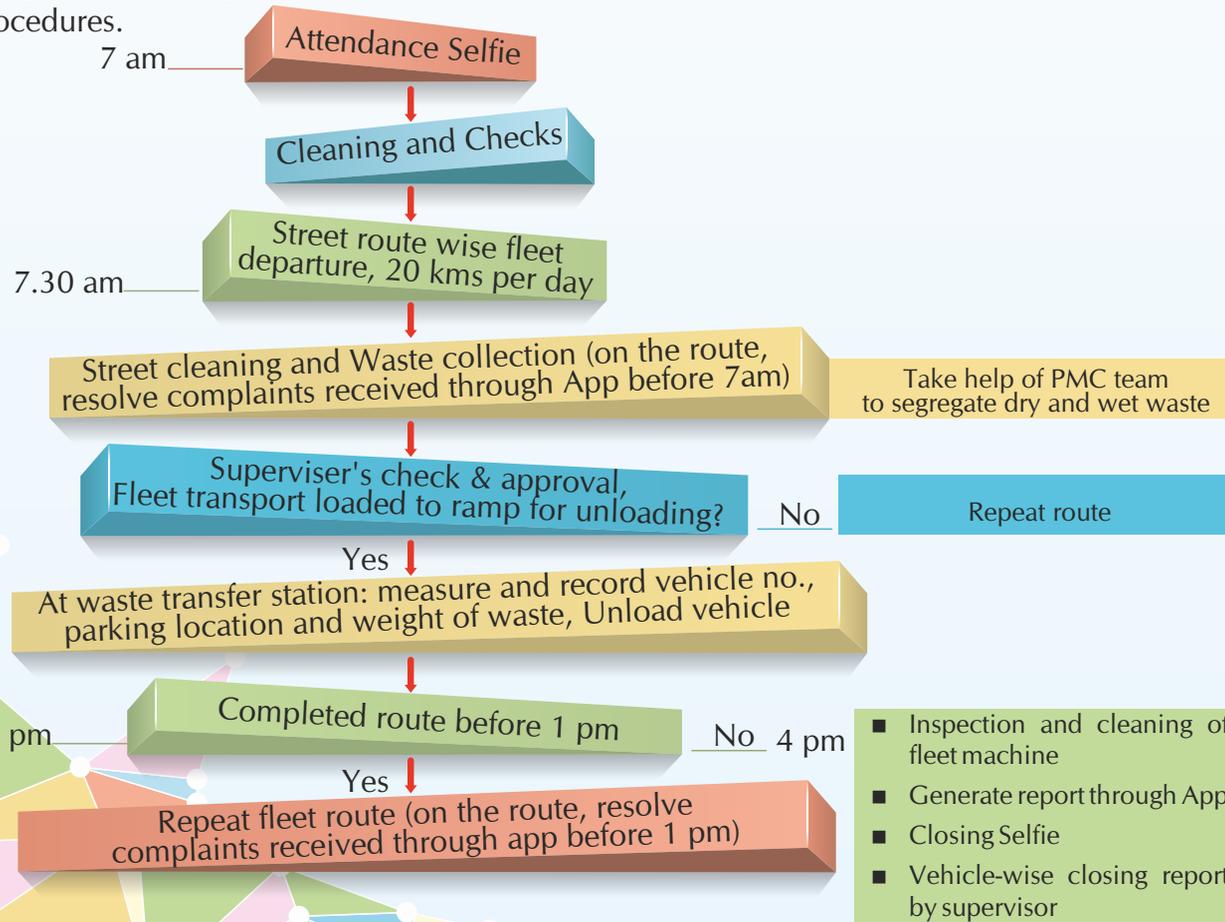


4. Performance: Moments of Pride and Learning

Economic and Environment-Friendly utilization of resources is the result of strategic planning of fleet routes. Judicious fleet management and optimal route planning has helped in effective deployment of vehicles resulting in savings on fuel, reduced emissions and congestion.

Street Cleaning: Flow Chart

The process is mapped to ensure visible cleanliness on streets by innovative methods such as route optimization and standard operations procedures.



Reporting and communication

Fuel report:

- 2-4pm, twice a week, fueling at specified petrol pump

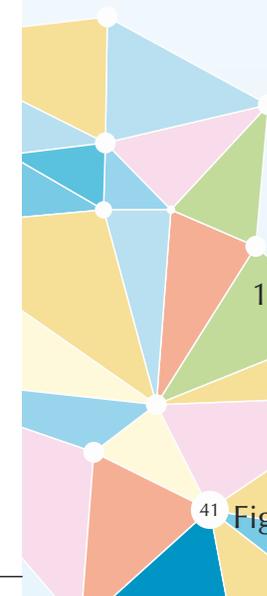
Waste collection report:

- 4-5pm, along with before and after images of street cleaning and resolved cleaning complaints
- Communicate information about resolved complaints to complainant

Weekly audit report:

- Evaluation of quality and efficiency of work
- Fleet appearance, compliances
- Personal protective equipment
- Findings and feedback to drivers, supervisors and waste warriors

41 Figure 6: Operational flow for waste pickup, cleaning and waste transport activities



The day for the waste warriors begins with an attendance selfie at 7 am at the parking location. This is followed by checking and cleaning of fleet machines before leaving the parking locations.

7.30 am onwards, each fleet machine starts cleaning the planned routes. They complete the cleaning of the streets. Waste is then collected from identified chronic spots located on the street. At these chronic waste spots, ULBs' manpower helps the waste warriors to segregate wet and dry waste as and when required.

Concerns raised or requests received from citizens on APCCI app are attended to and resolved along the routes. The waste warriors take photographs of the cleaned spot and send them to respective citizens who have raised the waste pickup concern on specific location along the street. The issue raised is closed, and informed to the citizen by SMS. Once the target of the route is achieved, the vehicle goes to a transfer station to unload the garbage. Data is recorded in log sheets at the transfer station.

The day ends with an inspection and cleaning of the fleet machine. The supervisor then prepares a closing report.



Reporting and Communication

Reporting

Proper and timely reporting is crucial activity for effective working. The reporting flow starts with opening manpower attendance, cleanliness of vehicles, inspection of PPEs, monitoring waste collected, chronic spot monitoring, resolution of citizen complaints received through app, incident reporting and maintenance issue reporting. At the end of the day, all the reports are consolidated and sent to the management.

Communication and review

Daily reporting practices, continuous communications reviews and feedback from various stakeholders like citizens, volunteers, partners like ULBs, *Janwani* help APCCI to improve services.

Weekly audit report

Janwani conducts weekly work audits and assessments on quality and efficiency of work by waste warriors, fleet machine appearance, standard compliances as per relevant laws applicable from time to time.

Weekly work audit conducted year-on-year

2018-19	2019-20	2020-21
3,919	3,002	1239

The fleet wise work performance weekly audits started in 2016-17 and continuously followed on yearly basis. However, the number of weekly audits were less due to COVID restrictions in 2020-21.

Fuel filling report

Fuel in fleet machines is filled twice a week between 2 pm and 4 pm at pre-determined, partner petrol pumps that are close to the parking locations for optimum utilization.



Workplace

Primarily the main and arterial roads of the city are workplaces of APCCI. In collaboration with ULBs roads are planned and mapped. This avoided duplication of cleaning by ULB and APCCI.

Surveys are carried out for identification of main roads, garbage chronic spots and areas that require attention. This, in turn, is supported by technology using Google Maps, Geofencing and other new age technologies.

Chronic Waste Spots cleaning

Lack of an effective waste collection system across the city causes the waste ends up on the streets in the form of chronic garbage spots. Identified spots are cleaned according to a predetermined schedule

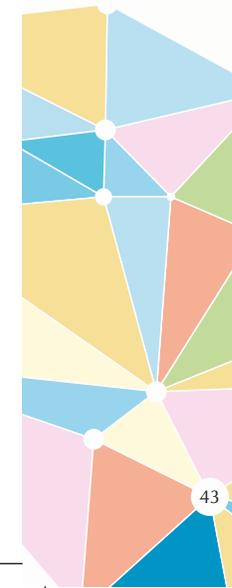
on a daily basis. These chronic spots are marked, numbered and allotted to specific vehicles for collection. Further, awareness campaigns on behaviour change are carried out across the communities to include schools, colleges, citizen groups, and door-to-door campaigns to reduce the number of chronic spots and thereby eliminate them over a period of time. This activity is jointly carried out by various stakeholders such as ULBs, NGOs, citizen groups, volunteers in coordination with APCCI. This activity is constantly monitored and measured to reduce the number of chronic spots.



Cleaning of chronic spot



Cleanliness drive by APCCI volunteers



Chronic waste spots elimination

With the active involvement of all stakeholders in coordination with APCCI it has been possible to eliminate 106 chronic waste spots in the city.

No of wards covered & Eliminated Chronic Spots



Figure 7 Chronic waste spots eliminated

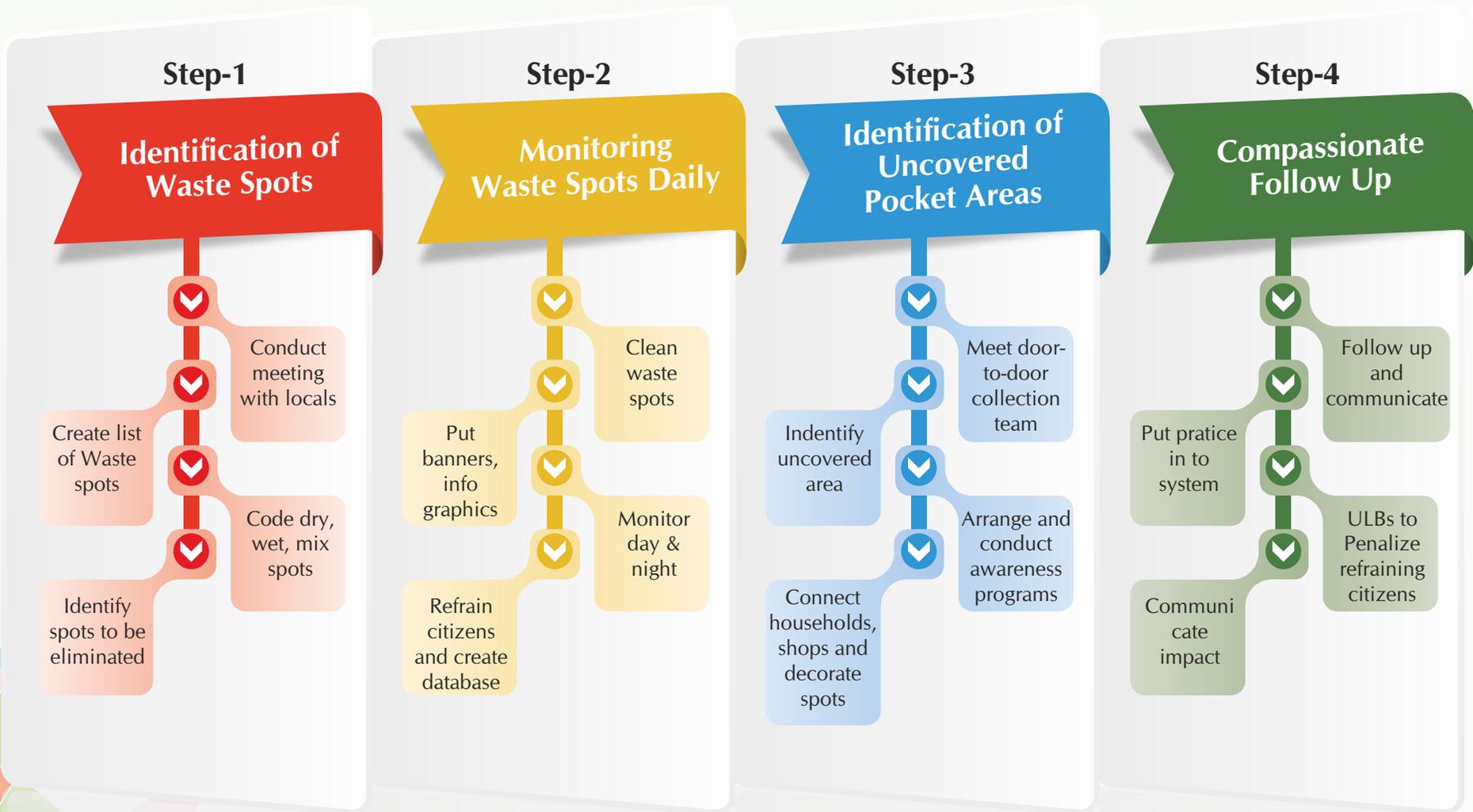


Figure 8 SOP for chronic waste spot elimination



Case Study: Hadapsar (Solapur Highway) Slum Project

The Hadapsar area of Pune has one of the city's largest slum. Several waste management issues are caused by lack of awareness and unwillingness of the people. The efforts of the ULBs to solve this chronic issue have not met with the desired results.

As solution for this chronic issue, APCCI adopted this area and supported the primary door-to-door collection of waste to mitigate the subsequent problems of garbage disposal and make the locality clean and disease-free. This was result of the joint efforts of ULBs, NGOs and local citizens and today the area is free of garbage accumulation. APCCI also planned a secondary waste collection

and transportation system after several meetings with the stakeholders and conducted campaigns to create awareness and understanding.

Issues in Hadapsar slum area before APCCI intervention

- A poor house-to-house waste collection system
- Absence of waste segregation
- Chronic garbage spots were becoming eyesores

Irregular services and unwillingness to pay user-fees created a vicious circle



Figure 9 Methodology for slum area waste management

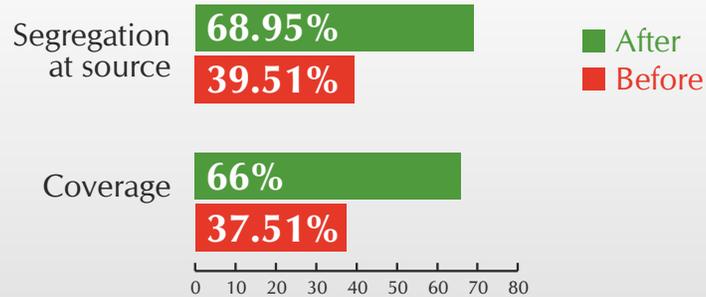
Hadapsar (Solapur Highway) slum area project details

Sr. No.	Particulars	2020-21
1	Total properties	~ 5732
2	Coverage (Properties)	~ 3649
3	Segregation (Properties)	~ 2387
4	Waste collectors	~ 17
5	Average houses covered per waste collector	~ 215
6	Waste chronic spots and containers	~ 54 ~ 13
7	Daily segregated waste collected	~ 9.04

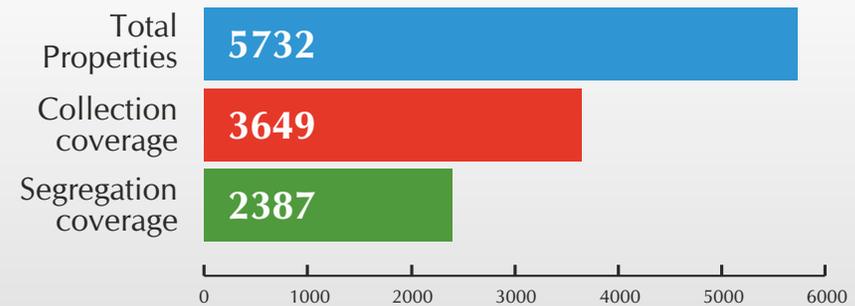
After APCCI interventions:

- Increased in daily waste collection coverage from 37% to 66%.
- 68% Segregation at source has been achieved.
- APCCI volunteers closely monitored the collection system and addressed issues
- The primary waste collection was ensured when APCCI provided fleet machines for secondary waste collection
- 54 open dumping spots were eliminated by integrating uncovered pockets into the door-to-door waste collection system.

Impact at Hadapsar Slum



Hadapsar



House-to-house survey and awareness programs conducted in Yerwada slums by APCCI and Janwani teams.



Figure 10 House to house survey and awareness



House to house survey and awareness



Figure 11 Awareness Campaign



Awareness Campaign



Clean Water Supply project at Phursungi

- A unique project to provide safe, clean and pure water to low income group people near Fursungi, Pune area.
- River Water is sourced and purified with newly installed zRO filters.
- Completely automated process through water ATM concept
- Highly equipped vehicles for water purification, transport and distribution of safe, pure and clean water without contamination.

Key features of the Clean Water Supply project

- Water purification through RO plant with 48 CuM capacity.
- 40000 litre of filtered drinking water per day delivered
- Water supply to water ATMs through 6 tankers
- Water distribution through 39 water ATMs

Key outcomes of the project

- Safe and pure water for free for 3000 + families round the year
- Employment to 10 employees in clean water supply project.



Water ATM



Water filtering unit



Beneficiaries of Water ATM



Water tanker refilling on Water ATM



Legal Compliance

All statutory and legal compliances stipulated by the Government are complied with and duly audited.

Legal compliances



APCCI complies with the standard government policies on wage payments and statutory legal compliances. APCCI provides enhanced benefits which are over and above the laid down government norms.

Figure 12 Legal compliances





Recognition–Awards and Appreciation

APCCI is one of the unique interventions by an individual mitigating the problem of garbage management of an Urban Local Body in India. This is the first time an individual has dedicated his personal time and resources to address the issue of garbage in a city. This generated curiosity and interest about this project amongst a cross-section of citizens, government, ULBs, and NGOs. The success of this initiative lies in passion and dedication of the donor and it has become highly visible in the past few years and has helped to attract appreciation for the work. As a goodwill action, a cross-section of citizens acclaimed this project. This, in turn, resulted in the initiative receiving appreciation letters for the good work done.

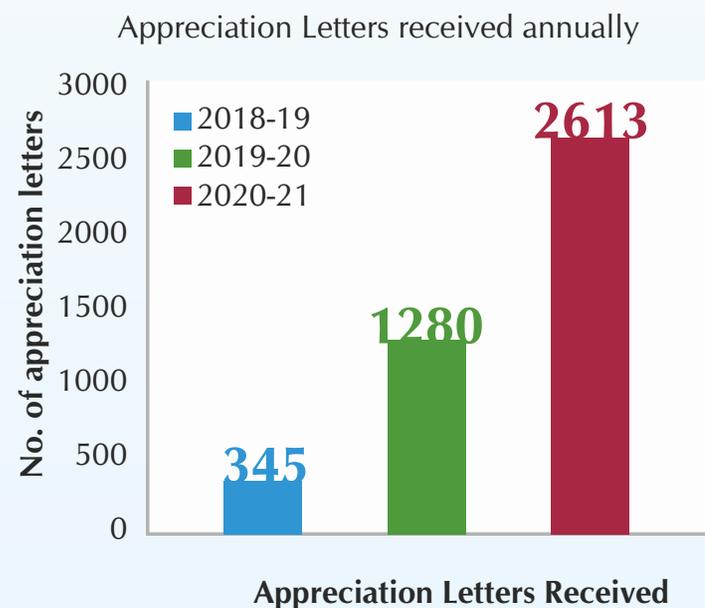


Figure 13 Appreciation letters year-on-year

Table: Awards received so far

Sr. No.	Awards Name
1	Prime Minister Letter
2	Pune Running Sport Foundation Award
3	Nawabhart Health Care Award
4	(TMC) Top Management Consortium Award
5	Pune Pride 2018 (By Residency Club)
6	Ministry of Urban development (Swatch Bharat mission)
7	Smart Cities India Award-2017
8	SKOTCH order of Merit award
9	CSR Health Impact Award (Paras Health Care)
10	ABP News Award
11	CNBC IBLA Award 2018
12	VNRA (Viman Nagar Resident Association)Award
13	PM Nominated Adar Poonawalla As Brand Ambassador for Swachh Bharat Mission
14	MCCIA Award



APCCI's Contribution to the nation's "Swachh Bharat Mission"

Objectives of Swachh Bharat Mission

The Swachh Bharat campaign launched by the Government of India aims to fulfil the vision of "Clean India" by 2nd October 2019, which was the 150th birth anniversary of Mahatma Gandhi. The investment was over ₹62,000 crore (US\$ 9.7 billion).

Objectives of the Swachh Bharat Mission:

- To eradicate open defecation
- To converting sanitary toilets into pour-flush toilets
- To stop manual scavenging
- To generate awareness about sanitation and its linkage with public health
- To bring about behavioural changes in people through awareness
- To empower urban local bodies to design, execute and operate all systems related to cleanliness
- To start scientific processing, disposal, reuse and recycling of municipal solid waste
- To create a conducive environment for the private sector to participate in capital expenditure, and operational and maintenance expenditure

APCCI's Contribution

APCCI in collaboration with Urban Local Bodies (ULBs) is adding value through

- Collection of street waste
- Cleaning of chronic spots
- Waste transportation
- Creating awareness


 सत्यमेव जयते
 प्रधान मंत्री
 Prime Minister

MESSAGE

I am pleased to note about the continued contribution of Adar Poonawalla City Movement towards the cause of Swachh Bharat Abhiyan. Swachh Bharat is truly a mass movement. Jan Bhagidari makes it a unique initiative involving people from all walks of life.

I fondly remember my visit to Serum Institute of India in November, 2016. Steps towards timely and affordable vaccination of our children are always important for a healthy nation, and so is Swachhta. Your city movement will surely inspire others to take up the cause.

Pune has made a mark in the list of 'Smart City' initiative aimed at urban rejuvenation. We are committed to develop these cities by promoting healthy competition and creating an ecosystem of self-reliant and clean cities.

Our mission to dedicate a 'Clean India' to Mahatma Gandhi on his 150th Birth Anniversary can only be realised with these collective and sustained efforts.

Best wishes for your future endeavours.


 (Narendra Modi)

New Delhi
 08 March, 2017

APCCI's contribution to Swachh Bharat Mission is illustrated below:

Select Objectives of Swachh Bharat Mission	APCCI Activity	How APCCI Contributed?
<ul style="list-style-type: none"> To make people aware of healthy sanitation practices by bringing behavioural changes in people 	Promotional activities for dry and wet waste segregation at the source Increasing door-to-door collection and segregation	<ul style="list-style-type: none"> Information and outreach programs to educate citizens regarding the importance of segregation of waste and disposal using waste litter bins Health initiative through PPE for waste warriors
<ul style="list-style-type: none"> To empower urban local bodies to design, execute and operate all systems related to cleanliness 	Cooperation, collaboration, capacity building and resources sharing	<ul style="list-style-type: none"> The activities of APCCI were planned with a focus on the environment and economy Resource efficient system Service operations optimisation Timely waste pickup Tracking fleet machines by use of App technology
<ul style="list-style-type: none"> To scientifically process, dispose, reuse, and recycle municipal solid waste 	Capacity building of ULBs' waste helpers for segregation at chronic spots	<ul style="list-style-type: none"> Helping ULBs' helpers on site through information and building capacity for the scientific way of segregating wet and dry waste at all the chronic garbage spots under APCCI
<ul style="list-style-type: none"> To provide the required environment for the private sector to participate in the capital, operational, and maintenance expenditure 	The private-public partnership of APCCI and ULBs Cleaning of streets, chronic waste spots	<ul style="list-style-type: none"> APCCI independently functioning in the mutually decided areas Total number of litter bins installed by APCCI across the city-3300+, which are also cleaned daily Total number of chronic spots under APCCI activities-1167+, where waste is collected and transported to waste transfer stations Total on-road fleet machines-262 Total Manpower-525 Mr Adar Poonawalla's pledge funds APCCI activities Contributed through mechanized cleaning of streets with the help of 'Electric Glutton' deployed

5. Planet

APCCI's operating model is transformative. It is about cleaning the city as well as emphasizes caring about our planet. Improvement in environmental performance and managing waste economically are involved in the model.



Low-Carbon Fleet Machines

Since the planning stage, APCCI emphasizes on reducing greenhouse gas emissions in its waste management operations. It invested in low-carbon, technology-based fleet machines. It aspires to continue these efforts along with expanding its activities and will explore options to reduce the carbon footprint further.

Energy consumption

The table below illustrates the fleet-machine-wise energy mix and annual fuel consumption

Parameters	Unit	2018-19	2019-20	2020-21
Fleet machines	Number	227	257	262
Road length covered	kilometre/day	455	455	512
Total fleet's travel	kilometre/day	5,353	6226	6664
Electric gluttons travel	kilometre/day	868	931	944
Diesel fleet machines travel	kilometre/day	4,485	5295	5720
Electricity consumed by gluttons	kilowatt-hour/year	58,590	58590	58590
Diesel consumed by diesel fleet machines	Kilo-liter/year	190	179	175
Petrol consumed for operations ⁶	Kilo-liter/year	5	3	3

Currently, 262 fleet machines cover 512 kilometres per day. The total distance covered by all fleet machines is 6,664 kilometres per day. The electric glutton machine runs 5.8 kilometres per kilowatt-hour of electricity, and the performance of diesel operated fleet machines is 11.76 kilometres per litre of diesel.

6: Operations like pothole repair, jetting machine



Carbon Footprint of Fleet Machines

The carbon emission footprint comprises the following:

- Emissions from diesel consumption (scope-1) for transportation of waste
- Emissions from petrol consumption (scope-1) for operations of the jetting machine and pothole repairing machine
- Emissions from electricity consumption (scope-2) used for the charging of electric gluttons

Recording and reporting of the data of route travelled by every fleet and respective fuel consumption are done regularly for continuous analysis and improvements.

Carbon footprint is regularly monitored and calculated and we follow a gate-to-gate approach. The direct emissions (scope-1) include emissions from the overall fleet machines, and the indirect emissions (scope-2) include emission from the use of electricity from the grid.

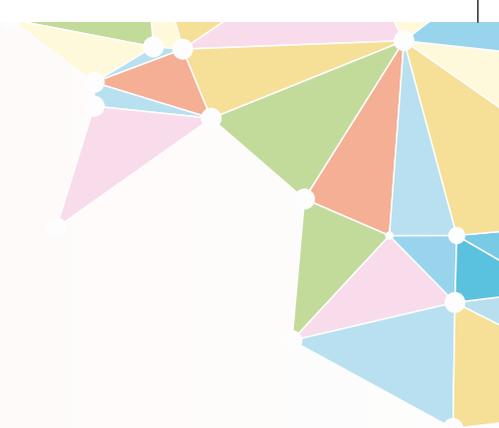
Table: GHG footprint (MTCO₂ Equivalent)

Emissions	2018-19	2019-20	2020-21
Scope-1 Emissions (Diesel)/year	521.8	506.7	495.3
Scope-1 Emissions (Petrol)/year	12.0	6.0	6.0
Scope-2 Emissions (Electricity)/year	57.4	46.8	46.8
TOTAL Emissions/year	591.2	559.6	548.3

Note: (scope-3) Business travel not considered

Use of low-carbon fleet technology has helped in streamlining fleet travel and reducing fuel usage.

Sustainability goals are integrated into the operation strategy focussing on life-cycle approach and evaluating GHG emissions works to reduce the impact on climate change. These goals are in line with APCCI's carbon mission.



The emission reduction options adopted include:

- Investment in low-carbon fleet machines
- Improving operating efficiency by optimizing routes and timely waste collection
- Improving operating efficiency by tracking all fleets, and sharing tracking information with drivers and supervisors to facilitate distributed decision-making.

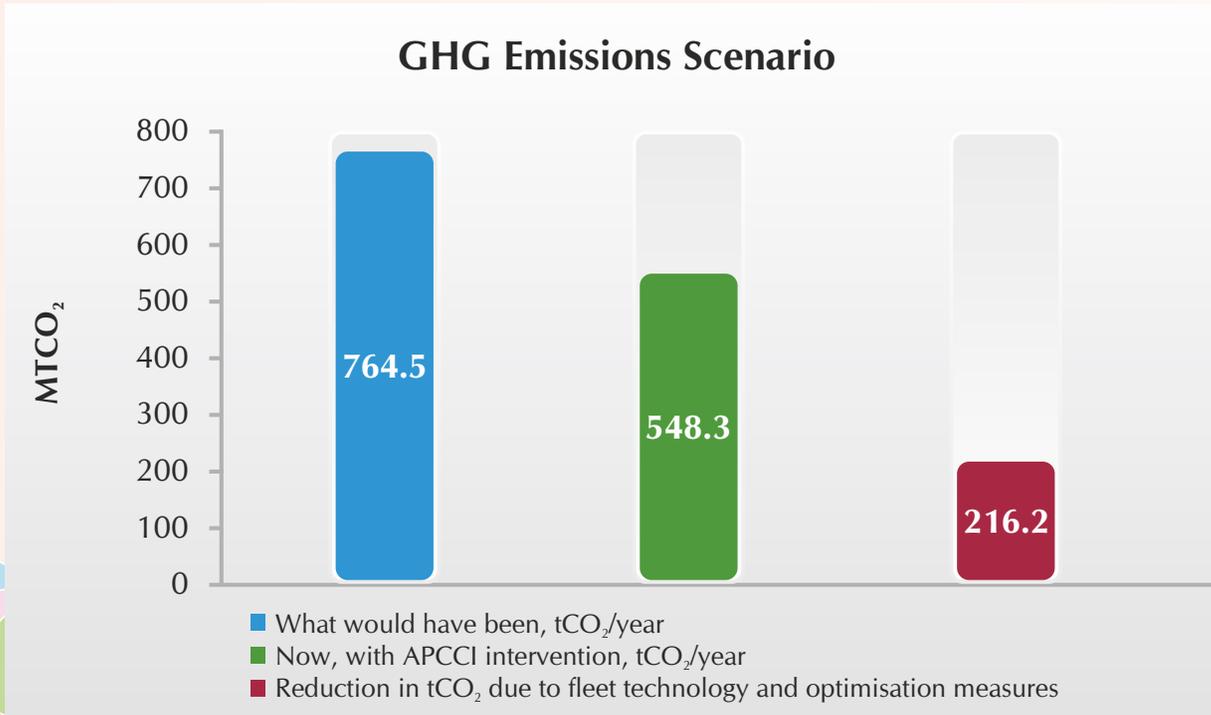
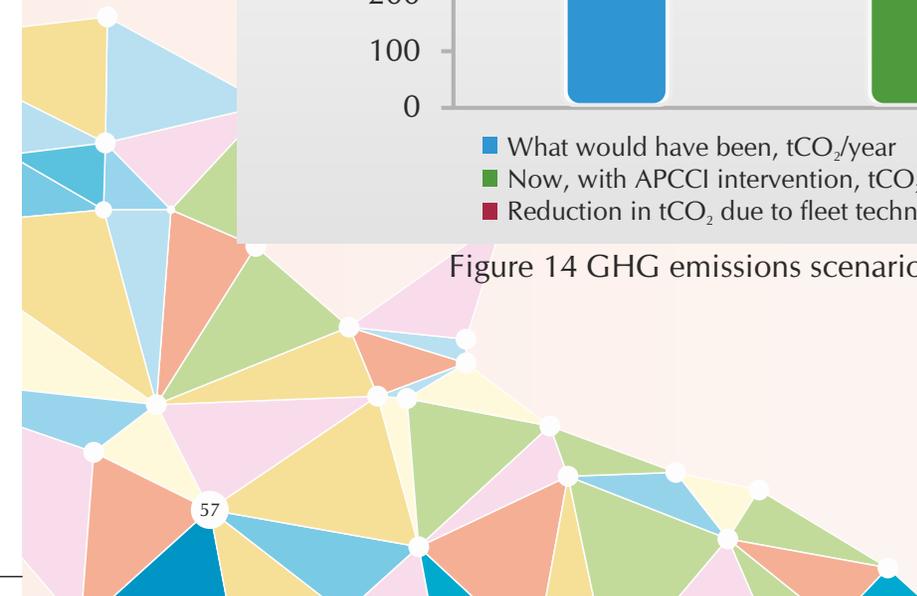


Figure 14 GHG emissions scenario for year 2020-21

APCCI has also focused on training fleet machine drivers to cover routes more efficiently. This training includes imparting knowledge on regulating speed limit, avoiding sudden brakes and acceleration.

In the reporting year, the carbon footprint illustrates two scenarios “What would have been” if low carbon fleet machines, planning and optimization options were not adopted and “Now” with these options adopted.

As compared to 764 MtCO₂ in business as usual scenario in the reporting period, all these efforts have led to an almost 28% reduction in APCCI's carbon footprint emissions.



6. People



Citizens Outreach

APCCI's achievements cannot emphasize the importance of public engagement. Public work done by a private entity requires acceptance from all stakeholders. Citizens of the city are key stakeholders. APCCI takes special efforts to reach out and educate citizens.

Activities regarding citizen's outreach are organized for a month and carried out. Janwani takes the lead in organising such events. Feedback from citizens and comments of appreciation are indicators of the success of these programs. The table below shows the yearly data on the events held by APCCI

Sr. No	Event Name	Location	Date	No. of Participants.	Year
1	Cleanliness Drive	Ujjivan Small Finance Bank	01-08-2020	120	2020-21
2	Cleanliness Drive	KCB Mula River Cleanliness Drive	01-11-2020	95	2020-21
3	Cleanliness Drive	Salisbury Park Cleanliness Drive	01-12-2020	80	2020-21
4	Cleanliness Drive	Siddheshwar Ghat	02-08-2020	110	2020-21
5	Cleanliness Drive	Tank Road Shanti Nagar	03-08-2020	25	2020-21
6	Cleanliness Drive	Siddheshwar Ghat	03-08-2020	30	2020-21
7	Cleanliness Drive	Jiveet Nadi	03-08-2020	55	2020-21
8	Cleanliness Drive	Viman Nagar	09-12-2020	50	2020-21
9	Cleanliness Drive	KCB- Khadaki Railway Station	20-12-2020	35	2020-21
10	Cleanliness Drive	Salisbury Park Hill	17-01-2021	55	2020-21
11	Cleanliness Drive	khadki station to Ambedkar chowk bopodi	14-02-2021	78	2020-21
12	Cleanliness Drive	Hadapsar	14-02-2021	42	2020-21
13	Cleanliness Drive	Hadapsar	28-02-2021	35	2020-21
14	Cleanliness Drive	Hadapsar	28-03-2021	23	2020-21
				833	

Due to COVID restrictions there were less number of social drives arranged in the year 2020-21. Still APCCI is able to reach 833 people.



Waste warriors participation in Marathon



Cleanliness drive by APCCI volunteers



Citizens connect through MyAPCC Mobile App

Citizens can raise concerns, request for collection of street waste, and request for cleaning of garbage spots through a mobile app called "MyAPCC".

Year	App Downloads	Waste pickup Concerns Reported and Responded
FY 2018-19	6,296	4,664
FY 2019-20	7,745	4,904
FY 2020-21	11137	2,625
Total	29,203	26,371

App ratings and percentage of users

Google Play Store Average Rating	4.6/5
iOSPlay Store Rating	4.7/5
Total Number of Reviewers	526
Percentage of Android Users	82%
Percentage of iOS Users	18%

Citizens Outreach (No.s)

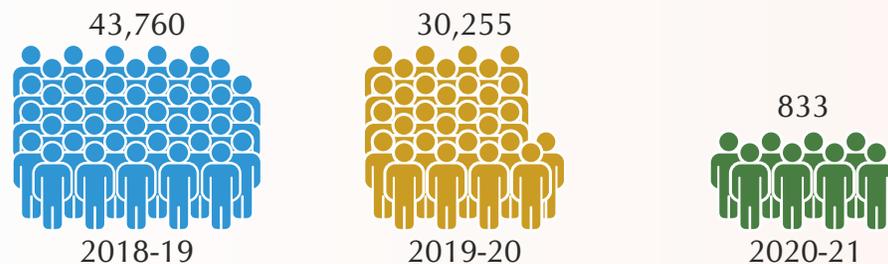


Figure 15 Citizens outreach



Citizen's feedback

Mr. Suhas D. Vanjare, Officers in Charge, Hope House, Home for Boys

"I have recently noticed good performance of Team Member of Poonawalla Clean City and ASR services. The wastage & garbage is being collected from the door. It is really great help to our Orphanage Hostel".

Dr. Aftab Anwar Sheikh, Principal, Poona College of Arts, Science & Commerce

"This is undoubtedly a welcome voluntary initiative that would go a long way of realization of Swachh Bharat. We appreciate efforts being taken by your team".

Mr. S. V. Buva, Assistant Police Inspector, Traffic Department, Wanawri

"Your team is working dedicatedly for cleanliness in the area opposite traffic deptment at Wanawri. Best wishes for future".

Mr. Laxman Kagne, Director, Ayodhya Charitable Trust, Pune

"Your entire team is doing very good job in this crucial period of lockdown due to COVID-19."

Mr. Shaik, Secretary, Wonderland Co-operative Housing Society, Pune

"It was your persistent hard work & research that give us a fruitful result every day".

Mrs. Sunita Ghule, Member of Grampanchayat, Ward no 2, Manjari Bk

"Even in this COVID-19 situation your vehicles are collecting waste in time. Your workers are doing appreciable work."



Educating Future Generations

Younger generation of the city is future generation. Our belief is that if young children are educated about proper waste management they become responsible citizens for handling waste in future. Activities in schools, colleges and communities involve awareness sessions on definition of waste, categories of waste, importance of segregation, impact of waste, alternatives to plastic, recycling methods, rules & regulations and APCCI activities for solving waste management issue. Sensitization will help to improve waste management at City level. This will make our nation a better and cleaner place to live.

Actual samples of waste are shown to students during the session to enable the identification of the type of waste like banana peels, food packets, milk pouches, battery cells etc. Due to COVID-19 situation schools cannot be reached for awareness sessions in the year 2020-21.



Waste warriors– Change Makers

Our belief is that our people are actual ambassadors in keeping the city clean with the help of urban local body and their various partners in its endeavour.

Our main partner, Janwani was associated since the beginning and has helped to streamline the process of mapping the roads, route planning and coordination with ULBs for all support services. They also carry out regular work performance audits. This year Janwani has dedicated resources for volunteer engagement and mobilisation. A small support team of MIS and documentation staff keeps a record of activities and provides information for decision making.

Janwani deployed 49 staff members for APCCI activities during the reporting period. It is worthwhile to note that the same team has covered more area, as the productivity of the team has increased.

For building connection with citizens APCCI has used technology. The APCCI app has more than 10,000 registered users.

As a part of strategy third party manpower is involved in the work. This allows APCCI to remain lean and take quick decisions. Because of outsourcing APCCI can focus more on technology and waste collection.

The third-party manpower service providers are selected based on formulated guidelines. Number of employees deployed in 2020-21 are as follows:

Supervisors	Fleet Drivers	Helpers	Glutton Operators
42	164	198	118

Contractual manpower receives on-the-job training at the time of joining. To ensure the safety and hygiene of the employees, periodic training is provided. APCCI ensures that no child labour is employed either directly or as Contractual. We also ensure that our manpower suppliers follows equal opportunity irrespective of caste, class, religion and gender.

Operational Training hours invested for each category

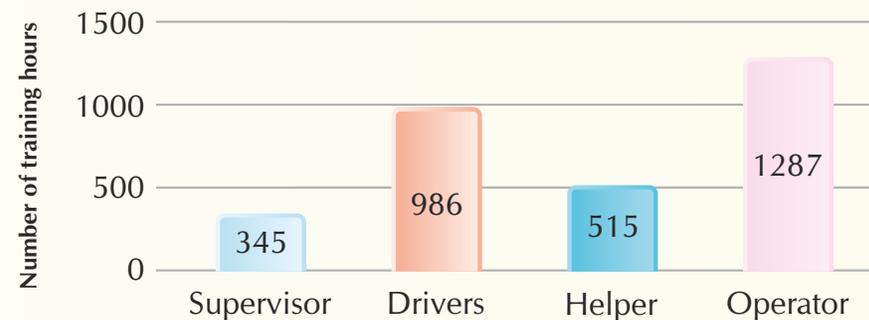


Figure 19. Operational training to employees

On-the-job trainings are being provided at regular intervals to operators, drivers, technicians and supervisors.

Table: Operational training to waste warriors

Training Number	Title and Content of Training to Waste Warriors	Outcome
Module-1	<p>Ethics and Best Operating Procedures:</p> <p>The first training module covers - ethics, values, daily operating procedure, routine checks, technical aspects of APP technology, fleet machine technology, symptoms, protective and preventive maintenance, anti-corruption</p>	<ul style="list-style-type: none"> ■ Deeper awareness and knowledge ■ Improved moral responsibility, pride and happiness at the workplace ■ A complete and better understanding of on-job activities and practices
Module-2	<p>Safety–Importance and Personal Protection Equipment:</p> <p>The second training module covers–why human safety and health is important, know your safety gears, use of safety gears, hazards identification and risk assessment (HIRA).</p>	<ul style="list-style-type: none"> ■ Increase in safety and ease of doing activities ■ Good health and rare sick leaves ■ Higher retention and courage at work
Module-3	<p>Awareness of Behavioural Change Communication for further development:</p> <p>The third training module covers–why change is desirable, manner and appearance at the workplace, ways of communication, reporting, and use of technology for change and better judgment, feedback and performance reviews.</p>	<ul style="list-style-type: none"> ■ Higher awareness and knowledge ■ Innovative, polite, patience in approaching and judgement ■ Better and patient cooperation with citizens ■ Motivated and sustained behaviours



Dignity through Technology

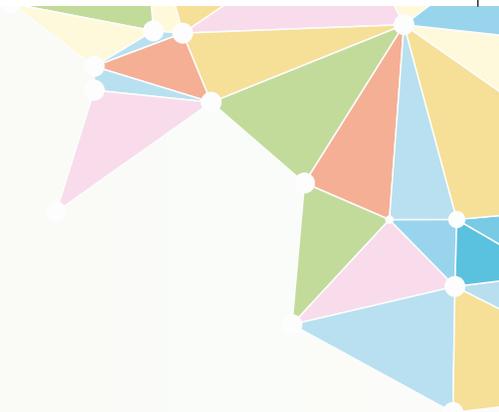
Typical street cleaning activity involved street cleaners using a long, stick broom and with no protective gear. The street cleaning was tedious and yet marginally effective. Even worse, it created several health issues for waste warriors.

APCCI changed that by introducing state-of-the-art machinery. Ease in the work and dignity to the operators are resulted due to introduction of machinery. Longer stretches of streets now could be cleaned in less time due to the machines.

The Electric Glutton needs just one operator to clean 8 kilometres, whereas four personnel were required to clean the same stretch manually.



Pavements cleaning with the help of Electric Glutton



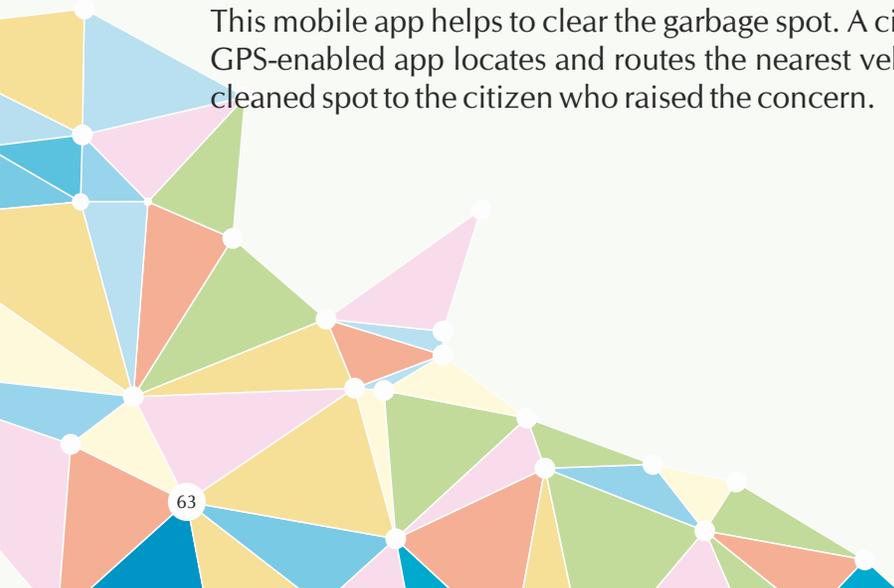
Mobile App technology

The mobile app "MyAPCC Operator" is used by the waste warriors like supervisors, operators, drivers and helpers. The functioning of the app is as seen below:



Figure 20 App function process flow

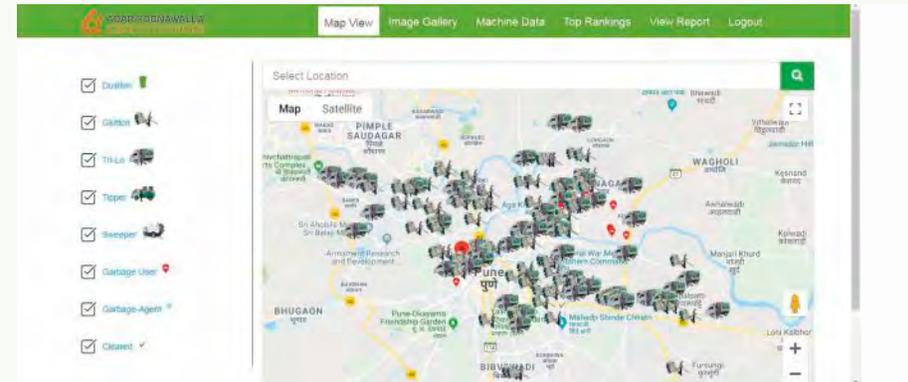
This mobile app helps to clear the garbage spot. A citizen can raise a waste pickup concern by clicking a photograph of the garbage spot. The GPS-enabled app locates and routes the nearest vehicle to clean the spot. After the spot is cleaned, the operator sends a photograph of the cleaned spot to the citizen who raised the concern.



Log in page for user



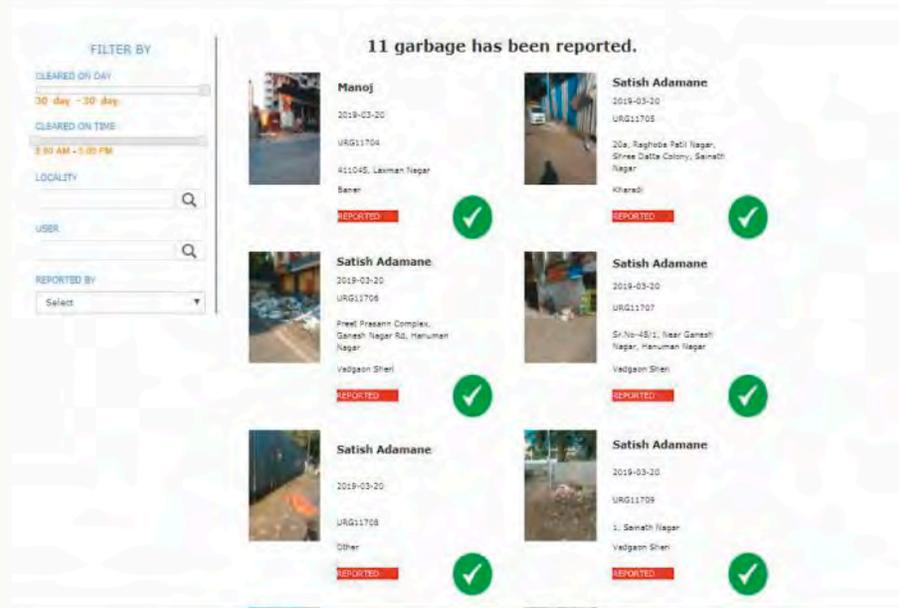
Vehicle location



Reporting of garbage by clicking photo.



Reported garbage



Garbage reports are allocated to nearby machines. The app shows the direction of the garbage spots. The spot is cleaned and the photograph is uploaded using MyAPCCI operator app, after which the citizen receives the photograph of the cleaned spot.





Economic Welfare

Other than tangible results like clean streets impacts depicting economic welfare are also seen. APCCI has had an economic impact in the livelihood of over 525 employees, NGO partners along with other indirect employment opportunities.

Waste Warriors

APCCI provides all statutory benefits and meets all statutory compliance requirements. APCCI provides other benefits over and above those prescribed by the government.

ULBs

Due to the support of APCCI in keeping the city clean ULBs have gained help. This has resulted in healthy surroundings and the citizens feel a sense of pride.



Society Contribution - Volunteers

APCCI can also be called a citizen driven activity as numerous volunteers across cross-sections of the society are actively involved. APCCI has attracted numerous volunteers & interested citizens go through a process of screening and then become volunteers as groups or as individuals. Regular meetings are held for various activities. Some of the volunteering activities include:

1. Clean-up drive
2. Awareness campaign
3. Programs in schools
4. Coordination of events like marathon or cycle rally

Through various activities new 1623 volunteers participated actively in cleanliness drives. Due to COVID-19 situation events like rallies & awareness campaigns couldn't be carried out in numerous numbers.



Cleanliness drive by APCCI volunteers



Testimonials from Volunteers

Mr. Atul Wavhal, Resident

"Lots of appreciation got from the society members. I would like to thank APCCI team for providing garbage vans & manpower."

Mrs. Roxane Quadros, Principal, Rewachand Bhojwani Academy, Camp

"It was a wonderful experience for the students & staff to indulge themselves in the activities."

Mr. Vijaykumar Jadhav, Ujjivan Small Finance Bank

"We appreciate your vision for Swachh Pune and your encouragement to organizations to participate in such noble cause. We are looking forward for more such drives in future."



Cleanliness Drive by Volunteers

7. Prospects



The way forward and sustainability targets

Pune is the first city to adopt the APCC initiative. To make cities livable APCCI is only a first step. The long term goal is to ensure that more and more cities adopt this initiative and urban India becomes cleaner, greener, healthier and happier.

Environment-friendly fleet operations, reducing carbon footprint, involving citizens, resident welfare associations, NGOs, civic officials have been hallmarks of this initiative.

1) Promote the private-public partnership model in other cities by 2023

APCCI has engaged with the local communities using digital technology platforms like apps, blogs, emails, feedback and through various campaigns organised in collaboration with ULBs and NGOs

2) Revamp the existing mobile app by June 2022

The new app will not only educate, inform and engage with citizens, it will also include a circular economy framework (Details in a subsequent section.)

The waste management practices of APCCI are one of the best in Pune. These methods will enhance the Swachh Bharat mission and climate action goals.

3) Invest and operate waste-to-energy (electricity) plant of 600 TPD for 8MW by 2022-23

As an extension of the waste collection initiative, the APCCI is taking a plunge into waste processing to generate electricity and proposing to set up a WtE facility in Pune with installed capacity of 600 TPD. APCCI has jointly worked with M/s. IVL Swedish Environment Research Institute, Stockholm and conducted a pre-feasibility study for a waste-to-energy plant in Pune. IVL's team and their local partner carried out an extensive study of waste generation in Pune. The plant shall be operational from 2022-2023.

1. Establish Sustainability Eco Club for student involvement in 15 schools
2. Convert 10% Diesel vehicles in fleet to electric vehicles.
3. Establish support for E-waste awareness and collection facility in Pune

8. Circular Economy in the Waste Sector will Reduce the Need for Landfills

We generate large amounts of trash and most of it goes into landfills. Not all of it needs to be landfilled. A lot of the waste can be reused and recycled.

Currently, the trash that goes to landfills consists of used and unused everyday items, product packaging, food scraps, etc. Some of these items take very long time for decomposition. Several items can take even thousands of years. Moreover the land used for landfills becomes useless. And of course, a landfill site harms the city's beauty. Waste on landfills pollutes air and groundwater, and affects the health of humans, animals and marine life. The idea is to reduce waste generated and reuse or recycle the waste created. This will reduce the need for landfills.

Reduce, reuse, repair, retain and recycle are the most common methods in a circular economy to reduce landfills.

Citizens are becoming interested in conserving and recycling. APCCI is planning to develop "a circular economy framework for citizens" through the mobile app technology. Citizens can actively contribute to the circularity. APCCI's mobile app will educate citizens. The app will also help them to locate the needy and donate items, eventually creating a positive impact in waste management. Here are some examples of how this would work.

1. Reduce:

- a. Use cloth bags to reduce the usage of plastic bags
- b. Rethink and rework requirements which have a shorter life cycle impact. For example
 - i. use and throw items used for food, packaging, toys and clothes
 - ii. reduce food waste

- c. Eat healthy food, pick up food items that use recyclable packaging material.

2. Retain:

- a. Increase the product life cycle of items
 - i. using shoe polish for shoes
 - ii. using protective coating for furniture
 - iii. cleaning clothes smartly
- b. Use clothes that last longer
- c. Use rechargeable batteries

3. Repair:

- a. Repair electronic equipment, shoes, kitchen appliances and furniture
- b. Repair old items and donate it to the needy

4. Reuse:

- a. Donate old clothes and items in good condition such as sweaters, toys, bicycle, kitchen items and appliances
- b. Use reusable containers for food

5. Recycle:

- a. Glass bottles, plastic bottles, papers, damaged toys, metal items, aluminum bottles, electronic items, batteries and rubber items can be segregated for recycling at the time of disposal
- b. In-house composting of food waste.



Figure 21 Circular economy framework by APCCI



App-features and steps for users

Donate old items to needy

- Step1: Download APCCI app and register with your e-mail ID and mobile number.
- Step2: Open by clicking on the donate button
- Step3: Click on the "Take a photograph of the old item in good condition" link
- Step4: Click on upload
- Step5: Select convenient time window to pick up items
- Step6: Waste warrior collects the item
- Step7: Feedback to the old-item donor by the recipient
- Step8: Thank you email from APCCI

Donate waste for recycling

- Step-1: Download APCCI app and register with your email id and mobile no.
- Step-2: Open by clicking on donate mark
- Step-3: Click on take a photograph of the waste to be recycled
- Step-4: Click on upload
- Step-5: Select convenient time window to pick up the waste that is recycled
- Step-6: The waste warrior will collect the recyclable item
- Step-7: Feedback to the recyclable-waste donor by the recycling agency.
- Step-8: Thank you email from APCCI

Donate money

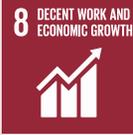
- Step-1: Download APCCI app and register with your email id and mobile no.
- Step-2: Open by clicking on donate mark
- Step-3: Click on donate funds or CSR money
- Step-4: Fill information in three boxes
- Step-5: Select convenient mode of donation transfer
- Step-6: Receive confirmation of transfer
- Step-7: Receipt of donation made along with thank you email from APCCI

Appendix



Mapping UN's Sustainable Development Goals (UN's SDG)

Sustainable development goals (SDGs) mapping of how the initiative is adding value to

Sustainable Development Goals (SDGs)	Significant Sustainability actions by APCCI	Sustainable Development Goals (SDGs)	Significant Sustainability actions by APCCI
 <p>1 NO POVERTY</p>	<p>Contributing to target 1.b</p> <ul style="list-style-type: none"> APCCI provided employment to 450+ members of low-income families APCCI pays more than minimum wages 	 <p>6 CLEAN WATER AND SANITATION</p>	<p>Contributing to targets 6.2, 6.3, 6.b</p> <ul style="list-style-type: none"> Waste segregation processes for better sanitation Conserving water for cleaning of fleet machines by use of wet cleaning cloths
 <p>3 GOOD HEALTH AND WELL-BEING</p>	<p>Contributing to target 3.c</p> <ul style="list-style-type: none"> Cleaning streets directly impacts health 8 types of personal protective equipment to waste warriors Strategic activities to change citizen behaviour Skill development training to fleet drivers, helpers, Glutton operators and supervisors 	 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>Contributing to target 7.a</p> <ul style="list-style-type: none"> Invested in clean and fossil-fuel friendly fleet machines like Glutton and others which are advanced, efficient and has low carbon technology base
 <p>4 QUALITY EDUCATION</p>	<p>Contributing to targets 4.4, 4.7</p> <ul style="list-style-type: none"> 450 skilled jobs made available to youths Skill development training including technical and vocational skills for creating decent working conditions and experience Various procedures and innovative approach adopted for citizens engagement, volunteers, coming generation for providing deeper knowledge and skills required to promote sustainable development 	 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>Contributing to targets 8.6, 8.8, 8.b</p> <ul style="list-style-type: none"> Provided state-of-the-art technology-based fleet machines for ease of work No physical contact with waste while collection, cleaning and transport Faster feedback system to enhance productivity Direct employment for more than 450+ persons
		 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>Contributing to targets 9.1, 9.2, 9.4, 9.5</p> <ul style="list-style-type: none"> Public-private partnership Use of innovative approach and advanced fleet machines Optimum coverage due to innovative operating procedures

Sustainable Development Goals (SDGs)

Significant Sustainability actions by APCCI



Contributing to targets 10.2, 10.3

- Promoting socio-economic growth
- Empowering all people who are connected and are benefiting due to services
- Provided outcome driven opportunities for stakeholders involved



Contributing to targets 11.1, 11.6, 11.7, 11.a

- Directly impacts the city's health and hence that of its citizens
- Cleaning activity ensures waste management



Contributing to targets 12.2, 12.4, 12.5, 12.6, 12.8, 12.a

- Low carbon fleet machines and optimisation of fleet route
- Use of IT interventions for operations efficiency
- Environmentally sound waste management procedures (SOPs)
- Awareness campaigns on waste reduction and management skills required to promote sustainable development

Sustainable Development Goals (SDGs)

Significant Sustainability actions by APCCI



Contributing to target 13.3

- Climate action by investing in low-carbon electric fleet machines and BS-IV diesel fleet machines
- Optimum fleet travel lowers emissions



Contributing to targets 16.5, 16.6, 16.7

- Training on various topics including anti-corruption and transparency at work
- Inclusive development and decisions by participatory way



Contributing to targets 17.6, 17.7, 17.8, 17.9, 17.15, 17.16, 17.17, 17.18

- Collaboration with stakeholders like ULBs, Gram panchayats
- Partnership with NGOs like Janwani, Swachh, Poornam
- Partnership with service providers like BP, Mtech (TATA)

GRI Content Index



CONTENT INDEX SERVICE

2022



GRI Standards Content Index

For the GRI Content Index Service, GRI Services reviewed that the GRI content index is clearly presented and the references for all disclosures included align with the appropriate sections in the body of the report.

GRI 101: Foundation 2016

GRI 102: General Disclosures 2016

Disclosure	Page number(s) and/or direct answers	Omissions – Reasons and Explanations
Organizational profile		
102-1	Name of the organization	3, 15
102-2	Activities, brands, products, and services	3, 4, 6,
102-3	Location of headquarters	15
102-4	Location of operations	15, 17
102-5	Ownership and legal form	15, 17, 18
102-6	Markets served	15, 43-45
102-7	Scale of the organization	3, 4, 6
102-8	Information on employees and other workers	37, 64, 68
102-9	Supply chain	17 to 19
102-10	Significant changes to the organization and its supply chain	No significant changes observed since first report 2018-19, in reporting year 2020-21
102-11	Precautionary Principle or approach	23, 26 to 30, 35 to 42
102-12	External initiatives	27, 28, 58 to 61
102-13	Membership of associations	15
Strategy		
102-14	Statement from senior decision-maker	3, 4, 6, 21
Ethics and integrity		
102-16	Values, principles, standards, and norms of behavior	17 to 19

Disclosure	Page number(s) and/or direct answers	Omissions – Reasons and Explanations
Governance		
102-18	Governance structure	17, 18
Stakeholder engagement		
102-40	List of stakeholder groups	20, 21
102-41	Collective bargaining agreements	9, 10, 12, 17, 38, 60
102-42	Identifying and selecting stakeholders	20, 21
102-43	Approach to stakeholder engagement	21
102-44	Key topics and concerns raised	22 to 24
Reporting practice		
102-45	Entities included in the consolidated financial statements	15
102-46	Defining report content and topic Boundaries	15, 22 to 24
102-47	List of material topics	22
102-48	Restatements of information	No such information of restatement for reporting year 2020-21
102-49	Changes in reporting	No significant materiality changes in reporting period 2020-21 (Since last report 2018-19)
102-50	Reporting period	15
102-51	Date of most recent report	15
102-52	Reporting cycle	15
102-53	Contact point for questions regarding the report	15
102-54	Claims of reporting in accordance with the GRI Standards	15
102-55	GRI context index	77 to 82
102-56	External assurance	Report is not externally assured



Topic Specific Standards

GRI 200: Economic Topics

Disclosure		Page number(s) and/or direct answers	Omissions – Reasons and Explanations
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	22 to 24	
103-2	The management approach and its components	3, 4, 6, 9 to 12	
103-3	Evaluation of the management approach	17, 23, 24, 65, 68 to 73	
GRI 201: Economic Performance 2016			
201-1	Direct economic value generated and distributed	3, 34	
201-2	Financial implications and other risks and opportunities due to climate change	29, 55 to 57	
201-3	Defined benefit plan obligations and other retirement plans	37, 40, 51	
201-4	Financial assistance received from government	No financial assistance received from government in reporting year 2020-21. The APCCI is financially supported by Mr Adar Poonawalla (CEO Serum Institute of India & founder, APCCI)	
GRI 202: Market Presence 2016			
202-2	Proportion of senior management hired from the local community	17, 18	
GRI 203: Indirect Economic Impacts 2016			
203-1	Infrastructure investments and services supported	34	
203-2	Significant indirect economic impacts	34, 37, 46, 47, 68	
GRI 204: Procurement Practices 2016			
204-1	Proportion of spending on local suppliers	34, 37, 45, 46, 62, 63	
GRI 205: Anti-corruption 2016			
205-1	Operations assessed for risks related to corruption	64, 65	
205-2	Communication and training about anti-corruption policies and procedures	65	
GRI 206: Anti-competitive Behavior 2016			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	No legal action is pending or completed during the reporting period regarding anti-competitive behavior, anti-trust, and monopoly practices	

GRI 300: Environmental Topics

Disclosure		Page number(s) and/or direct answers	Omissions – Reasons and Explanations
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	22 to 24	
103-2	The management approach and its components	3, 4, 6, 9 to 12	
103-3	Evaluation of the management approach	17, 23, 24, 65, 68 to 73	
GRI 301: Materials 2016			
301-1	Materials used by weight or volume	49, 50, 55	
301-2	Recycled input materials used	No recycled input materials are used in reporting year 2020-21	
GRI 302: Energy 2016			
302-1	Energy consumption within the organization	55	
302-4	Reduction of energy consumption	56, 57	
302-5	Reductions in energy requirements of products and services	56, 57	
GRI 303: Water and effluents 2018			
303-1	Interactions with water as a shared resource	23, 49, 50	
303-2	Management of water discharge-related impacts	23, 49, 50	
303-3	Water withdrawal	No significant use of water is recorded in 2020-21	
303-4	Water discharge	No significant use of water is recorded in 2020-21	
303-5	Water consumption	No significant use of water is recorded in 2020-21	
GRI 304: Biodiversity 2016			
304-3	Habitats protected or restored	APCCI providing services to keep city clean. No data is available on impact or scientific waste management and restoration of habitats	
GRI 305: Emissions 2016			
305-1	Direct (Scope 1) GHG emissions	56	
305-2	Energy indirect (Scope 2) GHG emissions	56	
305-3	Other indirect (Scope 3) GHG emissions	56	
305-4	GHG emissions intensity	57	
305-5	Reduction of GHG emissions	57	
305-6	Emissions of ozone-depleting substances (ODS)	APCCI is providing waste management services and no emission of Ozone depleting substances are expected in reporting year 2020-21	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	29	

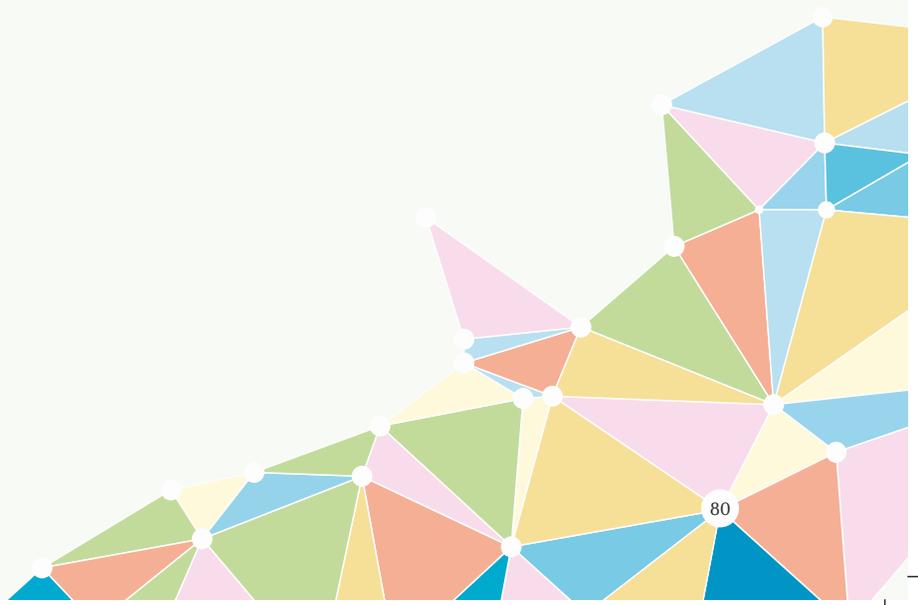
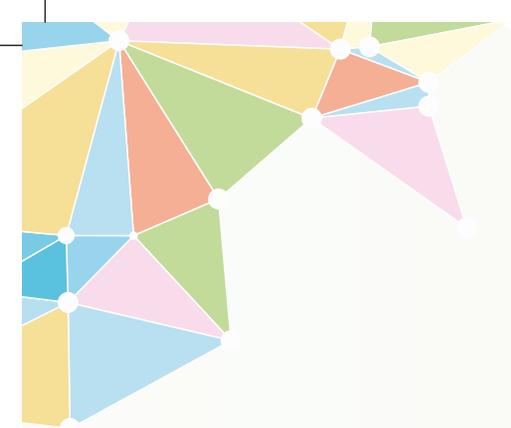
Disclosure	Page number(s) and/or direct answers	Omissions – Reasons and Explanations
GRI 306: Waste 2020		
306-1	Waste generation and significant waste-related impacts	No data Available, as only marginal use of water, just for cleaning of vehicles by wet cleaning cloth
306-2	Management of significant waste-related impacts	16, 17, 33, 41, 43, 72, 73
306-3	Waste generated	APCCI is providing waste management services and no waste is being generated in this process
306-4	Waste diverted from disposal	APCCI is providing waste management services and no waste is being generated in this process
306-5	Waste directed to disposal	APCCI is providing waste management services and no waste is being generated in this process
GRI 307: Environmental Compliance 2016		
307-1	Non-compliance with environmental laws and regulations	11, 29
GRI 308: Supplier Environmental Assessment 2016		
308-1	New suppliers that were screened using environmental criteria	37, 38
308-2	Negative environmental impacts in the supply chain and actions taken	27, 28, 35, 36, 39, 41, 42, 46, 47, 61 to 63
GRI 400: Social Topics		
GRI 103: Management Approach 2016		
103-1	Explanation of the material topic and its Boundary	22 to 24
103-2	The management approach and its components	3, 4, 6, 9 to 12
103-3	Evaluation of the management approach	17, 23, 24, 65, 68 to 73
GRI 401: Employment 2016		
401-1	New employee hires and employee turnover	64
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	51
GRI 403: Occupational Health and Safety 2018		
403-1	Occupational health and safety management system	19, 22, 35, 37, 39
403-2	Hazard identification, risk assessment, and incident investigation	19, 22, 35, 37, 39
403-3	Occupational health services	19, 22, 35, 37, 39
403-4	Worker participation, consultation, and communication on occupational health and safety	24, 65
403-5	Worker training on occupational health and safety	24, 65
403-6	Promotion of worker health	37, 64
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	19

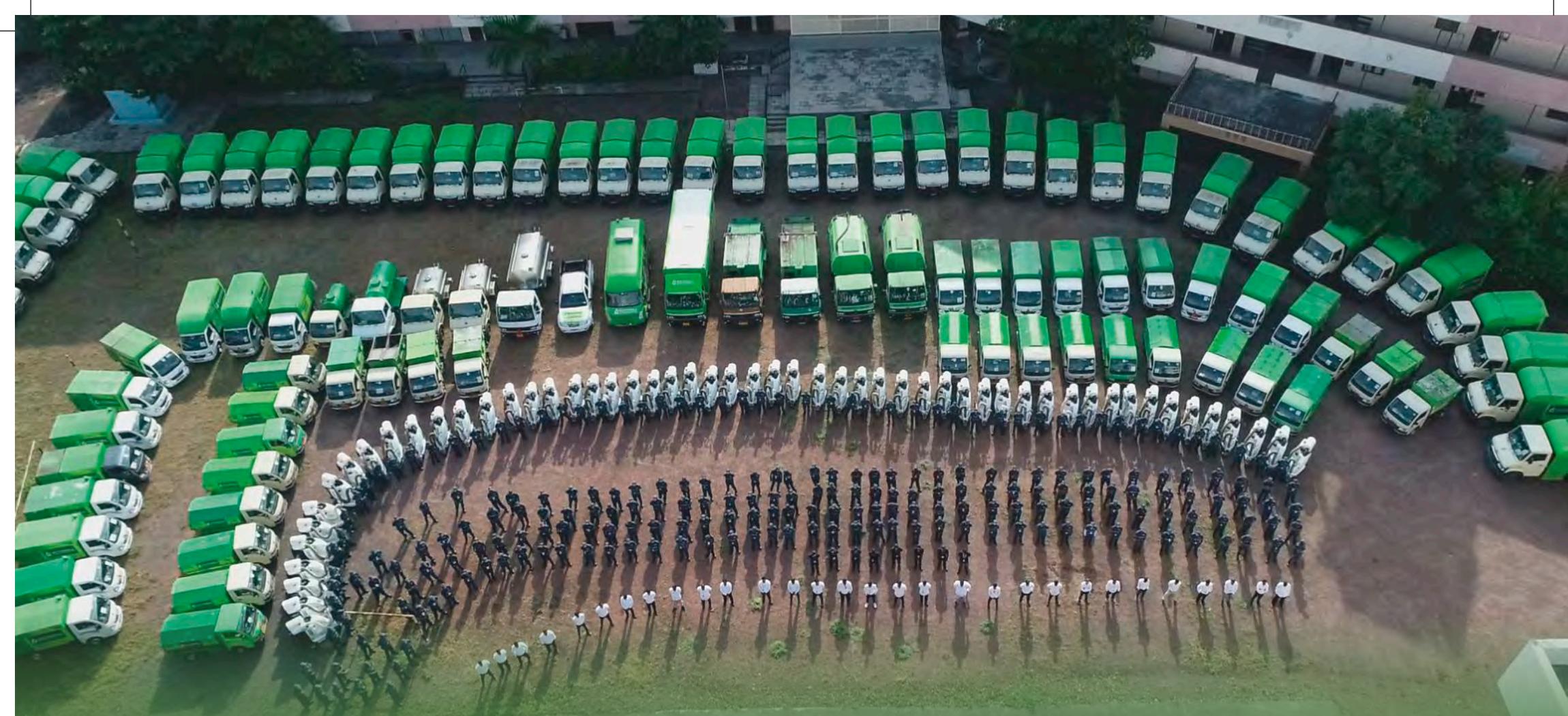
Disclosure	Page number(s) and/or direct answers	Omissions – Reasons and Explanations
403-8	Workers covered by an occupational health and safety management system	37
403-9	Work-related injuries	2
403-10	Work-related ill health	65
GRI 404: Training and Education 2016		
404-1	Average hours of training per year per employee	64, 65
404-2	Programs for upgrading employee skills and transition assistance programs	42, 65
404-3	Percentage of employees receiving regular performance and career development reviews	40, 65
GRI 405: Diversity and Equal Opportunity 2016		
405-1	Diversity of governance bodies and employees	17, 38
GRI 408: Child Labor 2016		
408-1	Operations and suppliers at significant risk for incidents of child labor	66
GRI 409: Forced or Compulsory Labor 2016		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	68
GRI 410: Security Practices 2016		
410-1	Security personnel trained in human rights policies or procedures	65, 68
GRI 411: Rights of Indigenous Peoples 2016		
411-1	Incidents of violations involving rights of indigenous peoples	3, 4, 6
GRI 412: Human Rights Assessment 2016		
412-1	Operations that have been subject to human rights reviews or impact assessments	17, 19
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments, and development programs	27, 46 to 48, 52 to 54, 58 to 61, 63
413-2	Operations with significant actual and potential negative impacts on local communities	46, 47, 62, 69
GRI 414: Supplier Social Assessment 2016		
414-1	New suppliers that were screened using social criteria	66, 68
GRI 416: Customer Health and Safety 2016		
416-1	Assessment of the health and safety impacts of product and service categories	24, 66 to 68
GRI 419: Socioeconomic Compliance 2016		
419-1	Non-compliance with laws and regulations in the social and economic area	19, 43, 68



List of Figures

Figure 1 APCCI's Functional Structure	18
Figure 2 Stakeholders mapping	20
Figure 3 Materiality assessment	22
Figure 4 Number of on-road fleet machines	30
Figure 5 Year-on-Year streets length coverage	33
Figure 6 Operational flow for waste pickup, cleaning and waste transport activities	41
Figure 7 Chronic waste spots eliminated	44
Figure 8 SOP for waste chronic spot elimination	45
Figure 9 Methodology for slum area waste management	46
Figure 10 House to house survey and awareness	48
Figure 11 Awareness campaigns - select photographs	48
Figure 12 Legal compliances	51
Figure 13 Appreciation letters year-on-year	52
Figure 14 GHG emissions scenario for year 2020-21	57
Figure 15 Citizens outreach	60
Figure 19 Operational training to employees	61
Figure 20 App function process flow	63
Figure 21 Circular economy framework by APCCI	69





ADAR POONAWALLA
CLEAN CITY INITIATIVE



Regd. off.: A-wing, 3rd floor, Mittal Court, Off Dr. Babasaheb Ambedkar Road, Rasta Peth, Pune 411011
TEL.: +91-20-26137777 ■ www.adarpcleancity.com ■ email: ceo@adarpcleancity.com