IPCA

SUSTAINABILITY IS OUR GOAL

ANNUAL REPORT
2018 - 2019


RUN TO CLEAN 2018

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1. PRO – Producer Responsible Organization
2. MSWM – Municipal Solid Waste Management
3. EPR – Extended Producer Responsibility
4. MLP – Multilayer Plastic
5. ULBs – Urban Local Bodies
6. CO_2eq – Carbon dioxide equivalent emissions
7. PWM – Plastic Waste Management
8. CSR – Corporate Social Responsibility

Director's Message

The past year has been a absolutely gratifying for me as I have had the privilege and opportunity to work for the UN Environment Theme of "Beat Plastic Pollution" in India. Having known that our efforts would be like a drop-in ocean, I truly believe in the saying, "Many a little makes a mickle". These small and relevant steps would surely yield sustainable results in the long run.

It's been 18 years since IPCA's inception, we can proudly announce that we have taken the right steps at the right time to work for our fast deteriorating environment, which is the need of an hour. The journey started, when India got its first Municipal Solid Waste (Handling and Management) Rules, 2000 and those were the times when people hardly understood the term "Solid Waste Management" with zero segregation of waste at source, scarce awareness and knowledge about waste management practices. It was during these times, when most recycled plastic (PET) was not recycled due to lack of infrastructure and technology in India. The year 2018-19 reminisces me of those days as we are witnessing similar scenario with other form of plastic, Multi-layer Plastic (MLP). Till 2017, MLP was considered as non-recyclable and was not considered worth collection and segregation. It is a moment of pride for IPCA since it brought to the fore, the process of MLP co-processing across India and created a network of cement industries, waste to energy plants, road construction contractors and pyrolysis sector for co-processing of MLP waste. This innovative contribution of the organization to the society makes me even more excited about our future and the ways in which we can deepen our impact in the meeting our goal of achieving environmental sustainability.

The past year proved to be another environmentally eventful year for us. We worked closely with Central and State Pollution Control Boards, ULBs, more than 60 international and Indian MNCs, waste management agencies, recyclers/processors, waste collectors, residents and school children for effective waste management, which included source segregation, Extended Producer Responsibility (EPR) for plastic waste, and composting of organic waste. We have also extended our services to hospitals, corporate offices, hotels, cinema theatre and auditoriums to improve their indoor air quality. We have continued our rigorous efforts in our primary education program for rag-pickers' children, which has been very close to my heart, as we are contributing our bit for upliftment of this sector of society. Keeping up the motto of working together, around 10,000 waste collectors have been benefitted through our program and their per capita income has increased significantly. Our work has been recognized by Central Pollution Control Board and we became the first Producer Responsible Organization (PRO) in India for PWM, which helped us to spread our roots to 24 states of India.

As an organization, we strive to put our best foot forward every hour of the day to save the environment in the most efficient and effective ways possible. In this year's Report, we are highlighting many, though certainly not all, of the IPCA's accomplishments and activities to advance our vision, ensuring that each one of us can have healthy air, water, soil and ultimately a healthier life .I hope you will enjoy reading this report and that it gives you further insight into the work that we do and the progress we have made as an organization in partnership with others during 2018-19. We consider our staff as our greatest resource and I'm proud to say we have a committed team working together for the realising our goals and vision for the organization. As we enter 2019-20, I would like to take a moment to thank all of our donors, board members, partners, volunteers and well-wishers for showering their confidence and commitment for IPCA.

ASHISH JAIN
DIRECTOR, IPCA

About the Report

"The Earth provides enough to satisfy every man's need but not every man's greed"

-Mahatma Gandhi

India was a global host for 2018 World Environment Day which took place on June 5, 2018 on the theme "Beat Plastic Pollution" to bring the world together to combat the menace of plastic pollution. UN Environment's theme "Beat Plastic Pollution" urged governments, industry, communities, and individuals to come together and explore sustainable alternatives and urgently reduce the production and excessive use of plastic, polluting our oceans damaging marine life and threatening human health. Keeping pace with the theme, IPCA moved ahead on its mission for a sustainable and healthy environment by taking a plunge for effective Plastic Waste Management in India and became the First Producer Responsible Organisation (PRO) for Plastic Waste Management, approved by Central Pollution Control Board (CPCB). This year IPCA catapulted to greater heights while dealing with the environmental issues of Municipal Solid Waste Management (MSWM), Plastic Waste Management (PWM) and Air Quality. The highlights ranged from developing and implementation of a collect back model for plastic waste from 24 States of India, keeping Extended Producer Responsibility (EPR) at the fore, contributing and enhancing the practice of source segregation in Delhi-NCR, conducting training programs for urban local bodies (ULBs) across states on Solid Waste Management, monitoring of indoor air quality in different micro environments i.e. government buildings, hospitals, malls and offices.

Some of the remarkable initiatives and achievements of 2018-19 were:

- IPCA extended its **WE CARE** project on Extended Producer Responsibility (EPR) for Plastic Waste Management in sync with a Plastic Waste Management (Amendment) Rules, 2018 to Project EPRO by spreading its wings to **24 states** and collecting **16,378.681 MT** of plastic waste. **11,394.68 MT** of post-consumer Multilayer plastic (MLP) packaging waste, **3951.94 MT** of non-MLP and **1032.05 MT** of Paper Beverage cartons waste was collected and send for environmentally safe processing/recycling till March 2019

- IPCA created a sustainable value chain of Plastic Waste for **64 Producers/Brand owners** and **18 recyclers/co-processors** across India in 2018-19 and successfully channelized almost **16,378 MT** of Plastic Waste for its end of life processing and recycling
- IPCA created an exhaustive network of appx. **10,000 waste collectors** at Pan India in 2018-19 and reinforced the sensitization of waste collectors about segregation of various grades of waste, linked them with the aggregator, improved their per capita income and improved their personal hygiene and sanitation conditions
- **140 children** have been enrolled in primary education programme for waste collector's children in 2018-19
- IPCA successfully completed its first year of decentralized management of organic waste under Project S.O.R.T by installation of Composter at **8 locations** in Delhi-Noida. Under this project IPCA prevented around **33,695 kg** of organic waste from reaching Dhalaos/Landfills (equivalent to **64,020 kg of CO_2 emissions**) and sensitized **4711 stakeholders** in the supply chain of Municipal Solid Waste Management
- As part of its outreach programs, IPCA conducted a series of **6 workshops** for the Urban Local Bodies (ULB) officials of **five states** (Rajasthan, Haryana, U.P. Himachal Pradesh and Jammu & Kashmir) on behalf of National Institute of Urban Affairs (NIUA), with the support of Ministry of Housing & Urban Affairs (MoHUA), Govt. of India The objective of the workshops was to provide exposure on current waste management practices, technologies and methods adopted at various stakeholders levels and to built the capacity of ULB officers on solid waste management under Swachh Bharat Mission (SBM). More than **300 ULB officers** were trained through these workshops
- Mr. Ashish Jain, was appointed as an expert in the committee constituted by Central Pollution Control Board (CPCB) to prepare a National Framework to Implement EPR for Plastic Waste Management
- Dr. Radha Goyal, Deputy Director, IPCA was appointed as an expert member in the Indoor Air Pollution Committee constituted by Ministry of Environment, Forests and Climate Change (MoEFCC), Govt. of India
- IPCA was involved in designing and conducting capacity building programs at The International Centre for Environment Audit and Sustainable Development (iCED), which was set up by the Comptroller and Auditor General of India in 2010 for capacity building of auditors on issues related to environment and sustainable development
- **88 Capacity building programs**, training and workshops were organized and conducted in 2018-19 for different stakeholders on SWM
- **3rd Series of AIR-O-THON** was successfully conducted in **3 metropolitan cities** of India - Bangalore, Delhi and Mumbai
- 1**3 Road Campaigns** were conducted with support from East Delhi Municipal Corporation (EDMC) and Central Pollution Control Board in 2018-19
- Indoor Air Quality Monitoring and Analysis of more than **12 buildings** in Delhi/NCR with recommendation reports

OUR MISSION

- To improve livelihood through the responsible use of natural resources for the welfare of present and future generations
- To ensure proper recycling/processing of different kinds of waste to produce other useful consumable products
- To provide solutions to environment and climate-related problems

OUR VISION

Sustainable Economic Development of India in a way that ensures environment protection

OUR VALUES

Our values serve as a compass for our actions and describe how we behave in environment

- **Passion:** We are committed with heart, mind, and soul to achieve and to serve the best
- **Accountability:** If it is to be, it's up to me
- **Integrity:** Be real and holistic in approach
- **Leadership:** The courage to shape a better future by revolutionizing the present

A. NEW PROJECTS AND INITIATIVES

1. PROJECT: EPRO

Plastic products have become an integral part in our daily life as a basic need. It is produced on a massive scale worldwide and its production crosses the 150 million tonnes per year globally. Globalization and industrialization have resulted in increased rate of generation for packaging waste in India. As per the CPCB's report, India generates 56 lakhs tones of plastic waste annually, out of which total plastic waste, which is collected and recycled in the country is estimated to be 9,205 tons per day (approximately 60% of total plastic waste), and 6,137 tones remain uncollected and littered. With an estimated packaging recycling rate of 30% - India lags behind many other developed countries in recycling of these wastes. In India, over the last few decades, the packaging industry in India has grown exponentially. If packaging materials are not disposed of correctly it ends up as a litter.

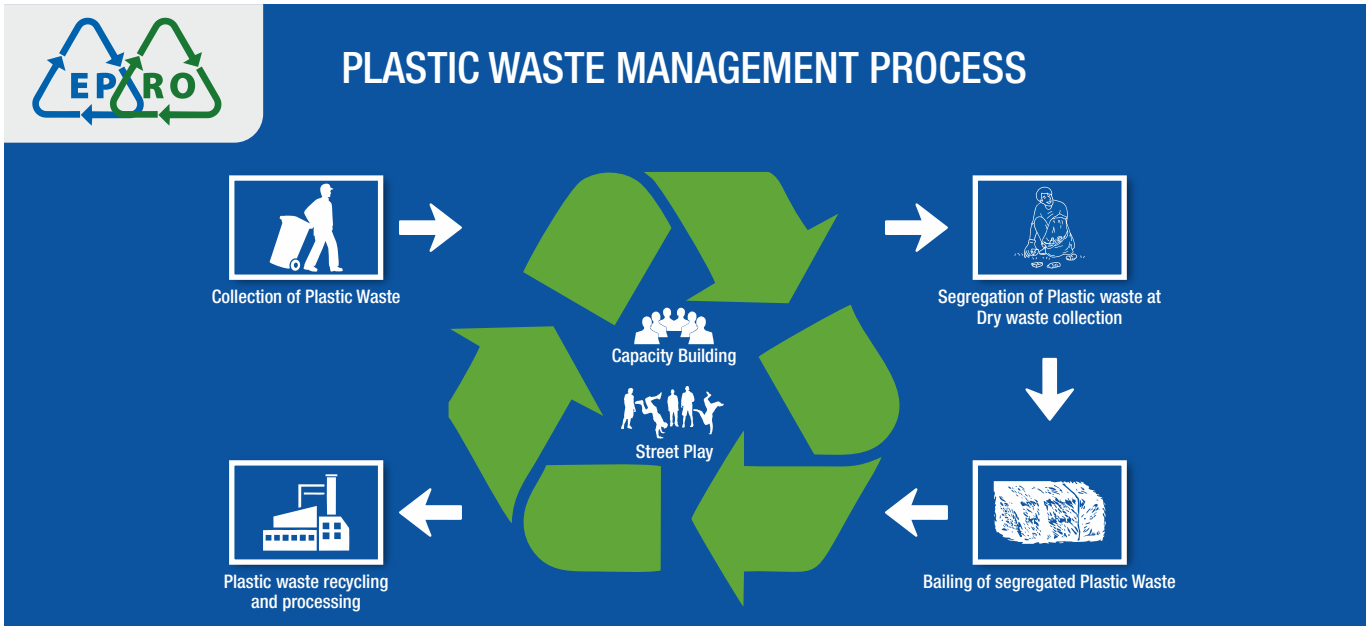


Figure 1: Plastic EPRO

Source: IPCA, 2018

Plastic Waste Management (PWM) Rules in India has been introduced with the primary objective to channelize the Plastic waste (especially multilayer plastic waste) generated in the country for the environmentally sound recycling / processing, the major portion of which in the current scenario ends in the landfill, the open air burning of which results in the higher pollution and less recovery, thereby causing damage to the environment. In order to cope up with the problem of plastic waste management, Ministry of Environment, Forest and Climate Change (MoEFCC) had framed **Plastic Waste (Management and Handling) Rules, 2011** which were effective from 4th February 2011. In order to ensure effective implementation of the Plastic Waste Management Rules (2011) and to clearly identify the role of Producer, Importer and Brand owner in the Extended Producer Responsibility, Government of India amended the **Plastic Waste (Management and Handling) Rules, 2011**, notified the **Plastic Waste Management Rules, 2016,** which were further amended on 27th March 2018 and read as **Plastic Waste Management (Amendment) Rules, 2018.**

The section 9 (1&2) of Plastic Waste Management (Amendment) Rules, 2018 talks about Extended Producer Responsibility (EPR) in which Producer/ Brand Owner/ Importer need to develop a collection back mechanism for their post-consumer plastic packaging waste. In-order to effectively implement the **Extended Producer Responsibility** on behalf of brand owner/producer/importer, there is a dire need for developing a mechanism of segregation, collection and channelizing it to the right recycling/processing industry for sustainable end of life solutions. To develop sustainable supply chain, strengthen segregation and collection of plastic waste, lots of serious efforts are required at the ground with collaboration of various stakeholders. Keeping this in mind,IPCA has conceived the Project EPRO with the following objectives:

OBJECTIVE:

- To comply the section 9 (1 & 2) of Plastic Waste Management (Amendment) Rules 2018.
- To create a wide network of rag-pickers/waste collectors for the collection and segregation of plastic waste
- To set up dry waste collection centers in each state of India for secondary storage of segregated plastic waste
- To channelize collected quantity of Plastic Waste to the authorized and recommended recycling/processing industries for end of life solution

PROJECT LOCATIONS:

Figure 2: States covered in Project EPRO

PROJECT ACTIVITIES:

1) **Workshop for waste collectors:**

IPCA conducted numerous workshops to educate the waste collectors about the plastic waste collection, segregation and incentives generated out of plastic waste. They were also taught about their personal hygiene and sanitary conditions.


Figure 3: Workshops for waste collectors

2) Plastic Clean-up Drive:

With an objective to create awareness on hazardous impact of plastic pollution, IPCA conducted Plastic Clean-up Drives with the support from East Delhi Municipal Corporation (EDMC) and Central Pollution Control Board (CPCB). The aim of the program was to spread awareness amongst general public regarding plastic waste management. A participatory approach was adopted by including school children of Arunodaya Public School, RWA members and volunteers to increase awareness on plastic waste.


Figure 4: Plastic Clean Drive

3) Collection, Processing and Recycling of Plastic Waste

Dry waste collection centres for the secondary storage and compaction of Plastic Waste have been set up by IPCA in various locations of India. These dry waste collection centers are well equipped with vertical hydraulic balers, which compact the low weight high volume plastic waste into compact bale.

After the baling process, the plastic bales are sent to Waste to Energy plants, Pyrolysis plants, cement kilns and respective recycling plants for further processing and recycling.

Figure 5: Segregation process at the Dry Waste Collection Centres

Figure 6: Bailing process at the dry waste collection centres

Figure 7: Transportation of Bales

ACHIEVEMENTS:

- Project EPRO has been successfully implemented in **24 states of India**
- Under Project EPRO, a network of **10,000 waste collectors** across India has been created for collection of plastic waste
- Collected, processed and recycled **16,378.681 MT of plastic waste (MLP-11,394MT, Non-MLP-3951.94MT, and Paper Bevrage carton -1032.05MT)**
- Helped in reduction of **11,065,745 kgs of CO_2eq** and equivalent gases emissions by systematic collection, processing and recycling of plastic waste

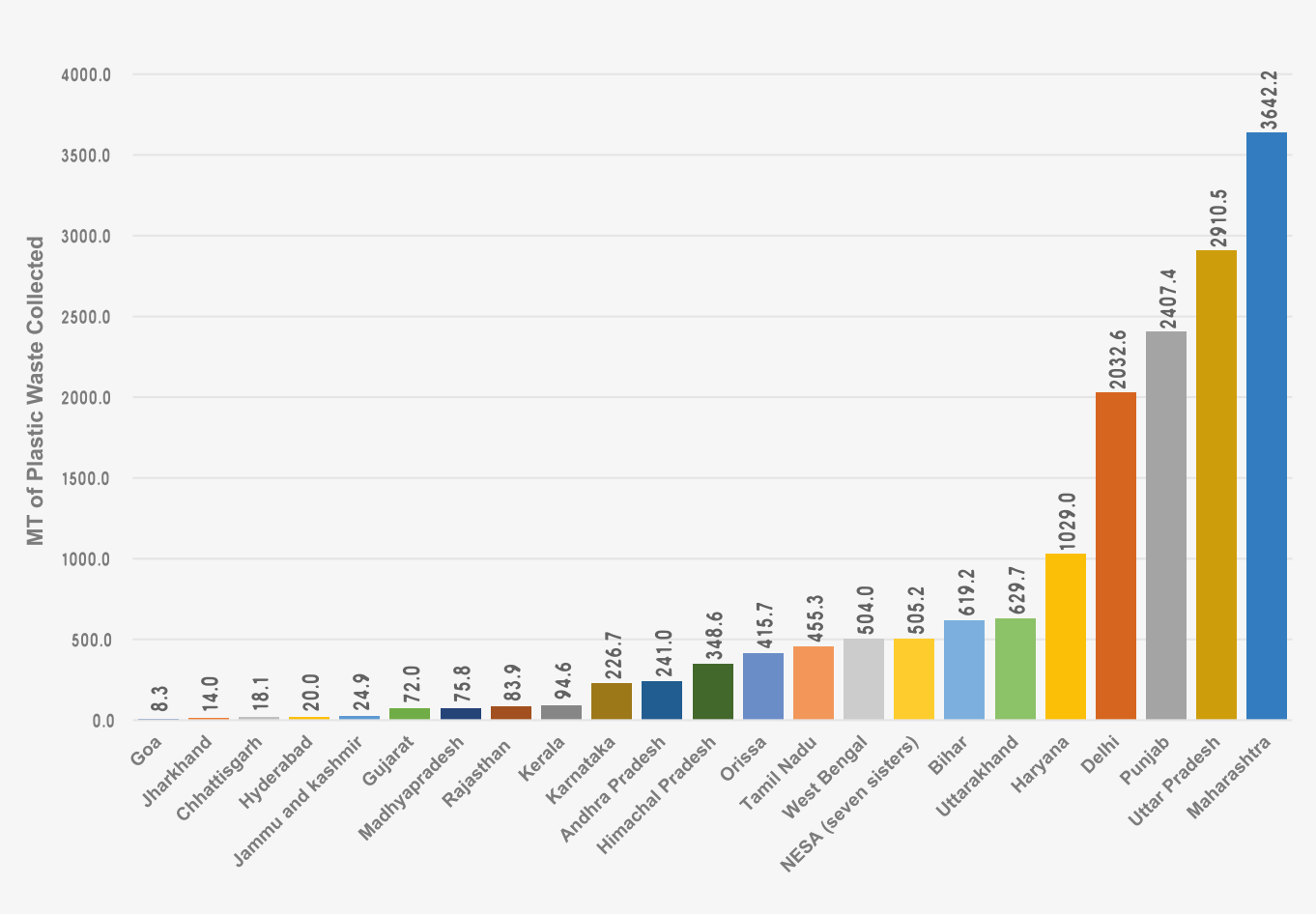


Figure 8: Plastic waste collected in 24 states

LAUNCH OF PLASTIC WASTE MANAGEMENT INITIATIVES:

(a) Amritsar, Punjab LAUNCH:

The Punjab Pollution Control Board (PPCB) and the Punjab Plastic Waste Management Society (PPWMS) on 2nd October 2018 in Amritsar launched a five-year programme for effectively managing post-consumer multi-layered packaging (MLP) in the state. Senior representatives from the member companies of the PPWMS, a consortium of 26 fast moving consumer goods (FMCG) companies, in partnership with the Indian Pollution Control Association (IPCA) pledged to collect and re-process 1,100 tonnes of post-consumer MLP in Punjab in the first year. Hence, Punjab Plastic Waste Management Society (PPWMS) appointed IPCA (India's First PRO regd. with CPCB) to strengthen the collection and processing of post-consumer multi-layered plastic (MLP) waste.

Figure 9: Sh. O.P. Soni, Environment Minister, Punjab launched the Project along with Senior Officers from PPCB and Municiplity, Chairman- PPCB, MS- PPCB and Mayor- Amritsar

b) Mysore, Karnataka LAUNCH :

Keeping pace with this green movement, Reckitt Benckiser (India) Private Limited launched a MLP (Multi-layered Plastic) Collection and Processing Project with Indian Pollution Control Association (IPCA) in the presence of the Mayor, Mysore and Commissioner, Municipal Corporation, Mysore. Reckitt Benkister is the first brand owner in Mysore to join this EPR initiative on Plastic waste management. In this launch, Reckitt Benkister (RB) along with IPCA brings the network of rag pickers, Municipal corporations, officials of Karnataka Pollution Control Board to a common platform and will work towards generating awareness amongst the stakeholders regarding the segregation and collection of multi-layer packaging (MLP) waste for further processing and recycling.

Figure 10: Plastic Waste management Launch Initiative in Mysore

c) Baddi, Himachal Pradesh Launch:

The launch programme for Reckitt Benckiser EPR Initiative was held on 26th November, 2018 at Baddi, Himachal Pradesh. The programme was launched with the aim to "*Raise awareness through workshops and street plays among key stake holders*". This project involves all the stakeholders ranging from the brand owners, Pollution Control Board, Municipal Corporation, waste pickers and the processors, which make it more viable and sustainable.

Figure 11: Plastic waste management Launch in Baddi, Himachal Pradesh

Table 1: List of collection, recycling, processing and government partners engaged in implementing the EPR action plan in 23 states

Plastic Waste Collection Partners	Recycling Partners for Non- MLP and Tetra Pak waste	Co- processing Partners for MLP waste
Balaji Enterprises	Ganesha Ecosphere	East Delhi waste processing company limited
Sampurn(e)arth Environment Solutions Pvt. Ltd.	BLS Ecotech	Ambuja Cements, Rabriyawas
Green Worms Eco Solutions LLP	RPG Industrial Products Pvt. Ltd.	Ambuja Cements, Chandrapur (Maratha Cement Works)
Aaliya Traders	Almehtab industries pvt ltd	Ultratech Cements, Dhar, Madhya Pradesh
Khushboo Enterprises	Datar Polymers	Shakti Plastic Industries, Mumbai
Vishvash Cattle Feed and Scarp Traders	Aqua Fibers, Industries	Ultratech Cements, Rawan
Global Waste Management Cell Pvt. Ltd.	Dalmia Polypro Industries	Ultratech cements, Redipalayam
Maleeha Enterprises	Adarsh Fibers	ACC Ltd., Wadi
Develop Link Foundation(DLF)	Konari Advanced Polymers	Ultratech Cements, Bhatapara
Malik Traders	Green Worms Eco Solutions	Ambuja Cements, Bhatapara
Imran Plastic processing	Khatema Fibers Ltd.	Madhav Products
Zaid and Brothers	Deluxe Recycling (India) Pvt. Ltd.	Manikgarh
Singla Plastic Industries	ITC Limited	Dalmia
Shri Krishna Plastic	Balaji Enterprises	
Gurditta Informatics		
Guruji Enterprises		
Mahajan Trading Company		
Mishra Traders		
The Shakti Plastic Industries		
Karma Ecotech Pvt. Ltd		
Madina Enterprises		
National Traders		
Thangam Traders		

"Collaboration is the key to any policy implementation on ground and Project EPRO has been a success story of a joint effort starting from strengthening the waste collectors/aggregators and building their network with recyclers and small NGOs at PAN India. Segregation of waste still remains the common link between public and policy."

Mr. Ajay Garg (Secretary)

2. PROJECT DO MINUTE SAFAAI KE NAAM

Nestle India Ltd. launched a campaign in the state of Uttarakhand for its Product Maggie in the two cities of Uttarakhand (Dehradun and Mussoorie). As per the exchange Scheme, consumers can exchange 10 empty packs of Maggi for one fresh packet of Maggi at retail shops. Nestle India Ltd. appointed IPCA to audit the exchange scheme at the identified retail counter and to collect and dispose the empty wrappers of Maggie during the campaign.

OBJECTIVES:

- To develop a take back mechanism of post-consumer plastic packaging waste as per PWM (Amendment) Rules, 2018.
- To audit the empty wrappers exchanged at the identified retail counter of Dehradun and Mussoorie.
- To ensure the timely pick up of empty wrapper from the retail counter.
- To safely dispose the empty wrappers through the recommended technologies.

PROJECT LOCATIONS:

Nestle India awarded this project to IPCA for the audit collection and processing of empty plastic packets of Maggi. For the execution of this project, IPCA selected 2 cities of Uttarakhand i.e. Dehradun and Mussoorie.

PROJECT ACTIVITIES:

1. **Cloth bag distribution:** IPCA distributed cloth bags amongst the retailers for the storage of empty wrappers of Maggi. These bags were made from cotton which make them a much better option than plastic bags as these bags are reusable and durable as well.

Figure 12: Cotton Cloth Bags

2. **Auditing**: IPCA conducted an auditing process at each and every outlet. As per the exchange programme, consumers can exchange 10 empty packs of Maggi noodles for one fresh packet of Maggie at retail shops. This process included two more processes:

2.1. **Counting of wrappers:** This auditing process started with the counting of empty wrappers of Maggi, IPCA used to visit the outlets on weekly basis to count those wrappers from the cloth bags which were provided by IPCA at the initial stage of this project.

Figure 13: Counting of empty Maggi wrappers

2.2. Issuance of receipts:

After the counting of the wrappers, our team used to issue one receipt to the retailers. That receipts used to be an evidence of the auditing process as well as the receipt was also used by the retailers to get more new packs of Maggi from the Maggi distributors.

Figure 14: Issuance of receipts

Figure 15: Providing Cotton cloth bag

3. Collection of wrappers:

In this process, IPCA used to collect the entire wrapper filled cloth bag from the retailers and used to provide them a new cloth bag in the exchange of the filled one. The bags were then taken to the dry waste collection centre for the storage purpose.

6. Storage and Disposal of wrappers:

Dry Waste Collection Centres (DWCC) were set up in the different locations of Uttarakhand. From the dry waste collection centre, the plastic wrappers waste were baled and sent to waste to energy plant for energy recovery.

Figure 16: Storage area at dry waste collection centre

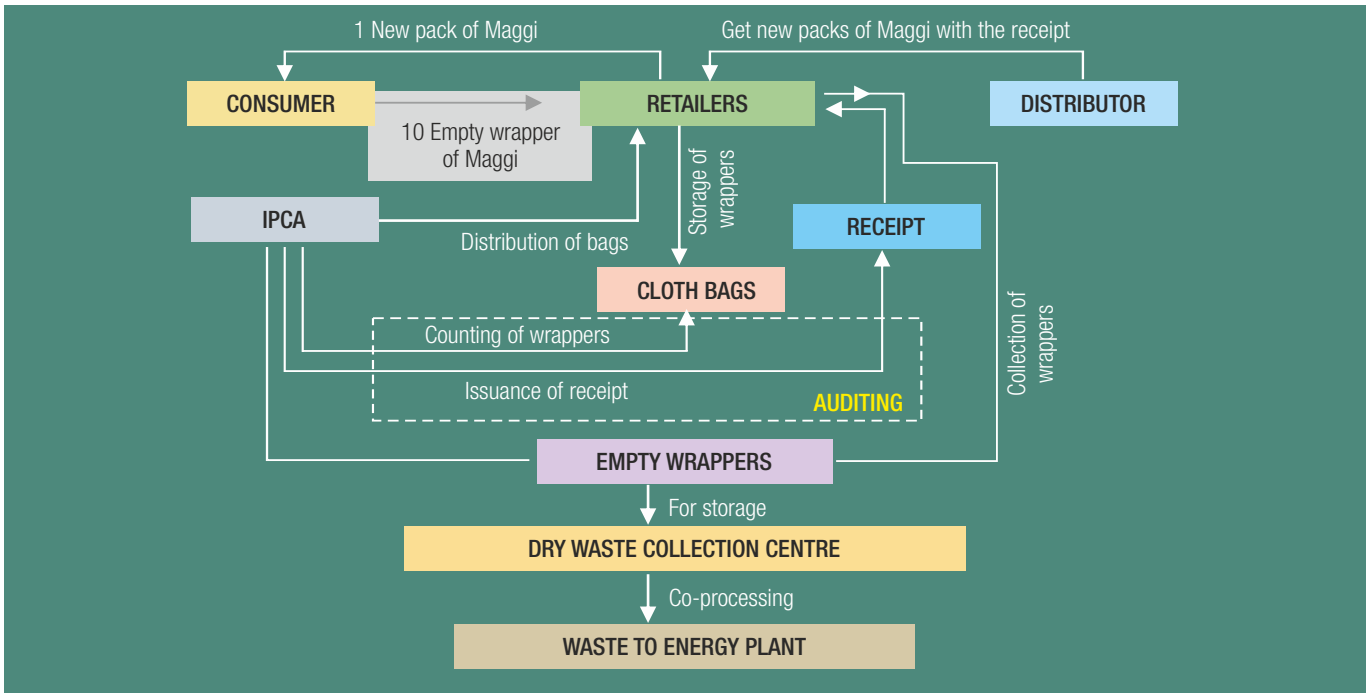


Figure 17: Detailed flow diagram of the working methodology in Project Do minute Safaai ke Naam

ACHIEVEMENTS:

- IPCA has collected **84824** and **42435** of empty wrappers of Maggi from the Mussoorie and Dehradun respectively.
- Thus, IPCA entirely collected **284 Kg** of wrappers which were baled and dispatched to the Waste to Energy Plants for their recycling process.
- Helped in the prevention of **116,724 Kg** of **CO_2eq** and equivalent gases emissions by systematic collection and processing of wrapper.

3. SWACHH BHARAT MISSION (URBAN) SOLID WASTE MANAGEMENT EXPOSURE WORKSHOPS - 2018

On behalf of National Institute of Urban Affiars (NIUA) and Ministry of Housing & Urban Affairs (MoHUA), Govt. of India, IPCA and ICUC conducted 6 workshops at four locations (Gurugram, Alwar, Panchkula and Jammu) under Package I as shown in Table 2 under Swachh Bharat Mission with the objective to build the capacity of officials of Urban Local Bodies (ULBs) on Solid Waste Management and to expose them on current practices and methodologies of Waste Management and to update them on their role and responsibility under current rules of different types of waste. More than 300 senior ULB officers such as Commissioners, Chief Executive Officers, Health officers and Engineers involved in SWM activity from 5 states (Haryana, U.P. Rajasthan, Himachal Pradesh and Jammu & Kashmir) participated in these workshops. The main objectives of the workshops were as follows:

1. To recognize the issues, challenges and constraints of Solid Waste Management in India
2. To impart a better understanding on the Solid Waste Management Rules, 2016 to the ULBs
3. To impart an understanding of the various approaches, technologies used in Solid Waste Management and their financial implications
4. To build capacity of ULB staff for planning solutions for implementation and executing it

PROJECT LOCATIONS:

Table 2: Locations of SWM Exposure Workshops under Package No. 1

S.No.	Workshop Location	States Covered	No. of Cities Covered
1	Gurugram, Haryana	Haryana & Uttar Pradesh	24
2	Gurugram, Haryana.	Haryana & Uttar Pradesh	31
3	Jammu, Jammu & Kashmir	Jammu & Kashmir and Himachal Pradesh	33
4	Alwar, Rajasthan	Rajasthan	33
4	Panchkula, Haryana	Haryana	25
6	Panchkula, Haryana	Haryana	25

Each workshop was conducted for three days elaborated as under:

PROJECT ACTIVITIES:

Day I - Training Module and Presentations

The first day of the workshop was dedicated to lectures, presentations and panel discussions on different rules of SWM (including, Municipal Solid Waste, Plastic Waste, Construction and Demolition Waste, Biomedical Waste, E- waste and Hazardous Waste Management) Systemic Approach and Methodology for SWM, centralized and decentralized waste treatment technologies, wealth from waste as business model, material recovery facilities, importance of IEC in waste management were planned for the first day.

Figure 18: Lectures and Presentations in the workshops

Day II - Exposure Field Visit

Day II was completely dedicated to field visit for providing exposure to the participants about the current scenario and practices adopted for solid waste management in nearby locations along with various centralized and decentralized waste management facilities as per their availability in the cities of holding the workshops. The waste management sites visited during all 6 workshops in 4 cities are listed in Table 3.

Table 3: Details of the field visit sites

S.No.	Location of workshop	Name of the sites visited	Description of the sites
1.	Gurugram	Composting Site at HIIPA Campus Gurugram	Haryana Institute of Public Administration (HIPA) is an apex State Training Residential Institute has recently taken up an initiative of zero waste campus with Balancing Bits, a start-up company who has installed a 100 kg/ day capacity aerobic composting facility in the HIPA Campus.
		Composting Centre (Aerobic and Anaerobic), Nandidham Cowshed	This decentralized project of the door to door collection and composting has been set at Nandi Dham Goshala at Ashok Vihar, Phase III, in Gurgaon with the support of Municipal Corporation of Gurugram (MCG)
		Door to Door Waste Segregation Site at Uniworld -1	Uniworld-1, Sector- 47 is a good example of the door to door waste collection, source segregation and on-site composting in Gurugram. RWA of the Uniworld took this initiative of waste collection, segregation at source and processing of wet waste within their premises with the help of Balancing Bits.
		Material Recovery Facility (MRF) of J.D Sales, Ghatagaon	J.D Sales Material Recovery Facility at Ghatagaon, run by Mr. Ziauddin in Gurgaon, manages 20-25 tons of dry waste every day.
		Bhandhwari Landfill site, Gurugram- Faridabad Road	Bhandhwari landfill site is located in Bhandhwari village, Aravalli forest area along the Gurgaon-Faridabad Road. Around 1,000 -1200 tons of untreated municipal waste generated by the cities of Gurugram and Faridabad, is dumped here on daily basis.
		TEAM Technology at TERI Gwalpahari	TERI's Enhanced Acidification and Methanation (TEAM) converts food waste into biogas. The plant at RETREAT processes nearly 25 kg of food waste in a day to create 4 m3 biogas.

S.No.	Location of workshop	Name of the sites visited	Description of the sites
	Gurugram	Silver Oak Plant, DLF Phase – IV	The Silver Oak condominium, DLF Phase IV is a good example of 100% source segregation of solid waste in Gurgaon city. The Governing Body of the Complex Administrative Council, Silver Oak, undertook the project of introducing Waste Segregation at source and processing of Solid Waste in their premises.
		Organic Waste Composting through Aerobins	Delhi Government Officers flats in Greater Kailash I is one the decentralized organic waste management site, where the door to door collection and segregation of waste is taking place and the organic waste is processed with the revolutionary technology of aerobic composting - The Aerobins.
		Okhla Composting Plant	The Okhla compost plant was set upon Public Private Partnership (PPP) framework in association with the municipal corporation of Delhi (MCD) in 2008 with IL&FS to finance and operates. Today, the plant process is 500 tons of MSW each day and produces 75 TPD of organic compost which is comprehend to the fertilizer control order (FCO).
		TARA Waste Recycling Machines	TARA Machines & Tech Services Private Limited, promoted by TARA, Society for Technology and Action for Rural Advancement, is an enterprise of the Development Alternatives Group, India's first social enterprise and a pioneer in sustainable development.
2.	Jammu and Kashmir	Mule Dung Based Biogas Plant at Katra	Shri Mata Vaishno Devi Shrine Board (SMVDSB) has always endeavored to provide best of the facilities to the pilgrims visiting the Shrine from all over the country and is committed toward developing the solid waste disposal mechanism based on approved scientific programs.
		Sewage Treatment Plant at Kalika Dham, Jammu	All the 12 major Toilet Blocks at Bhawan have been connected to the 3.2 MLD capacity STP installed in the Bhawan area.
		Decentralized Composting Facility at Satwari, Jammu	Jammu Army Cantt has initiated a drive on solid waste management. Around 4000 people from 1500 households participated in the SWM Drive. On a daily basis 5 hours were spent for solid waste collection from the month of August 2017 to March 2018.
		Mule Dung Composting Facility at Tarakote	Mule dung based composting facility at Shrine Board Tarakote is a very good example of aerobic decentralized composting facility. On the advice of Indian Institute of Integrative Medicine (IIIM) Jammu, a full-fledged pit composting project operation started in October 2017 at a designated waste management site on Shrine Board's land at Tarakote.
		Dumping Site at Kot Bhalwal Jammu	The residents of the Kot Bhalwal and other surrounding villages of area representing a population of about 25,000 people. Everyday about 70-80 vehicles of

S.No.	Location of workshop	Name of the sites visited	Description of the sites
			garbage are being dumped in open area of about 157 kanals by the JMC, which has created a havoc in the area with stink, foul smell, stray dogs, pigs, vultures and other predators.
3.	Alwar	Ensol Multiclean Equipments Pvt. Ltd., Alwar	ENSOL has introduces waste Tippers for collection of waste in the Alwar city. Door to Door collection of waste from households is being conducted in 50 wards of the of the Alwar city through Auto Tippers.
		Biomedical Waste Management Facility Hoswin Incinerators, Alwar	The Hoswin Incinerator is self-collecting all the waste from the hospitals of Alwar & Bharatpur. Waste is collected on a daily basis from Alwar and on alternative day basis from Bharatpur.
		Electronic Waste Recycling Facility (Greenscape Eco Management Pvt Ltd.)	Greenscape Eco Management Pvt. Ltd. is an electronic waste management company run by a dedicated team comprising of extremely enthusiastic, socially responsible individuals.
		MSW Dump Yard, Baggad ka Tiraha	Landfill site in Alwar is located at Baggad Ka Tiraha, Alwar. Untreated Municipal Solid Waste generated by cities of Alwar is dumped here on a daily basis.
		Sewage Treatment Plant, Baggad ka Tiraha	Total capacity of STP is 20 MLD. STP is receiving 8 million liter per day sewerage water.
4.	Panchkula	Community Composting Facility, Aagas CCF,Mohali	Aagas is the environment-friendly, innovative and aesthetic product of Vatama Solutions that can compost all your wet waste. Vatama Solutions have more than 1500 installation all over India.
		Dump Site, Panchkula Sec 23	In Panchkula total 20 wards are present and are generating an estimated 194 ton/day waste.
		Door - Door Collection & Composting Facility, Panchkula, Sector 12	Panchkula Municipal Corporation has decided to take over door-to-door waste collection in the city. MC plans to do it using 39 Twin Bin Hopper Tipper and taking the waste directly to the processing plant.
		MRF, Panchkula, Sector 12	Panchkula Municipal Corporation has given the Material Recovery Facility at sect.-12 contract to Suddh Sustainable Solution Pvt. Ltd. Organization
		Mansa Devi Complex Composting Unit	Around 30kg of flower waste is generated here every day. In order to manage this floral waste, Shri Mansa Devi at Panchkula has installed a composting organic waste converter (OWC) of 30 Kg capacity.
		Biogas plant at Nadda Sahib Gurudwara	A 100 kg capacity bio gas plant has been installed at Nada sahib to process the food waste of community kitchen (Langar) catering to more than 2000 people on daily basis.
		MRF, IPCA, Mohali	Indian Pollution Control Association has a material recovery facility at Mohali. It handles 4 components which are tetra pack cartons, pet bottles, MLP and plastics. The site has 2 bailing machines.

Figure 19: Field visits during the workshops

Day III - Workshop and Activities

The third day of the workshop was dedicated to engagement of participants in various individual and group activities. On the basis of their field visit, quiz was organized to evaluate their understanding and exposure from site visits. Further, group activities were conducted, in which participants from different ULBs discussed among and presented their common and unique issues and challenges associated with Door to Door Collection of Waste, Waste Transportation, Treatment & Disposal, IEC Activity & Mainstreaming of Informal sector, Governance & Institutional set up for SWM system respectively. They were also required to select approaches and technologies that they can adopt in their respective ULBs for their city or town to make the projects economically viable, sustainable and bankable so as to access SBM funds. The prize and awards were kept for all the activities. The officers participated enthusiastically in all activities and awards and certificates were given to the first and second winners of quiz and group activities.

Figure 20: Group activities during the workshops

GREEN FEATURES OF THE WORKSHOP:

The noteworthy feature of these workshops was that these were the green event with no use of plastics. The kits distributed to participants contain the stationary are made up on recycled materials. Reusable metal bottle was provided to all the participants for their use in the field trip as well as classroom sessions. Eco friendly soaps& Tissue Box and Pen Stand made from TetraPak waste were used as mementos to felicitate the resource persons and prizes for winners. The event was made as sustainable as possible. This left an impact on the participants as they understood that the sustainable steps we talk about can actually be adopted in our daily lives

Figure 21: Green products used during the workshops

OUTCOMES:

The workshops strengthen the institutional capacities at ULBs towards collection, treatment, disposal and efficient management of various types and categories of wastes, promote 3Rs (Reduce, Reuse, Recycle) initiatives and dissemination of good practices, and facilitate integrated efforts towards achieving improvement in general health of city environment etc.

The training workshops saw a positive engagement between the participants, discussing and engaging in dialogues about the different ground realities they face in their respective cities.

More than **300 Urban** Local Bodies were trained by subject's experts in these 6 workshops and were brought together for at a common platform. Enhancement of the skills such as team building, strategy making, decision making, technical knowledge etc.

For the better understanding of the technologies available, hands on field experiences were provided to introduce them about the latest technologies and also bad practices were also shown to teach them a lesson what not to do and the negative outcomes of such unsustainable practices.

Figure 22: Group photo with ULB Participants

B. EXISTING PROJECTS

1. SEGREGATION OF ORGANIC WASTE FOR RECYCLING AND TREATMENT (S.O.R.T)

With the ever-increasing population and urbanization, the waste management has emerged as a huge challenge in the country. Not only the waste has increased in quantity, but the characteristics of waste have also changed tremendously over a period, with the introduction of so many new gadgets and equipment. It is estimated that India generates 1.7 lakh MT of waste per day and Delhi reportedly produces 10,000 MT of garbage every day. With an aim to eliminate this major problem of waste management, The Union Ministry of Environment, Forests and Climate Change (MoEF&CC) has come up with a new "Solid Waste Management Rules, 2016". The rules have mandated the source segregation of waste in order to channelize the waste to wealth by recovery, reuse and recycle. Waste generators would now have to now segregate waste into three streams- Biodegradables, Dry (Plastic, Paper, metal, Wood, etc.) and Domestic Hazardous waste (diapers, napkins, mosquito repellants, cleaning agents etc.) before handing it over to the collector.

As per SWM 2016, *"Resident Welfare associations and gated communities with an area >5,000 sqm should segregate waste and handover recyclable material to either the authorized waste pickers or the authorized recyclers, or to the urban local body"*.

In response to this need, IPCA has launched a project "S.O.R.T." (Segregation of Organic-Waste for Recycling and Treatment) supported by Swarn Lata Motherson Trust (SLMTT) with the following objectives:

OBJECTIVES:

- To motivate community participation in qualitative segregation of waste at source to increase the recycling rate of the waste material.
- To get segregated waste at source.
- To enable operation of Aerobin for composting of organic household waste to minimize the pressure on landfill or informal dumpsite.
- To educate waste generators/consumers on efficient waste management.
- To promote local self-responsibility for a clean environment.
- To improve the social, economic and environmental status of life of people.

PROJECT LOCATIONS:

1) Sunshine Helios, Sector 78, Noida
2) Saket Dham, Sector 61, Noida
3) Indraprastha Villa, Sector 61, Noida
4) Pocket B, SFS Flats, Mayur Vihar, Phase 3, Delhi
5) New Friends Colony, Delhi
6) Delhi Officer Flats, Greater Kailash-1, Delhi
7) Noida Sector-54
8) Noida Sector-23
9) Billabong High International School

PROJECT ACTIVITIES:

1) **KAP study:** In order to understand the gravity of solid waste management in the city we conducted a preliminary KAP study focusing on the current waste management Knowledge, Aptitude and Practices. This study carried out through observation, questionnaires and interactions with different stakeholders in 30 days. This formed the preliminary foundation for the evolution of a co-operative strategy.
2) **Preliminary workshops for Residents:** To aware and educate residents on source segregation, preliminary workshops for residents were organized at various societies. In these workshops' residents were told about the current scenario of waste management in India, impact of unsustainable waste management on health and environment, need and importance of source segregation, right way of source segregation, detailed description of Composter and the detailed analysis of KAP study conducted in the societies.

Figure 23: Workshop for the residents of the society

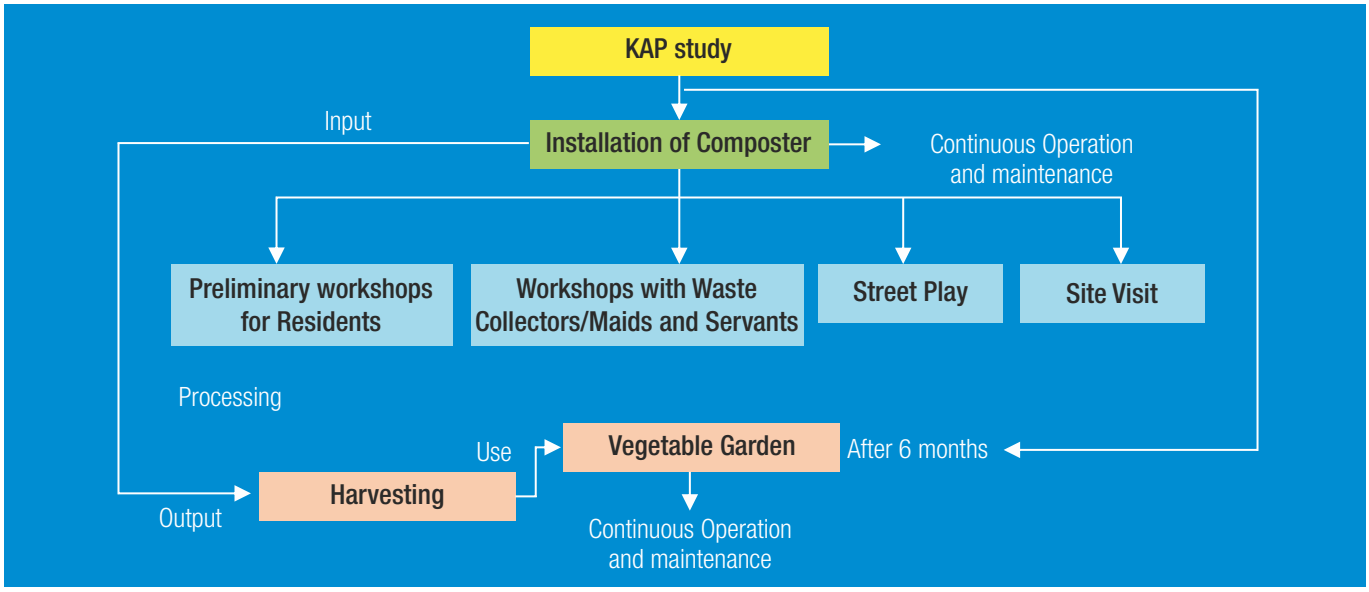


Figure 24: The working model for Project S.O.R.T

3) **Workshops with Waste Collectors:** A sustainable waste management cannot be created until there is a proper linkage between waste generators, waste collector and waste processor/recyclers. Therefore, the workshops for waste collectors were organized at all project locations. In these workshops, they were educated about the wet and dry waste, waste segregation, health issues and safety measures.

Figure 25: Workshop with waste collectors

4) **Door to Door Campaign/Volunteering:** We created a team of volunteers for spreading awareness on solid waste management practices. These volunteers went door to door to distribute pamphlets on source segregation and Composter, to create mass awareness and to take feedback from various stakeholders about the project.

Figure 26: Door to Door Campaign

5) **Workshop for School Students:** Since children are the citizens of tomorrow and most vulnerable population affected by environmental pollution. So workshops of schools students were also organized in different schools, to educate and aware them about the problem of solid waste management, source segregation, recycling and composting. The key objective of the campaign was to motivate students to come up with their own ideas to aware them about source segregation and implement their ideas in form of actions.

Figure 27: Workshop with school students

6) **Street Play:** To educate and generate awareness amongst people in more interactive and interesting way, street plays were organized at different project locations. The plays were performed by a professional team of IPCA, in which they explained about the waste management problem, source segregation etc.

Figure 28: Street play in action

7) **Visit for residents of project locations Waste Processing Site:** In order to know where our wastes end up, visits to waste composting sites landfill sites, recycling centre, dry waste collection centre and Waste to energy plants were organized under this project.

Figure 29: Visits for the residents to the waste processing sites

8) **Workshops with Maids/Servants:** Similar to training of residents and waste collectors, training regarding waste for Maids/Servants have also been organized at all various project locations to educate them about the source segregation, importance of source segregation, health & environment related issues and safety measures during segregation of waste.

Figure 30: Workshop with Maids/Servants

9) **Installation of Composters:** As a part of the project objective Composter were installed at all the project locations in the project for treating biodegradable waste at source. A demonstration on operation and maintenance of composters was organized for the residents at the time of installation.

Figure 31: Installation of Composters

10) **Distribution of organic manure:** The residents were delighted to see their biodegradable waste being converted into organic compost. The manure harvested from composters was distributed amongst the residents

Figure 32: Distribution of organic manure amongst the residents

Figure 33: Organic Waste Processing Model

ACHIEVEMENTS:

- One of the biggest achievements of project is prevention of around **33.69 tonnes** of organic waste to reach Dhalaos/Landfills, which is equivalent to:
  - Emissions of **CO2-e (kg): 64,020**
  - Equivalent days of electricity consumption for one household: **5,716.12 days**
  - Equivalent years of electricity consumption for one household: **15.66 years**
- More than **3700 people** (Including school/college students, residents, waste collectors, maids and servants) participated in the project
- IPCA promoted vegetable gardening in Indraprastha Villa and Sunshine Helios

2. GARBAGE RECYCLING PROGRAM

The self-sustainable Garbage Recycling Program of IPCA is running since 2004. IPCA provide services of door-to-door collection of solid waste and its management to the residential, commercial and corporate sector. Under this program, IPCA provides waste management services as well as conducts awareness campaigns.

OBJECTIVES:

- Stopping littering or open dumping of waste
- Implementing a decentralized Solid Waste Management System
- Advocating the practice of waste segregation at source.
- Increasing the rate of recycling of waste
- Reducing the quantity of waste reaches to the dump yard or landfill
- Increasing per capita income of waste pickers
- Promoting recyclable and recycled waste.

PROJECT ACTIVITIES:

- In the year 2018-19, IPCA has provided its services of the door to door solid waste collection to approximately 7,165 households,13 corporate buildings,4 shopping malls and 1 institutional building in Delhi NCR. The total number of beneficiaries under this program are 68,430 in 2018-19
- IPCA collects 27,680kg of solid waste per day from Delhi-NCR. In this collection program,163 ragpickers are actively involved from IPCA.
- IPCA provides 365 days services to its clients for the collection of waste and this program has helped in establishing zero littering areas in the IPCA's service area.
- The network of the waste collectors working with IPCA has been linked to waste aggregators and recyclers to increase their profit margins and helped them to earn more.
- IPCA has conducted capacity-building programs throughout the year to train these waste collectors to do their job. They are also trained on the value of various recyclable waste, which helped them to segregate waste more efficiently
- IPCA has also organized an awareness campaign for the source segregation of waste in association with clients on different occasions and worked to increase the rate of recycling.
- New recyclers have been linked to the existing supply chain to give more sustainability to the program.

Figure 34: Garbage collection from households

3. DESTRUCTION AND DISPOSAL OF INDUSTRIAL WASTE

IPCA has been working to provide destruction and disposal services to industries for their damaged finished goods in environmentally sound manner since 2002 and has well-developed infrastructure with well-equipped facilities like Hydraulic Aerosol Destruction Machine (ADM), Shredder, Organic Waste converter machine and Electric Bailer . The center receives damaged and expired goods from clients like Reckitt Benckiser India Ltd., Central Warehouse Corporation and many pvt. companies from across the country.

OBJECTIVES:

- To work towards reduction of untreated disposal of industrial waste
- To maximize utilization of waste material through various means of recycling
- To provide Safety equipment to workers are provided to safeguard them against any mishaps

ABOUT MANDOLI DESTRUCTION FACILITY

This destruction facility is located in the eastern part of the capital and has a covered area of 10,000 sq. mtr. for stock and destruction of damaged goods. There is a well-developed infrastructure at Mandoli managed by a team of trained people. The following facilities are available at the site for the destruction of the industrial damaged and expire goods received from across the country. The steps involved in the complete destruction processing include the following:

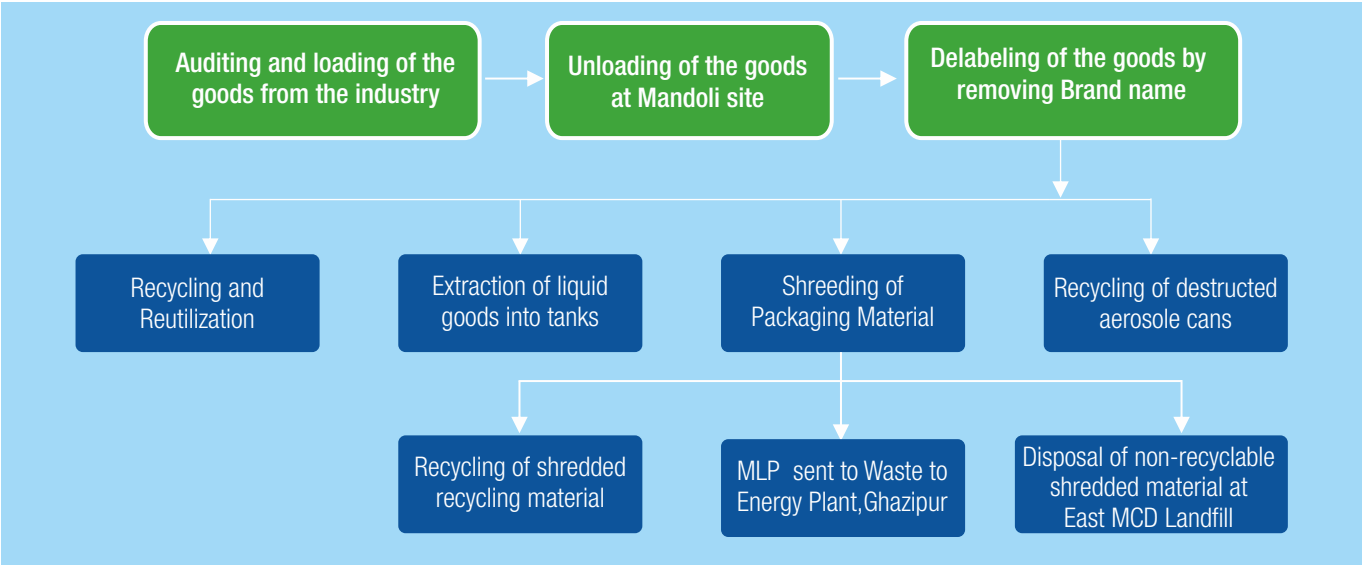


Figure 35: Destruction and Disposal Process of industrial waste at Mandoli

The centralized set up at Mandoli has larger space and has enabled more efficient monitoring. A fully automatic hydraulic aerosol destruction machine has been established in this unit. This machine has an airtight chamber, which prevents leakages of gases into the environment and prevents the workers from occupational exposure to the gases. This machine has also eliminated the risk of the fire accidents during the destruction of the aerosol bottles and reduced occupational health hazard of the workers.

4. PRIMARY EDUCATION PROGRAM FOR RAGPICKER'S CHILDREN

India is a country with more than one billion people, and just one-third of them can read. Rapidly growing size of population, shortages of teachers, books, and basic facilities, and insufficient public funds to cover education costs are some of the nation's toughest challenges. This is where children in India are facing the basic challenges. India is fourth among the top 10 nations with the highest numbers of out of children in primary level. Furthermore, the rate of school drop-outs amongst students is very high. One of the main reasons behind this is poverty. When earning a livelihood and taking care of the members of the family becomes a primary matter of concern in one's life, education stands a little or, very often, no chance of pursuance. For the underprivileged people in India, education is perceived as a high-priced luxury, and this negative outlook continues on with every new generation. IPCA plans to improve learning outcomes of poor and underprivileged ragpickers children in slums. These children suffer from extreme disparity, deprivation and are engaged in rag picking, waste picking or other small jobs. They are not attending school regularly and are likely to drop out of school. The Primary Education Program aims to provide care and education facilities to more than 100 such children in the age group of 4-10 years and remove them from shackles of child labour and poverty. IPCA is running the Primary Education program initiative for rag-pickers' children since 2013. Currently, three education centres are running in Delhi NCR (one at Indirapuram, two in Noida) with 35-40 children at each centre.

The main aim of IPCA's intervention on primary education of rag pickers children is to bring a positive behavioural change, build their self-esteem and work towards making the ragpicker's children socially responsible citizens of the country and break the chain of being "future rag pickers". The education centres aim to prepare them to choose their profession as per their own wish and are not coerced to follow their parents' footsteps.

OBJECTIVES:

The program was envisaged with the following objectives:

- To provide primary education through fun learning activities
- Bringing behavioral changes and inculcating the concept of healthy food habits, health and hygiene
- Grooming the children for successful enrolment in a regular governmental education network.
- Ensuring regular attendance of the students
- Nurturing the creativity and innovativeness of the children through training, exposure visits and interaction
- To improve lifestyle and social status of ragpicker community and stop any child from becoming rag picker without his/her own choice.

PROJECT ACTIVITIES:

- **Admission to Government/Private Schools**

  In the three centers, there are a total of140 children of which64% are girls. The main objective of the programme is to empower these children through education to enable them to be admitted in a government or private schools. The major motto is to mainstream them and provide them formal education. Our primary education programme is resulting in better school readiness and helping to reduce the number of dropouts of these children from the schools. This year 15 students admitted to formal education.

- **Celebration of Events**

  Various events like Republic Day, Diwali, Holi, Children's Day were celebrated during the session 2018-19 in which the students were taught about the importance of the event through the cultural programme, interesting games & activities and healthy refreshments were also served during the events. During the programmes, children showed their talents through dance, songs, poems, drawing competition etc. in which they participated very actively. Prizes, lamps, colors, and gifts were also distributed at respective festivals.

Figure 36: Celebration of events at the educational centres

Figure 37: Sharing the joys together

- **Teacher's training programme -** For the effective implementation of the primary education programme, teachers training programme is continuously undertaken for capacity building of the staff. This training programme includes the development of some special training materials to impart a meaningful education to these children such as matching sets, counting strings, fractions set, number concept dominos, fine word boards, picture boards for language enhancement etc. For the development of civic sense, hygiene, and cleanliness, activity-based learning is imparted to the children that encouraged them to cut their nails habitually, take a daily bath, comb hair and wash hands.
- **Co-Curricular activities:** In order to develop physical and mental fitness of children, to enhance their hidden talent and also to improve their other capabilities such as focus/motivation/stress management etc., IPCA conducted various co-curricular activities such as stress relief activity, physical exercise, games etc.,


Figure 38: Interactions with the volunteers

- **Provision of meal supplements:** The children at the centres receive regular meal supplements like fruits, healthy snacks and juices which aids in their proper nourishment


Figure 39: Spreading Happiness around


Figure 40: Celebration of Festivals

5. AIR QUALITY MONITORING PROJECTS

Air Quality Monitoring Department was established in the year 2016 at IPCA in with the aim to provide unbiased Air Quality Testing & Consultation services, and to understand the air we breathe and suggest solutions by experts with the help of finest range (Gold standard) of calibrated instruments and their knowledge. It works at investigating, identifying and providing performance measurement solutions by taking on a difficult problem and providing tools for further improvement in air quality. It is committed to provide a comprehensive solution for improving the indoor air quality in residential, institutional, commercial and corporate houses in urban regions of India.

PROJECT ACTIVITIES:

Air Quality Monitoring Department have successfully completed following studies in 2018-19:

a) Indoor Air Quality testing in Corporate Offices in Delhi/NCR:

The Indoor Air Quality Monitoring was conducted at Eros Corporate Tower – Nehru Place, Infoedge Pvt Ltd, Noida, Mother Diary Corporate Office, Patpargunj, Thompson Reuters Office, Gurugram and Toluna Corporate Office, Gurugram to evaluate the indoor air quality within office building and inside the Air Handling Units (AHU) room. A study of IAQ was done with the consideration of various parameters such as:

Particulate Matter 2.5 ($PM_{2.5}$), Total Volatile Organic Compound (TVOC), Bioaerosol, Formaldehyde, Ozone and Carbon Dioxide (CO^2). The final report was submitted with the performance evaluation with respect to pollutant parameters identified and tested in the study with certain recommendations on the basis of performance evaluation.

b) Indoor Air Quality Monitoring at Government Offices of Delhi:

Air Quality Testing and analysis was carried out of Indoor Air for National Archieve of India and Ministry fo External Affairs to evaluate the performance of the air purification installed inside the building. Real-time samples of CO^2, $PM_{2.5,}$ TVOC and Bioaerosol were collected for testing and analysis. The final report of Pre-Post evaluation and results were submitted with the recommendations with respect to the standards.

c) Indoor Air Quality Monitoring at Hospitals – Delhi/NCR:

Indoor Air Quality Testing was carried out in Medanta Hospital and Max Hospital for the evaluation of the purification technology for the parameters such as $PM_{2.5}$, CO^2, Bioaerosol, and TVOC. The monitoring was conducted in NICU, MICU, HDU, OPDs, ICUs, Lobbies and reception area.

Real Time Samples were taken in all the critical areas of the hospitals. The study report was submitted for all the monitored parameters with the pre and post air purification analysis with the comparison with the international and national standards.

d) Indoor Air Quality Monitoring at Pre schools, PVR Cinemas, residences, of Delhi/NCR:

Air Quality testing was conducted at different micro environmnet in Delhi and NCR in Pre Schools, Cinemas, Malls and residences. The Monitoring was conducted for the parameters such as $PM_{2.5}$, CO^2, Bioaersols, Ozone, TVOC and formladehyde. The final report were submittted with recommendations and comparison with the nationak and international standards.

e) Developing air purification technology (R&D) with Samsung:

The aim was to achieve heating and cooling mode in air purifiers of the Samsung. For this, a detailed study and technological review was conducted using Peltier Thermoelectric modules. Different types of heaters were experimented for achieving the desired effect.

f) Chamber studies and CADR calculations of various Air purifiers (Samsung, Sharp)

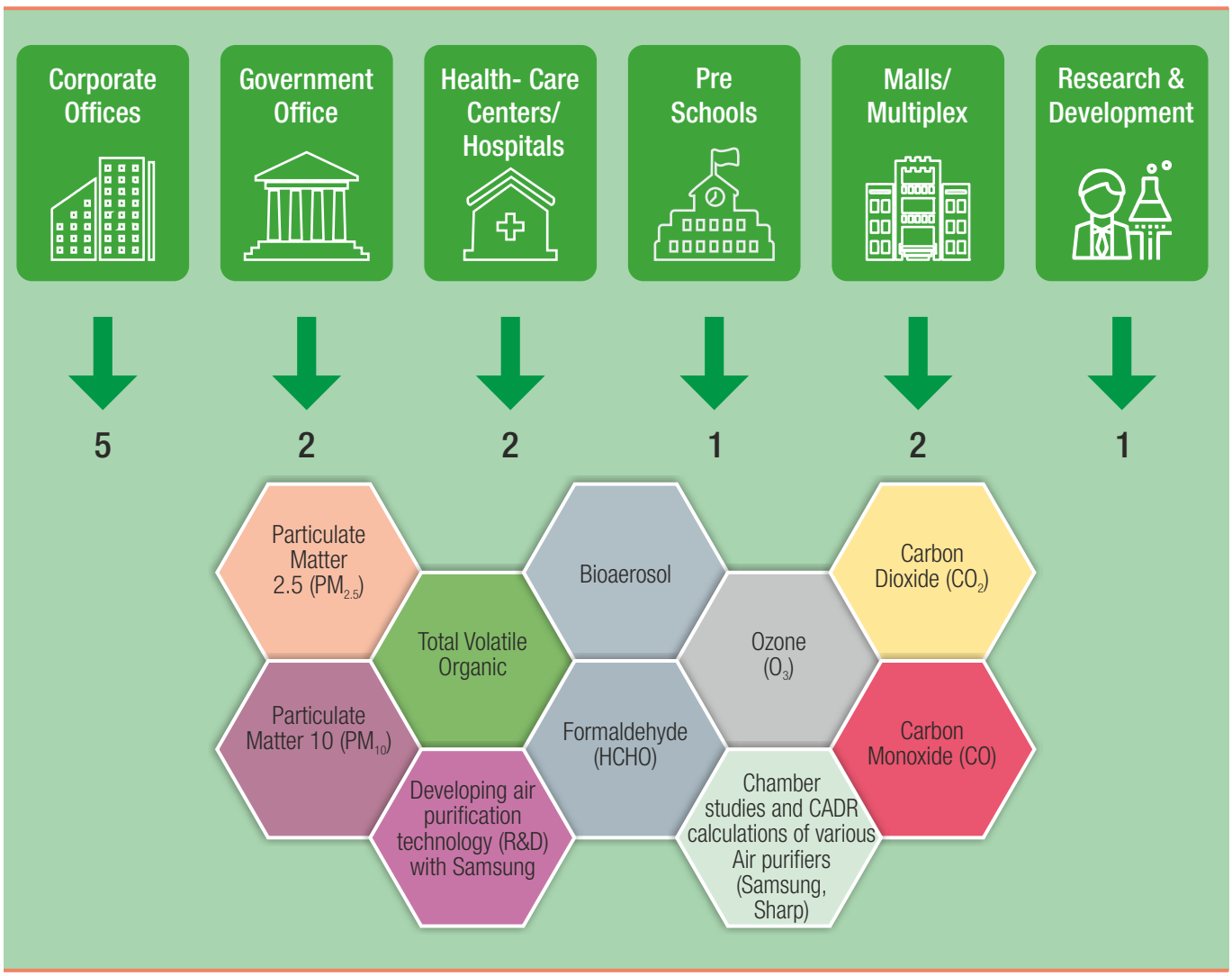
g) Partner with CPCB, Govt. of India in developing protocols and guidelines for Air Purifiers in India

h) Various newspaper articles were published in leading newspapers of the studies conducted by the IPCA

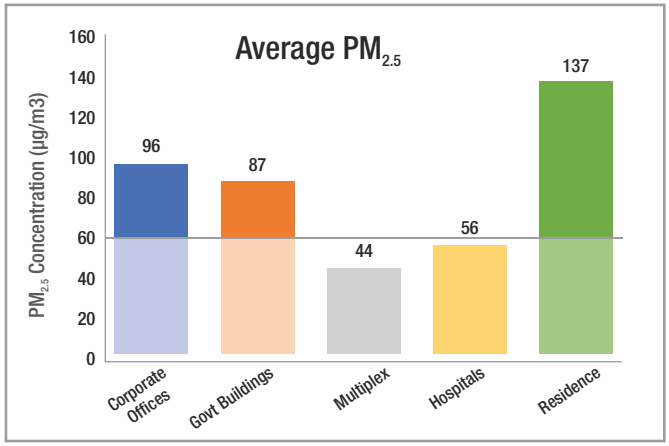
i) Sucessfully conducted 3rd edition of Airothon in three cities of India – Delhi, Bengaluru & Mumbai

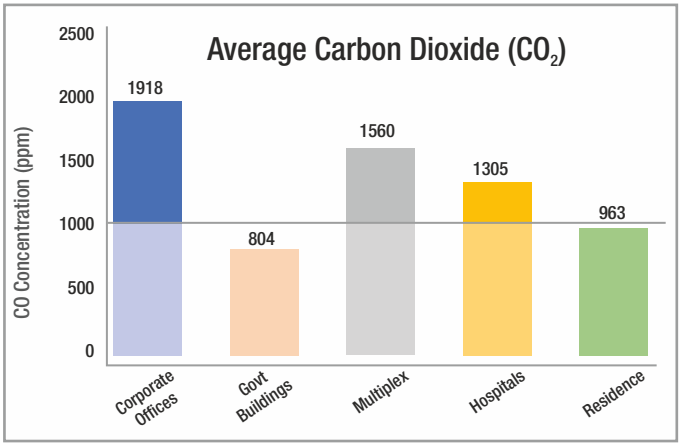
j) Studies in International & National Platform through various conferences and seminars organised by leading institutes of India and Abroad were presented.

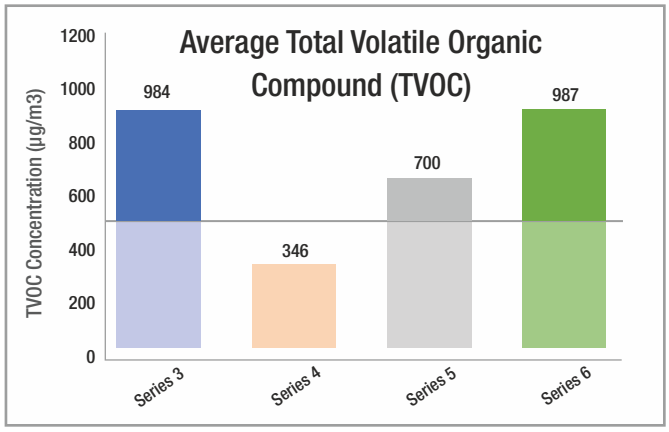
Figure 41: Indoor Air Quality Monitoring at PVR and AHU Room



OUTCOMES OF THE STUDIES CONDUCTED:







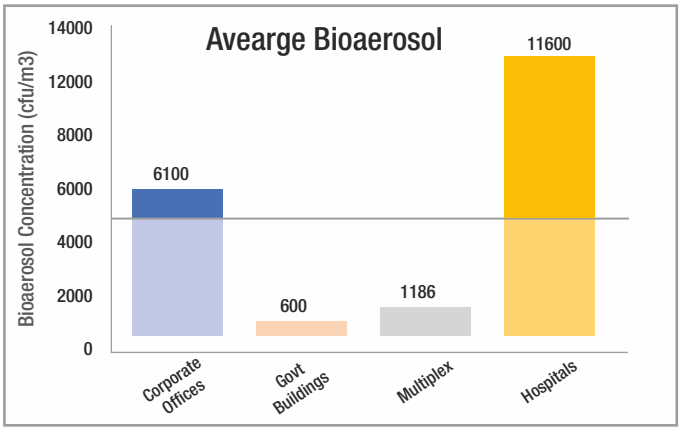


Figure 42: Indoor Air Quality Monitoring at different locations

C. CONFERENCES

3rd AIR-O-THON CONFERENCE & EXHIBITION 2018

3rd Edition AIR-O-THON 2018, was organized by Indian Pollution Control Association (IPCA) & VProspers Pvt Ltd. After the success of 2nd Edition AIR-O-THON 2017 "*Running for the opportunities in Indoor Air*", the 3rd Edition took place in other metro cities of India. It started with its **Bengaluru** Chapter on **31st August 2018**, followed by **Delhi** on **26th October 2018** and **Mumbai** on **14th December 2018** with the motto "***Healthy Air, Healthy Family, and Healthy Nation***". The conference's main focus was to address the Air Pollution Challenges for Sustainable Environment in India. This year's theme has been broadened to include outdoor air pollution too along with indoor air and featured exhibitions from prominent industry leaders and their cutting-edge technologies.

OBJECTIVES

- To discuss the Health Impacts and associated diseases caused due to air pollutions
- An attempt to bring together all the stakeholders & authorities from Ministry of Environment, Ministry of Health, Central Pollution Control Board, Green Building Solution Providers, Healthcare Professionals, Purification companies, Industries, NGOs, Research Institutes, RWAs etc.
- To discuss the challenge and solution of the biggest Environment threat country is facing
- To provide the unique platform to the enterprises to showcase their technologies & innovations used to combat air pollution
- To let the public know about technologies & innovations and their usage in day to day life

STAKEHOLDERS

Industries

- Green Dream Foundation
- Paharpur Business Centre
- Clean Air Asia
- Environmental Management Centre (EMC)
- Centre for Study of Science, Environment & Policy
- APT technologies
- Asian Paints
- Y.O.G.A
- Magneto Clean tech
- Kaiterra

Research & Academic Organization

- University College of Medical Sciences, Delhi University
- Society for Indoor Environment
- Indian Institute of Science, Bangalore (IISC),
- Ashoka Trust for Research in Ecology & Environment (ATREE)
- IIT - Madras
- IIT - Delhi
- IIT – Bombay
- IIT Roorkee
- PGI Chandigarh
- MNIT – Jaipur
- CSIR- NEERI

Regulatory Bodies

- Central Pollution Control Board (CPCB)
- Maharashtra Pollution Control Board (MPCB)
- Karnataka State Pollution Control Board (KSPCB)
- Rajasthan Pollution Control Board (RPCB)
- Tamil Nadu State Pollution Control Board
- National Green Tribunal (NGT)

Media

- The Tribune
- Hindustan Times
- Times of India
- Dainik Bhaskar
- Dainik Jagran

Government Representatives

- Ministry of Health & Family Welfare (MoHFW)
- Ministry of Environment, Forest and Climate Change (MoEFCC)

GLIMPSES:

Figure 43: Glimpses of AIR-O-THON Delhi Chapter – 26th October 2018

Figure 44: Glimpses of AIR-O-THON Mumbai Chapter – 14th December 2018

Figure 45: Glimpses of AIR-O-THON Bengaluru Chapter – 31st August 2018

D. RESEARCH AND DEVELOPMENT

REPORT ON "STATUS OF WOVEN BAGS WASTE IN INDIA"

The project was sponsored by Ambuja & ACC Cement

The present study assessed the current supply chain of woven cement bags waste in India. The study was conducted qualitatively and quantitatively in four cities of India i.e. New Delhi, Bangalore, Mumbai and Kolkata. The cement bags are presently being made from 100% virgin PP granules. Most of the cement bags waste was reused by the retailers to store other construction material. The building contractor either sold the empty bags to the waste collectors or reused these bags for various other purposes e.g. storing construction material, lining the river banks or road sides by filling it with sand. It was observed that negligible amount of cement bags reach to the secondary collection sites (0.03% in Delhi and 0.02% in Mumbai) which could be because of the maximum amount of bags being reused or recycled by the stakeholder. Since the amount of bags which reach the dhalao is very less, the percentage of cement bags waste reaching the landfill site was also found to be very low ie 0.62% in Delhi, 0.51% in Kolkata, 0.12% in Mumbai and 0.03% in Bangalore. Only residual and severely damaged bags reached landfills which were again collected by the waste collectors unless they were in a shredded dilapidated state.

E. PUBLICATIONS (2018-19)

1. Book on Solid Waste Management by Dr. Shyamli Singh, Dr. Vinod Sharma, and Ashish Jain
2. Radha Goyal, Ashish Jain and Shyamli Singh (2019). " *Sustainability, Health and Environment: A Case Study of Waste Management Sector*" Chapter 19 in Book titled, "*Sustainable Material Forming and Joining*" to be published by Taylor & Francis.
3. Radha Goyal (2018). AIR POLLUTION IS A PUBLIC HEALTH PROBLEM - A LEADING CAUSE OF POOR HEALTH AND CANCERS. Published online on Patient Engage, https://www.patientsengage.com/news-and-views/air-pollution-public-health-problem-leading-cause-poor-health-cancers
4. Akansha Gupta, Radha Goyal, Priyanka Kulshreshtha & Ashish Jain (2019). "*Environmental Monitoring of $PM_{2.5}$ and CO_2 in Indoor Office Spaces of Delhi, India*" Paper presented in "Asian Conference on Indoor Environmental Quality (ACIEQ), 2019, 1-2 Feb, Delhi
5. Pratima Singh, Renu Arora and Radha Goyal (2019). Impact of Lighting on Performance of Students in Delhi Schools. Paper presented in "Asian Conference on Indoor Environmental Quality (ACIEQ), 2019, 1-2 Feb, Delhi
6. Pratima Singh, Renu Arora and Radha Goyal (2019). "*Classroom Ventilation and its impact on Concentration and Performance of Students: Evidences from Air-Conditioned and Naturally Ventilated Schools of Delhi.*" Paper presented in "Asian Conference on Indoor Environmental Quality (ACIEQ), 2019, 1-2 Feb, Delhi
7. Master's dissertation "*Capacity Building towards Solid Waste Management in Schools of Delhi: An Action Research*" in Lady Irwin College, University of Delhi.
8. Madhu Jaswal and Priyanka Kulshreshtha (2019) "*Managing Indoor Air Quality (IAQ) in Hospitals*" in Cooling India magazine-In Press.
9. Monika Kumari, Puja Gupta and Priyanka Kulshreshtha (2019), "*Experimental Investigation and Oxygen Optimization of Indoor Air Quality in an Institutional Building*" held on 1-2 Feb 2019, at Asian Conference on Indoor Environmental Quality-2019(ACIEQ 2019), New Delhi. Best Poster award by Springer Publishers.
10. Newsletter Volume 3, Issue 1, Jan-March 2018 - *Plastic Waste: An Opportunity in Disguise*
11. Newsletter Volume 3, Issue 2, July- Sept 2018 - *Biodegradable Waste: Constructing a Greener Tomorrow.*
12. Newsletter Volume 3, Issue 3, Oct-Dec 2018 - *Air, Air Everywhere and No Air to Breathe*
13. Newsletter Volume 4, Issue 1, Jan-Mar 2019- *Closing the loop: Circular Economy in Packaging.*
14. IPCA CONNECT November - December Issue I, 2018
15. IPCA CONNECT January - February Issue II, 2019
16. IPCA CONNECT March - April Issue III, 2019
16. We care Documentary (http://ipcaworld.co.in/video/)

F. PARTICIPATED / SUPPORTED EVENTS / PROJECTS

1. Indian Pollution Control Association (IPCA) in association with UN theme for the World Environment Day 2018(WED 2018) "Beat Plastic Pollution" launched a campaign to control plastic pollution which was exhibited from 2 – 6 June 2018, Vigyan Bhawan, New Delhi
2. IPCA in collaboration with SuperSikh Run and Ploggers of India organized a Run "Recycling and Plogging Partners to keep the SSR Route Clean"
3. IPCA in collaboration with KEEP INDIA BEAUTIFUL organized a RUN at Connaught Place, New Delhi
4. IPCA was the Supporting partner for the 1st Asian Conference on Indoor Environmental Quality(ACIEQ 2019) held on 1-2 Feb 2019 in New Delhi
5. Associated with East Delhi Municipal Corporation (EDMC) for organizing awareness campaigns on "Beat Plastic Pollution" at 8 different sites in East Delhi from 22nd Oct-1st Nov 2018

Figure 46: IPCA Participation in different Conferences and Events

G. IPCA@ MEDIA IN 2018-19


INTERVENTIONS IDENTIFIED AS MOST HELPFUL
Complete phase-out of biomass use in NCR by enhanced LPG penetration in rural households
Retrofitment programme with control devices
Enhanced penetration of electric and hybrid vehicles
Strict implementation of BS-VI norms
expert speak
ASHISH JAIN, Founder-Director of Indian Pollution Control Association (IPCA)
'Women, kids are worst hit'
What causes indoor pollution?
How does it affect one's health?
How can indoor air be made safe?
While indoor air purifiers can bring down PM2.5, high CO2 remains a problem at most indoor locations, mostly due to poor ventilation
In offices, average CO2 can go up to as high as 2000 ppm — twice the safe limit — while it is generally around 1.5 times the safe limit at locations like movie theatres
WHY CO2 SPIKES IN AIR-PURIFIED ROOMS
WHAT CAN BE DONE
Use indoor plants to reduce CO2 levels
Improve ventilation; For offices, periodically open windows to allow movement of air
AVERAGE CO2 AT DIFFERENT LOCATIONS
STANDARD: 1000
CO2 (PPM)
Corporate office 1918.4
Govt building 803.9
Multiplex 1560
Hospital
ARE YOU REALLY SAFE AT HOME?
A study of 13 locations, including corporate buildings, govt offices, residences and hospitals, for indoor air quality from Jan-Sept 2018 revealed startling facts
AVERAGE PM2.5
AVERAGE CO2
VOC
BIOAEROSOL
WHAT TO DO
सांसों में ज़हर है...ये दिल्ली शहर है...
आज तक
अंजना ओम कश्यप
सचिन पवार, सदस्य, भारतीय प्रदूषण नियंत्रण एसोसिएशन (IPCA)
दिल्ली-एनसीआर में वायुप्रदूषण की चुनौतियों से निपटने के लिए एयर-ओ-थॉन में मंथन
बच्चों का मानसिक विकास रोक रहा कक्षा में एसी
हिन्दुस्तान विशेष
प्लास्टिक प्रबंधन पर वर्कशॉप का आयोजन
पहल: कूड़ा उठाने वाले लोग बनेंगे पर्यावरण योद्धा
आईपीसीए ने फैलायी पर्यावरण के प्रति जागरूकता
सफाई के महत्व को समझें और दूसरों को भी ऐसा करने के लिए कहें
कूड़ा बीनने वाले बच्चों के साथ मनाया स्वतंत्रता दिवस
कचरे के निपटान को नई पहल
बद्दी में प्लास्टिक कचरा प्रबंधन के प्रति जागरूकता वर्कशाप

H. BOARD OF MEMBERS

Prof. Padma Vasudevan
(Patron)

Prof. P.K. Sen
(Patron)

Dr.S.K.Nigam
(Patron)

Ashish Jain
(President)

Ajay Garg
(Secretary)

Dr. Shyamli Singh
(Jt. Secretary)

Amit Jain
(Treasurer)

Aarti Kaushik
(Executive Member)

Dr. Radha Goyal
(Executive Member)

Pragya Kaushik
(Executive Member)

Madhuri Nanda
(Executive Member)

Raj Kishore
(Executive Member)

Neha
(Executive Member)

Sandeep Kauda
(Executive Member)

INDIAN POLLUTION CONTROL ASSOCIATION
450/1/B-1, STREET NO. 14-A, VISHWAS NAGAR,
SHAHDARA DELHI - 110032
(NON - TRADING)
Balance Sheet As On 31.03.2019

Liabilities		Amount	Assets		Amount
GENERAL RESERVE			**FIXED ASSETS**		
Balance B/F	7,245,555.76		As per Annexure 1		790,436.00
Add: Donation Capitalised	3,366,000.00				
Add: Membership Fees	14,300.00				
Add: Surplus	16,273,534.59	26,899,390.35			
			SUNDRY DEBTORS		
ADVANCES FROM CUSTOMER			As per Annexure 2		75,225,210.41
IPCA Trading		27,586,822.93			
			TDS RECEIVABLE		
			As per Annexure 3		7,591,721.21
SUNDRY CREDITORS					
As per Annexure 4		28,042,577.89	**DEPOSITS**		
			Security Deposits	13,000.00	
			V.D. GUPTA	200,000.00	
EXPENSES PAYABLE			FDR & Accrued Interest	2,510,000.00	
As per Annexure 5		5,919,612.00	Advance to Staff	35,000.00	2,758,000.00
			CASH & BANK BALANCES		
			Cash-in-hand		14,073.10
			Axis Bank		172,045.50
			Bank of India		822,107.55
			Punjab National Bank		1,074,809.40
	Total	88,448,403.17		Total	88,448,403.17

Significant Accounting Policies & Notes to the Accounts Annexure - 2

President Secretary Treasurer

Date :- 22/07/2019
Place :- Delhi

This is the Balance Sheet referred to in our Audit Report of Even Date Attached
For Goyal Parul & Co.
Chartered Accountants

SEEMA SHARMA
Partner (M. No. 097386)

INDIAN POLLUTION CONTROL ASSOCIATION
450/1/B-1, STREET NO. 14-A, VISHWAS NAGAR,
SHAHDARA DELHI - 110032

Income & Expenditure Account (NON-TRADING)
For the Year ending 31.03.2019

	EXPENDITURE	Amount	INCOME		Amount
To	Workshop on creating Resilient Community	68,522.55	By	Donation	7,259,422.00
To	Healthcare Program for Rag Picker Children	415,625.00	BY	Air Quality Management	305,136.00
To	Primary Educational Program for Rag Picker Children	734,073.00	By	Study on Status-Woven Bags'Waste India (ACL)	1,106,800.00
To	Salary	4,331,765.00	By	EPR-MLP Awareness & Education Program	1,728,091.50
To	MLP Project-Expenses	73,345,434.87	By	EPR-MLP Collection & Recycling Program	107,019,957.51
To	S.O.R.T. Project Expenses	3,198,257.00	By	EPR-Registration with CPCB	1,850,847.44
To	Advertisement & Publicity	725,176.00	By	Garbage Management & Recycling Program	717,693.50
To	Air O2 Thon Workshop Exp.	102,611.65	By	Industrial Waste Management	17,249,616.25
To	Annual General Meeting Expenses	21,810.72	By	Interest on Income Tax Refund	62,947.80
To	AQMS Project-Expenses	223,047.00	By	Interest Recd	209,424.00
To	AQMS-Travelling Expenses	11,155.00	By	Interest Recd.on FDR	51,902.00
To	Bank Charges	4,364.64	By	Bad Debt Recovered	998,685.00
To	Bonus	430,000.00			
To	Computer Maintainance Exp	153,456.65			
To	EPF Contribution Of Employer	265,188.00			
To	ESI Contribution of Employer	58,665.00			
To	Exp. Study on woven bags,	189,711.00			
To	Green Tax Thru Transporter	13,500.00			
To	Garbage Waste Mgt (Exp.)	203,389.92			
To	Misc Exp.	11,618.60			
To	Interest Paid on GST	15,323.00			
To	Interest Paid on TDS	1,396.00			
To	IPCA Workshop Exp	31,820.00			
To	Nestle Project-Dehradun-MLP-Expenses	371,461.00			
To	Postage & Courier	26,587.40			
To	Printing & Stationary	129,808.10			
To	Procurement Expenses-NON MLP	2,189,544.50			
To	Procurement Expenses-Tetra Pack	768,555.00			
To	Procurement/Processing Services Exp.-MLP Etc.	20,039,825.50			
To	Professional Fee	1,146,600.00			
To	Rent	1,569,050.00			
To	Repairing & Maintenance	10,600.00			
To	Rounded Off	(93.52)			
To	Software	23,600.00			
To	Staff Welfare	28,391.00			
To	Swachch Bharat Expenses	171,185.00			
To	Telephone Exp.	4,245.00			
To	Transportation Charge	10,565,140.00			
To	Travelling Charges	40,131.00			
To	We Care- IPCA	404,851.00			
To	Audit Fees	25,000.00			
To	Depreciation	216,596.83			
To	Surplus	16,273,534.59			
	Total	138,560,523.00		Total	138,560,523.00

Significant Accounting Policies & Notes to the Accounts Annexure - 2

President Secretary Treasurer

Date :- 22/07/2019
Place :- Delhi

This is the Income & Expenditure Account referred to in our Audit Report of Even Date.

For Goyal Parul & Co.
Chartered Accountants

SEEMA SHARMA
Partner (M. No. 097386)

INDIAN POLLUTION CONTROL ASSOCIATION

450/1/B-1, STREET NO. 14-A, VISHWAS NAGAR,
SHAHDARA DELHI - 110032
(NON-TRADING)

ANNEXURE-1

FIXED ASSETS AS ON 31/03/2019

S.NO	Particulars	Rate of Depreciation	WDV as on 01.04.2018	Additions		Sale during the year	Total as on 31.03.2019	Depreciation During the year	WDV as on 31.03.2019
				Before 30.09.2018	After 30.09.2018				
1	Furniture & Fixture	10%	31,704.00	10,856.00	-	-	42,560.00	4,256.00	38,304.00
2	Amplifier	15%	1,695.50	-	-	-	1,695.50	1,695.50	-
3	Air Conditioner	15%	18,700.00	-	-	-	18,700.00	2,805.00	15,895.00
4	Composting Machine	15%	133,791.00		-	-	133,791.00	20,069.00	113,722.00
5	Cycle	15%	901.00	-		-	901.00	901.00	-
6	Electric Fitting	15%	6,395.00	-	-	-	6,395.00	959.00	5,436.00
7	Fire Extinguisher	15%	1,735.00	-	-	-	1,735.00	1,735.00	-
8	LCD Project	15%	24,573.50	-	-	-	24,573.50	3,686.50	20,887.00
9	Sewing Machine	15%	2,340.00	-	-	-	2,340.00	2,340.00	-
10	Shedered Machine	15%	10,692.00	-	-	-	10,692.00	1,604.00	9,088.00
11	Tools & Equipments	15%	8,586.10	-	-	-	8,586.10	1,288.10	7,298.00
12	Weighing Machine	15%	2,689.50	-	-	-	2,689.50	2,689.50	-
13	Punching Machine	15%	428,623.00	-	-	-	428,623.00	64,293.00	364,330.00
14	Gas Sampling Pump	15%	14,631.00	-	-	-	14,631.00	2,195.00	12,436.00
15	Computer	40%	181,735.49	39,545.76	87,838.98	-	309,120.23	106,080.23	203,040.00
	Total		868,792.09	50,401.76	87,838.98	-	1,007,032.83	216,596.83	790,436.00

Goyal Parti & Co. Chartered Accountants

INDIAN POLLUTION CONTROL ASSOCIATION DELHI

J. PROJECT PARTNERS

INDIAN POLLUTION CONTROL ASSOCIATION
3-5, DDA Shopping Complex, Hargobind Enclave, Vikas Marg Extn., Delhi-110092
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