

# THEME 1 CASE STUDY



Make the case" summary sheet application

## TEAM DETAILS

Team Name: Team Maurya School: Indian Institute of Packaging (IIP), Delhi

Initiative: Indian Pollution Control Association (IPCA)

Location: Delhi

Stakeholder: Ashish Jain, Director at Indian Pollution Control Board



## THEME 1 : IDENTIFY A PROVEN INITIATIVE (PROJECT OR PROGRAM) IN A CITY, TOWN OR VILLAGE THAT REDUCES PLASTIC POLLUTION FROM ENTERING A WATERWAY

### Profile of Stakeholder: MR. ASHISH JAIN

Ph.D. Holder in Environmental Management from IIT Delhi, Present founder Director of Indian Pollution Control Association, a NGO established in 2001 which is working in the field of Solid Waste Management and Air Quality Monitoring & Management. Implemented projects on EPR compliance, Solid Waste Management, Air Quality Monitoring, and Environmental Conservation.

### TEAM MEMBERS:

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SCHOOL: Indian Institute of Packaging IIP, Delhi

## PART I: PROVIDE BACKGROUND INFORMATION

### (Abstract) Describe the Plastic Waste Problem and The Proposed Solution

**Problem:** India faces a larger problem in managing and disposing of its waste. The problem gets predominantly worsened with rampant use of single use plastics which block the waterways. There is an inadequate amount of infrastructure for efficient waste management in the area of operation; disregard to training facilities and livelihood status provided to ragpickers; also, the lack of awareness among the citizens leads to uncollected; accounted and indestructible plastic waste causing clogging of sewer system, polluting water resources and damage to the environment and public health.

**Solution:** Indian Pollution Control Association (IPCA) is a reputed environment NGO in Delhi providing multi-faceted solid waste management solution to corporate industries, educational institutes and residential colonies. It has reached out to both public and private sectors to sensitize them about the importance of incorporating issues of environmental considerations and self-sustainability into project or policy development for India.

Many such projects include Garbage Recycling Programme, My 10 kg plastic-EPRO, Project DohBin and Project Relish. These projects emphasis on playing the role of an intermediary agency to bring together the EPR stakeholders, waste collector community and recyclers on a common forum; organizing training sessions for waste collectors and campaigns related to social awareness, setting up waste collection and waste recycling plants and lastly strengthen other environment organizations by rendering them appropriate platforms for learning, sharing and evolving and hence creating employment.

### Describe the city where the Initiative takes place?

Delhi, National capital territory and city of India is of great historical significance as an important commercial, transport, cultural hub and the political center of India. Being a tourist destination, it catches eyes to many architectural Marvels, splendid gardens, historic tombs, diverse market places and dynamic neighborhoods. Delhi being the world's second most populous city after Tokyo is home to 1.9 crore people. Delhi is not just India's top megacity in terms of population but also in terms of the solid waste generated every day. Yamuna is the second largest tributary of river Ganga were pristine blue but now is considered to be one of the severely polluted rivers in the world.

### Provide the scale of the problem of plastic waste in this city?

Delhi is facing the problem of plastic waste due to high population density which increases the consumption of goods, lack of segregation at grass root level. So, Landfills are overburdened as there is lack of management of disposal. When these plastic wastes when burnt, people face health issues like respiratory problems. Waste generated by industries causes major environmental havoc by polluting the water bodies on which both aquatic and terrestrial life depends. Delhi has a per capita waste generation of over 10,000 grams per year, which is four times the national average.

### Why did the Initiative start in this city?

The initiatives have been taken for many reasons like, for sustainable solid waste management and for rag pickers, and for creating awareness in order to minimize the solid wastes and to seek solutions. Training has been given to rag pickers and their families for proper hygiene and for their future goals, they are developing a sustainable supply chain for the post consuming paper beverages carton with the support of Tetra Pak India Pvt.Ltd. Have started a community engagement program with projects like “Dohbin”, Inclusive operations where rag pickers were formally inducted into the waste management programme of IPCA, so that they could earn a living from this. And awareness training programs/Contest in educational institutions held by IPCA to make all children know about the global problem of solid wastes. Entrepreneurship programme has been given to the candidates to start their own business in recycling waste management under the RELISH program.

## PART II: THE INITIATIVE’S IMPACT

### What are the benefits to society? What has been accomplished? Have the societal benefits outweighed the amount of resources expended to generate the results?

The best way to capture (stop) plastics before it ends up as street litter and winds its way to the water is through public awareness

#### Social Awareness -

- Social activities like clean up drives Street days, group discussions generated awareness in the community.
- Behavioral changes leading to source segregation of waste.
- RWA, individual households, cooperates, schools, educational institutes, hospitals have joined the campaign

#### Benefits provided to ragpickers- (DohBin project)

Rag /waste pickers were considered the weakest line in the supply chain of the highly unorganized waste collection sector but IPCA was able to strengthen their capacity to make them one of the strongest links.

- IPCA’s training and capacity building programs trained the unskilled migrant labor to identify the various types of plastic, collect MLPs, the importance of segregation of plastic, importance of hygiene and safety equipment.
- Post training the rag pickers are able to add value to the supply chain and get better prices for their segregation waste.
- IPCA also works actively with the community to make an impact on their livelihood through improvement of their socio-economic status.
- Organized health checkup camps and primary education programme for rag picker's children with financial support India Development Services (IDS).

Therefore, social benefits have definitely outweighed the number of resources expended to generate the results.



**Accomplishment: -**

## IPCA's Achievement 2020-21

### Tangible impacts

- 82278MT of Plastic Waste Recycled or Scientifically disposed.
- 10885MT of MLP converted to energy at Waste to Energy Plant.
- 110MT of Organic waste prevented from reaching Landfills.
- 5065Kg of organic Compost generated.
- 87 Air purifiers Installed.
- 25% reduction in PM<sub>10</sub> & PM<sub>2.5</sub>.
- 95 organic waste composters installed.
- 2.5 km Green belt developed.

### High impacts

- Presence in **30 States & UT.**
- Setting up Material Recovery Facility organisation by CPCB for Extended Producer responsibility.
- **Project RELISH** : Nation-wide Entrepreneurship programme.
- Setting up of Recycling plant.

### Wide Impacts

- Collaborated with **26 ULBs.**
- Partnered with **150 corporate houses.**
- **125** recycling and co-processing Partners.
- **12000 Households** participated in waste recycling programmes.
- **>100** Training and capacity building programmes.

### Deep impacts

- **>20,000** Rag-pickers have sustainable livelihood.
- Providing health and safety training to Rag-picker.
- Enhanced Citizen knowledge of segregation and recycling of Waste.
- **>500** trained and skilled manpower.

### What are the benefits for the environment? Has the Initiative reduced or eliminated the amount of plastic in the streets or waterways? What has been accomplished?

IPCA launched **Project My 10 Kg Plastic- EPRO** and the benefits and accomplishments gained from the project are as follows:

#### **Benefits:**

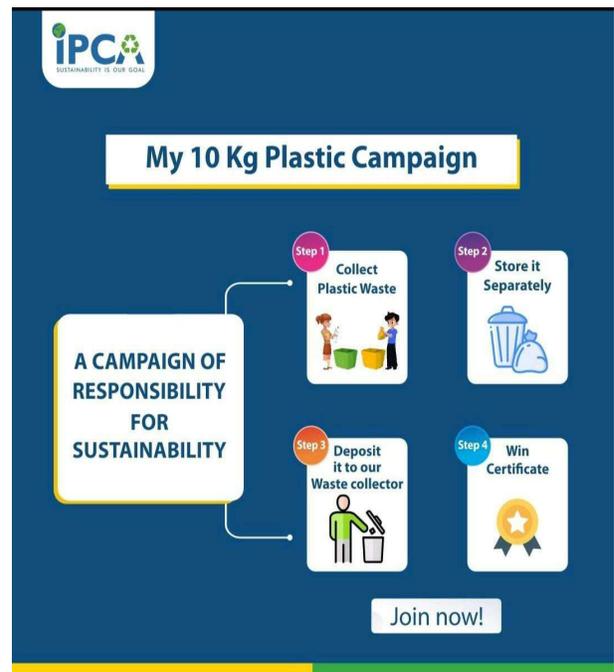
- Reduce littering and pressure on landfills, increasing recycling of plastic waste.
- Provide and establish channel for efficient collection and recycling/co-processing of plastic waste.
- Provide door-to-door collection of plastic waste from the target localities.
- Develop sustainable supply chain for MLP and Non-MLP and paper beverages carton waste or any other plastic waste commodity.
- It creates awareness on plastic waste collection, segregation and correct disposal/recycling of plastic waste.

#### **Reduction/Elimination of plastics:**

- Monthly collection of plastic waste over 2 ton.
- Weekly collection of plastic 500kg.
- Active adoption of campaign by: 30+ societies, 4000+ households.
- Increase in recycling of plastic.
- According to annual data report 2020-21 In 6 months, 12.258 tons of plastic bottles have been recycled with a monthly collection reaching 3600 Kg.

### Accomplishments:

- It increased per capita income of Rag Pickers and improve their health
- It reduced pressure on landfill sites and cost of transportation to the landfill sites.
- It made the citizens to realize their responsibilities/Ownership regards to their wastes.
- It increases community participation for source segregation of waste.



### What are the benefits for the economy? Has the Initiative created new business? Can it create new jobs?

According to the annual statistics report, these are the major economic benefits:

1. Increase in per capita income of the waste collectors by 10-15%. Raggpickers are provided with sustainable income, enhancing their livelihood status.
2. Creation of gainful employment for network of 6000 waste collectors across India.
3. IPCA makes the industries more environmentally conscious as they have to internalize the costs of pollution prevention and damage to for sustainable management of natural resources.
4. Reduced cost on storage and transportation due to compact bailing out of waste material.

### PROJECT RELISH

Project RELISH or project recognizing and empowering local initiatives for a sustainable habitat, aims to recognize, appreciate and bolster the efforts made by organizations and individuals working towards management of solid waste at grass root levels in India. Project a strengthens such organizations by providing appropriate platforms for growing, sharing and evolving.

It helps the grass root organizations who had been working diligently for solid waste management but could not expand their operations due to limitation of resources, industry know how and established network. Hence, creating new jobs/business opportunities based on the principles of "Atmanirbhar Bharat".



## PART II: WHAT IS POSSIBLE IF THE INITIATIVE HAD MORE RESOURCES IN ITS CURRENT LOCATION

**Are the Initiative's operations sustainable "as they are?" Will it be in operation for next five years? If yes, why? If no, why not and what can be improved?**

We are living on this planet as if we had another one to go to. So, sustainability is the most important feature of a waste management process. For that IPCA developed sustainable supply chain (collection, segregation, recycling / processing) for MLP, Non-MLP and paper beverages carton waste or any other plastic waste commodity under EPR (Extended Producer Responsibility) and RELISH Project. The Garbage recycling program was the first community centric service project bringing out social transformation, executed by IPCA in 2004 and is operated till date without any external funds. This program provides efficient and sustainable, door-door-door collection of municipal waste from households, markets, institutes, corporates etc. and thereafter scientifically recycling or disposing it.

Yes, it will be in operation for next 5 years due to following reasons:

Plastic waste is a crucial problem for next 5 years as there are less feasible alternative to the single use plastic and it will take time to introduce it fully to the market plus it's important to make people aware about the environment harm and the consequences. All the initiatives have been launched keeping in mind the sustainability and future needs and so they will be applicable even after 5 years. All the needful changes will be included keeping in mind the challenges faced every year and new opportunities will be provided for the benefits of the society.

**Assume your team had the funds to increase the budget to maximize social impact. How would the team spend this additional funding, and what would be the incremental results/benefits?**

### SPEND MONEY/WHY:

We get funding from government and private sectors for the implementation of this initiatives. In addition to that, if we have more funding, we would be using that amount to maximize social impact as below:

Line item #1: 2L INR(Approx.)- Improved employment for ragpickers.

Line item #2: 1.5L INR(Approx.)- Creating more educational centers and health checkup campaigns for ragpickers & their family.

Line item #3: 3L INR(Approx.) Bringing Technology- Creating mobile app to find the garbage in an area by ragpickers

Line item #4: 2.5L INR(Approx.) Procuring vertical hydraulic balers and bubble barriers.

### INCREMENTAL RESULTS/BENEFITS

- We employ more ragpickers to collect the one-use plastic solid wastes so that we can help government who are struggling to effectively handle the waste due to lack of expertise, man force and technical know-how.
- For ragpickers and their family's regular health checkup campaigns can be organized and to avoid child labors, educational centers for ragpickers' children and campaigns can be organized to bring the awareness among them.
- In a locality, to find a garbage and to remove them, a mobile application can be created to locate and collect it by ragpickers.
- By the increased fund, we will procure vertical hydraulic balers for recycling the plastic waste that we get and bubble barriers can be used to collect solid plastics wastes across water bodies.

# PART III: “MAKE THE CASE” TO REPLICATE THIS INITIATIVE IN FIVE OTHER LOCATIONS IN INDIA (OR WORLD)

## How can this Initiative be replicated in other cities in India?

Plastic Waste Management is the problem faced all over India especially in the metropolitan cities. IPCA tackle this problem by focusing on 4 domains: -

**1. Social Awareness:** - Organizing **My 10 Kg Plastic - EPRO** programme in other cities will educate people about best practices for effective solid waste management and inculcate in them an attitude change towards segregation and recycling of waste products.

**2. Benefits provided to the ragpickers:** - Being an essential part of the waste management supply chain in these cities IPCA provides employment and training opportunities to ragpicker/waste collectors. IPCA also commits to provide them with safe working conditions and uplifting their economic status through **Project DohBin**.

**3. Setting up of Dry Waste Collection Center:** - under the project “**Garbage Recycling Programme**” Adequate infrastructure for efficient waste management is installed in the area of operation. Workers of the center ensured proper storage of the segregated waste. Initiation of this project in the cities will help to reduce the load on landfills, cost of transportation and workload of workers.

**4. Creating a sustainable collect back system:** - IPCA plays the role of an intermediary agency to bring together the EPR stakeholders, waste collector community and recyclers (who desire good quality plastic waste that can be used as raw material) on a common forum to build this sustainable supply chain which helps in reduction waste burning due to effective collect back mechanism.

## What kind of resources will be required to replicate current innovation? Money? People? Change in regulation/policies?

Youth are the most important and dynamic segment of the population in any country. In order to replicate current innovation, creating awareness among youth through campaigns and activities leading to mass participation of people will be the foremost thing. After connecting with the people and working on the demands of the city regarding its plastic and waste problems, necessary action plan will be made, changes will be made according to the needs of the city. Collaborations with state authorities, local NGO's and formation of committee will contribute towards infrastructural and financial resources. Joining hands with industries, corporate companies will help the innovation through sponsorships and promotions.

## Why would these new Initiatives be worth the time, resources and effort?

These initiatives work on grass root level causes of generation of these single use plastics. These initiatives will be effectful due to following reasons:

- Slums in which there are no proper waste management and hygiene facilities.
- Coastal areas and river which are highly contaminated with these single used plastic waste.
- Industrial waste which are increasing due to increasing demand.
- Lack of awareness among people regarding responsibilities towards nature and future generation.

So, this initiative will help us to overcome these obstacles in a sustainable manner and helps in maintaining healthy environment with pure air and water which are basic need for survival. And can also replicated easily in any city.

## What challenges need to be overcome for replication?

The Challenges that should be overcome are given below:

- Implementing modern waste management Infrastructure, like recycling plant and also in this storage, transport, treatment and disposal of collected waste is one of the biggest challenges for many urban local bodies.
- Creating of lot of awareness among people is required and to make them understand the responsibility over the nation's cleanliness as a citizen of India.
- Structural deficiency is stopping to implement many good ideas to make it get implemented across landfills

- Need to approach state government authorities and stakeholders for this proposal and make it get implemented using certain rules and regulations and taking permissions from government for campaigns across cities, But In order to get it implemented, getting government and local bodies approvals are quite challenging.

### Which cities of India will you choose and why?

The Metropolitan cities which are densely populated, having high waste generation and takes optimum effort to replicate are DELHI, MUMBAI, PATNA, CHENNAI, KOLKATA. These cities are having water bodies which are highly contaminated with single used plastic wastes and also drainage system is chocking. They are also under most polluted cities in India though having most attractive tourist destinations. Due to majority of youth population; awareness of the youth can be done so that it can easy replicate in these cities. Most of the rivers are originated from southern and eastern part and moving towards the northern regions so these cities can play a major role in removal and recycling of the waste across rivers.

### What type of stakeholder and partnerships will be needed to replicate the current initiative?

The sustainability of alliances between stakeholders in waste management is quite significant to replicate the initiatives we mentioned already. Seeking assistance from city council and municipalities to regulate rules to how wastes like recyclables are separated and can make this as material forbidden in landfills. Nowadays, state and local governments view environmental protection as a major function, so it is quite easy to approach them. And next comes the Investors and Owners, plays a major role like recycler and start-ups.

Can approach for adequate vehicles to collect waste, to store it and to handle it. Alliances with Waste management businesses/Companies, especially start-ups and recyclers will get benefited since the required raw material that is plastics are provided and we could also benefit financially by getting the amount from those companies, and in near future, we can tie up with the companies in the cities so it would be easily replicated.

### Which core SDGs are impacted through this initiative? And which SDGs are tangentially impacted through this initiative? (Separate question)

The improper or the lack of waste management has gained attention as it negatively impacts the three spheres of sustainable development -Ecology, Economy and Society. The 17 sustainable development goals (SDGs) introduced by United Nations in 2015 to provide targets and indicators for broad global sustainability achievements and SDG 11 and 12 have direct linkage with solid waste management.

At least 12 other SDGs have links to solid waste management. Thus, effective solid waste management can help India achieve its international commitment achieving the SDGs by 2030. IPCA has streamlined and implementing its efforts, functioning and processes based on at least 14 of the 17 SDGs.

Following were the impacts that got targeted directly through projects and initiatives

- ✓ **Goal 6: Clean water and Sanitation**  
Waste collected and recycled, prevented from polluting water bodies.
- ✓ **Goal 7: Affordable and clean energy**  
Waste collected was sent to waste to energy plant
- ✓ **Goal 9: Industry, Innovation and infrastructure**  
There was a boom in industries, infrastructure. Development of 69 waste centers.
- ✓ **Goal 11: Sustainable cities and communities**  
Various measures and initiatives were taken to make cities sustainable.
- ✓ **Goal 13: Responsible consumption and production**  
Organic waste is converted to usable compost.
- ✓ **Goal 14: life below water**  
Water pollution was controlled and aquatic life became better.
- ✓ **Goal 15: life on land**  
As the pollution was controlled, environment became healthier.
- ✓ **Goal 17: Partnership for the goals**  
Various collaborations were made to give the initiative global recognition.

Apart from direct impacts, there were tangential impacts too. Projects and initiatives Gave the following tangential impacts:

- ✓ **Goal 1: No poverty**  
Ragpickers were given sustainable income
- ✓ **Goal 3: Good health and well being**  
It improved life style
- ✓ **Goal 4: Quality education**  
Primary education Centre's were setup.
- ✓ **Goal 8: Decent work and economic growth**
- ✓ **Goal 10: Reduced inequalities**  
Ragpickers were given recognition
- ✓ **Goal 13: Responsible consumption and production**  
Organic waste is converted to usable compost.

**1 NO POVERTY**



Sustainable income to 10,000+ rag/waste pickers and 125 co-processing partners

**3 GOOD HEALTH AND WELL-BEING**



1,00,000+ MT of waste collected and sustainably processed  
Mitigation of Air pollution and successful reduction of particulate matter by 39%

**4 QUALITY EDUCATION**



5 Primary education centres for children of Rag/waste pickers 100+ Training programmes and workshop

**6 CLEAN WATER AND SANITATION**



77325 MT of plastic waste recycled and prevented from polluting water bodies

**7 AFFORDABLE AND CLEAN ENERGY**



10885MT of waste sent to waste to energy plant

**8 DECENT WORK AND ECONOMIC GROWTH**



10,000 + Rag pickers provided sustainable livelihood source.

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**



Development of 69 waste collection centres. Development of recycling Plant in Greater Noida

**10 REDUCED INEQUALITIES**



Education and capacity building of rag-picker community

**11 SUSTAINABLE CITIES AND COMMUNITIES**



Providing SWM solution for industrial waste, plastic waste, organic waste reducing pressure on landfills and preventing pollution  
Providing solution for Air quality management and improving air quality

## SDGs and IPCA's Goal For SUSTAINABLE DEVELOPMENT

**13 CLIMATE ACTION**



1,00,000+MT of waste prevented from reaching landfills and producing emissions

**12 RESPONSIBLE CONSUMPTION AND PRODUCTION**



Waste is treated as a resource: Organic waste converted to usable compost, Plastic waste recycled, MLPs used as fuel at waste to energy plants Community programmes to educate about reducing waste

**14 LIFE BELOW WATER**



1,00,000+MT of waste prevented from improper dumping

**15 LIFE ON LAND**



Less pollution on the land, healthier environments

**17 PARTNERSHIPS FOR THE GOALS**



Collaborations with various organisations - IIT Delhi, IIT Madras, TERI University, Delhi University, GGSIPU, NEERI- CSIR, SBI, Dabur, Goodyear, GSK, SLMTT etc.

## **TEAM PROFILES**

### **TEAM LEADER: ASHITA YADAV (<https://www.linkedin.com/in/ashita-yadav-ab14331b2>)**

An enthusiastic personality who loves to participate in various competitions and give solutions to the real-life business problems through brainstorming, market research and customer insights. Did Bachelors in Food Technology from Lady Irwin College (DU) and is currently pursuing Masters in Packaging Technology from IIP, Delhi. Have a keen interest in sustainability and problem solving; would love to inculcate her knowledge work for a better social cause through internship / full time opportunity.

### **TEAM MEMBERS:**

#### **AARTIKA BHAYANA (<https://www.linkedin.com/in/aartika-bhayana-8b6a21209>)**

Completed her bachelors in chemistry from St Stephen's College and is currently pursuing masters in packaging technology. Studying chemistry developed her interest in exploring and learning different existing resources and their contribution towards sustainable lifestyle. Started social drives during pandemic to help community. looking forward to work for the betterment of society through her knowledge. Working on such case studies and participating in various competitions enhances knowledge and makes inquisitive

#### **AKILA MUNIAPPAN (<https://www.linkedin.com/in/akila-muniappan-390231146>)**

I am a confident, active, open minded, hardworking and proactive Packaging Technology student, I have constantly endeavored to strike a balance between academics and extracurricular activities to develop leadership qualities and soft skills. I value team work and working hard to help others in achieving a common goal. I am eager to learn, I enjoy overcoming challenges, and I have a genuine interest in Business Management, problem solving and making organizations successful. I am seeing an intern position in the industry in which I can put into practice my knowledge and experience, ultimately benefiting the operations of the organization that I work

#### **SAILESH JUJAL (<https://www.linkedin.com/in/sailesh-jujal-09394b21b>)**

An Ambitious, disciplined and dedicated personality who loves to work on projects based on real life problems with analytical thinking and brainstorming ideas. Love to design something distinct with the help of my macromolecular chemical knowledge in sustainable manner which can help the society. Pursued Bachelors in Polymer science from Bhaskaracharya College of Applied Sciences and currently pursuing Masters in Packaging Technology. Is ready to work in an internship/ full time job to gain more knowledge about subject.

## **PLEASE PROVIDE THIS INFORMATION FOR THE JUDGES: REFERENCES/INTERVIEWS**

### **INTERVIEWS (LIST PERSON, DATE OF INTERVIEW)**

1. Akanksha Gupta (senior Manager at IPCA) – Date of Interview: 27<sup>th</sup> January 2022
2. Deepanshi Gandherva (Senior Project Coordinator at IPCA) – Date of Interview: 14<sup>th</sup> February 2022

### **REFERENCES**

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