SUSTAINABILITY IS OUR GOAL

Indian Pollution Control Association (IPCA)

NEWSLETTER

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PLASTIC WASTE: AN OPPORTUNITY IN DISGUISE

WHY PLASTICS?

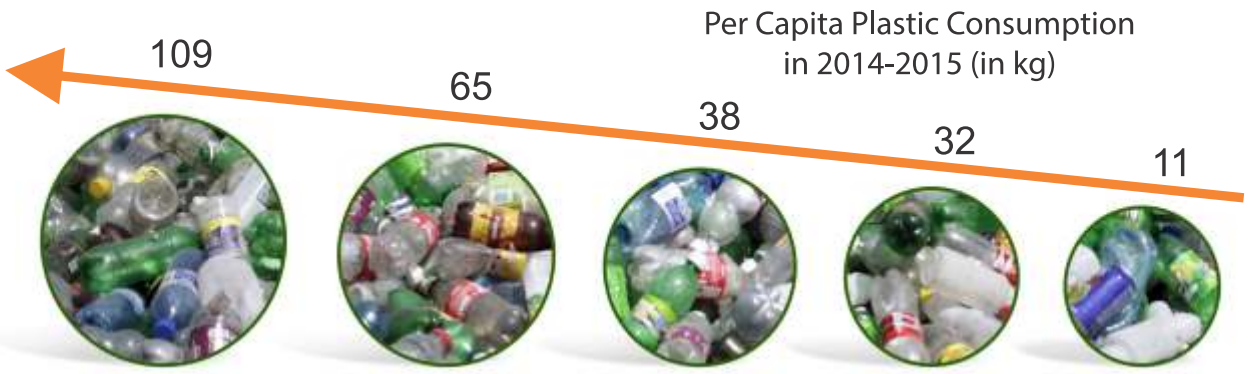
Economic growth, changing consumption and production patterns are resulting in a rapid increase in generation of plastic waste in the world. The world's annual consumption of plastic materials have not has increased from around 5 million tonnes in the 1950s to nearly 100 million tonnes; thus, 20 times more plastic is produced today than 50 years ago. In India, approximately 12 million tonnes plastic products are consumed every year (2012) which is expected to rise 18 million tonnes by 2020. It is to mention that no authentic estimation is available on total generation of plastic waste in the country. However, considering 70% of total plastic consumption is discarded as waste, thus approximately 5.6 million tons per annum (TPA) of plastic waste is generated throughout the country which is about 15342 tons per day (TPD). Central Pollution Control Board (CPCB) has estimated the generation of 15,342 tonnes of plastic waste in the country, out of which, 9205 tonnes (60%) were reported to be recycled and leaving 6137 tonnes uncollected and littered. Even then recycling rate of plastics in India is considerably higher than the global average of 14%.

This implies that on one hand, more resources are being used to meet the increased demand for plastic, and on the other hand, more plastic waste is being generated. Plastic consumption has increased much more than the world average due to rapid urbanization and economic development. Its broad range of application is in packaging films, wrapping material, shopping and garbage bags, fluid containers, clothing, toys, household and industrial products and building materials.

WHAT IS PLASTIC?

Plastics are non- biodegradable, synthetic polymers derived primarily from petro-fossil feedstock and made-up of long-chain hydrocarbon. There are different categories of plastic which include:

INDIA'S PLASTIC CONSUMPTION IS THENTH OF US'S



Recyclable Plastic (Thermoplastics): Pet, Hdpe, Ldpe, Pp, Pvc, Ps Etc.

2. Non-Recyclable Plastics (Thermoset & Others): Multilayer & Laminated Plastics, PUF, Bakelite, Polycarbonate, Melamine, Nylon etc

MULTILAYER PLASTIC (MLP)

Multi-Layer Packaging Diagram

Multilayer Plastic comprises a thin foil of aluminum, which is sandwiched, or laminated in a matrix of paper and/or plastic layers. MLP have been gaining increased importance in packaging goods due to its properties such as barrier against moisture, high dimensional stability, high impact strength, resistance to strain, low water absorption, transparency, resistance to heat and flame etc. Additionally, they improve the hygiene quotient and shelf-life of the products, especially in food and beverages segment. Most companies prefer multi-layered packaging because of its light weight, reduced shipping volume, less space on a shelf, and graphics friendly. Globally, by 2050, plastic packaging production will be more than the overall plastic volumes today, according to a report by the World Economic Forum (WEF). However, apart from playing an increasing role in packaging and consumer products, MLP also take up a growing percentage of municipal solid waste streams and pose environmental challenges.

WHY IS PLASTIC WASTE A CHALLENGE?

- The lack of integrated solid waste management system in place, most of the plastic waste is neither collected properly nor disposed of in an appropriate manner to avoid its negative impacts on the environment and public health.
- The waste plastics are causing littering and choking the sewerage system, thereby ending up in polluting streams or groundwater resources.
- As a result of extremely long period required for natural decomposition, plastic waste is often the most visible component in waste dumps and open landfills.
- One of the major reasons for the increase in plastic waste is that 50% of the plastic is discarded as waste after single use. Around 95% of the economic value of plastic packaging, is lost after their first use. This also adds to increase in the carbon footprint since single-use plastic products increase the demand for virgin plastic products.
- The economic cost of greenhouse gas emissions resulting from the production of plastic packaging and the pollution caused by plastic waste is pegged at around $40 billion.

WHAT DO THE RULES SAY?

Plastic Waste Management (Amendment) Rules, 2018

Ministry of Environment, Forests and Climate Change (MOEFCC), Government of India has formulated Plastic Waste Management (PWM) Rules 2016 and revised rules (PWM Amendment Rules 2018), under which it is clearly mentioned that manufacturing and use of Multi-layered Plastic which is non-recyclable be used for energy recovery from waste i.e. conversion of waste material into usable heat, electricity or fuel through variety of processes including combustion, gasification, pyrolization, anaerobic digestion and landfill gas recovery. Every producer or brand owner shall, for the purpose of registration or renewable of registration, make an application, to, - (I) The concerned State Pollution Control Board or Pollution Control Committee of the Union Territory, if operating in one or two states or Union Territories; or (II) The Central Pollution Control Board, if operating in more than two States or Union Territories.

Manufacturers and brand owners must provide the necessary financial assistance to local bodies for the establishment of a plastic waste management system. Additionally, for any non-recyclable waste generated from their packaging, they must put a system in place to collect back the waste. The new rule created panic and a state of confusion among the brand owners as currently neither any industry nor the government has found a suitable replacement/ alternative for multi-layered packaging and thus some experts feel that complete ban of this kind of packaging may seem like a hasty decision.

However, Plastic waste recycling can provide an opportunity to collect and dispose of plastic waste in the environmental friendly way so that it can be converted into a resource. In most of the situations, plastic waste recycling could also be economically viable, as it generates resources, which are in high demand. Plastic waste recycling also has a great potential for resource conservation and Green House Gases (GHG) emissions reduction, such as producing fuel from plastic waste. This resource conservation goal is very important for national and local governments, where rapid industrialization and economic development is putting a lot of pressure on natural resources.

Most companies prefer multi layered packaging because it's light, reduces shipping volume, doesn't take up much space on a shelf, and is graphics friendly

IPCA's "WE CARE"

Considering the gravity of the situation , Indian Pollution Control Association (IPCA) initiated the communication with the MLP producers/brand owners and the regulators to develop the action plans to strengthen the collection, segregation, and recycling of MLP waste. Regular brainstorming sessions with producers and regulators ended up in developing the Consortium of industries to deal with the issue and demonstrate their commitment to implement an effective plastic waste management system in India. "WE CARE: India's First Joint Initiative on EPR" under PWM Rules 2016 (Revised in 2018) has been initiated by IPCA with consortium partners and in association with CPCB and EDMC, Delhi to solve the problem of plastic waste and its disposal.

The collection & segregation of MLP waste is one of the key challenges in tackling the problem of plastic waste. There is no mechanism for collection and processing of MLP, it is being littered at various places including drain, landfills, roadside, water bodies, parks, railway tracks etc. As of now, there is no technology available for recycling of MLP, but it can be used as a raw material at waste to energy plant , cement kilns and mostly people are unaware of the energy value of MLP considering it as a rejected waste.

WE CARE Consortium

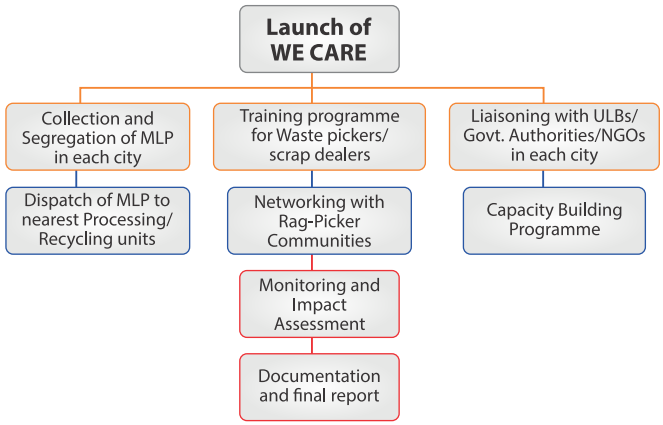
Uration of WE CARE Logo

In-order to cope with this issue, there is a need for developing a mechanism of its collection, segregation, and channelizing it to the right recycling industry for the end of life solution. A sustainable supply chain is needed for MLP waste materials.

With the objective of taking the onus of plastic waste, a group of like-minded brand owners came together and formed a consortium to manage plastic waste generated by their respective companies. The consortium comprises of representatives from PepsiCo India Holding Pvt. Ltd., Nestle India Ltd., Perfetti Van Melle India Private Ltd., Dharampal Satyapal Ltd. and Dabur India Ltd. The Consortium proposed to undertake implementation of their EPR obligations, i.e. collection, segregation and recycling of the post-consumed Multi-Layered Packaging (MLP) through IPCA, which has agreed to take up this project across Eight Cities (Delhi, Mumbai, Ghaziabad, Gurugram, Noida, Dehradun, Chandigarh and Faridabad) for initial first three months (Pilot Stage).

The key objectives fulfilled by IPCA under this pilot project is given below:

- To educate waste pickers/waste dealers/traders/aggregators on recycling properties of MLP and motivate them to collect and segregate it in the best viable way.
- To set up dry waste collection centers in metro cities with the help of local NGOs or waste management agencies to reduce the cost of logistics.
- To build up a network for collection and transportation of post-consumed MLP in metropolitan cities, in the first phase, where the consumption of such product is relatively high.
- To encourage people to participate in source segregation of waste for the betterment of our environment.
- To explore new recyclers in different regions for maximum recycling of waste with a higher margin of profit for waste pickers and lowest rate of logistics, eventually securing value for all stakeholders involved in this process of plastic waste management.



Project Methodology

Under this project various activities were conducted such as

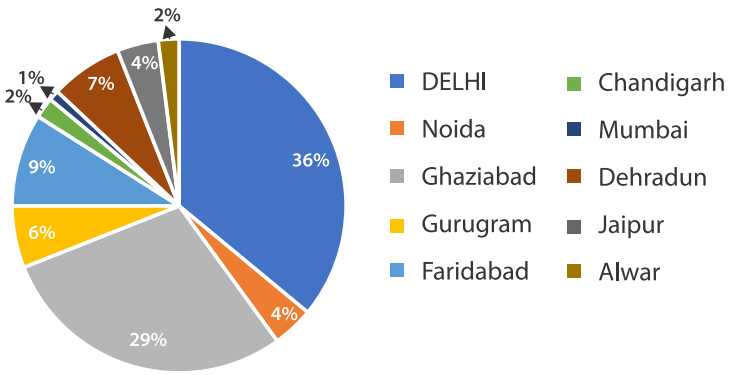
- Participatory learning workshops for waste pickers
- Street plays were organized on Plastic Waste Management Practices
- Capacity Building/Training for the waste collector and rag pickers, dry waste collection centers were set up.
- Under this project liaison with ULBs, Municipalities, policy makers and other relevant government bodies were also done so that this project could get support in segregation of waste and also to create awareness among the officials.
- After each activity review and audit was conducted to assess the failure and success of the activities and also to improve it for the next time.

To scale up such solutions, it is imperative to that rag pickers are tapped into for the collection and supply of waste, i.e. utilizing the supply chain that is already in place.

"WE CARE" FOOTPRINTS

ENVIRONMENTAL IMPACT

- If MLP would not have collected and processed, it would reach to either landfill or river bodies or parks or drain or burnt in an uncontrolled environment, which may have caused water/land/air pollution and poses health hazard to the people.
- Under this pilot project, a **total of 664.210 tons of MLP** was collected in eight cities of India.
- This waste would either have lied on road or would have clogged the drains, now it had created a significant change in the environment and beautified the area.
- It had also lead to efficient use of environmental resources.



MLP Collection in Eight cities of India: Project WE CARE

The uncontrolled burning of plastic waste at landfills and in open used to result in the emission of Green House Gases into the atmosphere. It also releases harmful toxins like Carbon Monoxides, Chlorine, Hydrochloric Acid, Dioxin, Furans, Amines, Nitrides, Benzene etc. into the air.

- IPCA efforts sending this waste to cement kiln and waste to energy plant has resulted in the controlled emission of plastic waste for its use.
- This has also become a source of alternate fuel in cement kilns because it has high calorific value as compared to coal thereby cutting down on coal consumption by 40%.
- This has also resulted in mitigating CO_2 and equivalent gases emission by **273000 kg** which is equivalent to **868660 kWh** of energy which can be used in various application.

  Thus, it is indirectly helping in the growth of GDP of the country.

SOCIO-ECONOMICAL IMPACT

This WE CARE Project has helped rag pickers and waste collector in many ways.

- The sector waste collection is a very informal sector. There is no record of number of people involved in it and managing such informal sector is a task in itself.
- Through WE CARE, IPCA has managed to bring all the stakeholders involved in waste segregation and collection into one large sector. It includes Waste pickers, waste dealers, traders, aggregators, Government Authorities, municipalities, cement kiln operators etc. it has helped in converting an informal sector into formal one by building a community of rag pickers.
- **Approximately 1500 rag pickers** were involved in the collection and segregation of MLP in eight cities of India.
- All of them were educated through awareness camps, workshops and street plays on recycling properties of MLP and were motivated to collect and segregate it in the best possible way.
- As most of the rag picker communities were uneducated so street plays were used as the mode of education.
- To encourage people to participate in source segregation of waste for the betterment of the environment, improving the environment and health condition of India through a recycling-based waste management approach, WE CARE project has led to spreading awareness about health impacts and making society more responsible

A street play performed by IPCA team on MLP

towards rag picker community and clean environment.

- These workshops had encouraged people in source segregation.
- The project had helped in changing the standard of rag pickers' lives.
- **For the collection of MLP the incentive of ₹ 7.00 per Kg were given to rag pickers.**
- Since approximately 1500 rag pickers were involved in the collection and segregation of MLP in Eight Cities of India and an average each rag picker has earned additional ₹ **3190** during the pilot project over their regular income.
- They had a sense of security as they were not exploited and got a regular flow of income to spend happy and secured life.

In 1911, the Tobler factory in Switzerland which produced Toblerone chocolate, were the first to use aluminium foil to package their products.

WE CARE: WAY AHEAD

There are great opportunities ahead for different stakeholders if this initiative will be extended to rest of India. As per the estimates, India generates approximately **1200MT / day** of MLP, which is currently not the part of waste supply chain and mostly goes to the landfill sites and creating a menace there due to its non-degradable properties. However, existing scientific reports claim that the MLP is having very high calorific value and it can be a good alternative source of energy to various processing industries. Therefore, there is an immense opportunity for the industries like cement kilns, waste to energy plants and many more to be explored, to get the MLP as raw material for increasing their plant operation efficiency. Besides the industries, the value added MLP waste collection and segregation can create the opportunities for waste pickers to increase their daily income and further to ULBs and Municipal Corporations as it will reduce the quantity of waste for them to handle and reduce the amount of non-degradable waste to be dumped on landfill sites.

- MLP waste can be a good raw material to many waste processing industries such as waste to energy plants (WTE) and to cement kilns as they have high calorific values and can increase the efficiency of the plants.
- Increasing the network of all stakeholders across India to collect the maximum amount of MLP for saving the environment and improving the economic condition for waste pickers community.
- Adding the value to the MLP waste is one of the key factors, which motivates the waste pickers to segregate the MLPs from the waste. There are more than 50 brand owners of MLP in India who can support this initiative to get the 100% collection of MLP waste at PAN India level.
- A dire need has been identified to integrate the municipal corporations and other ULBs for replication and successful implementation of the proposed model of plastic waste management in India. Without their integration, it would be difficult to make the model sustainable in future.
- Creating awareness amongst different stakeholders (starting from waste generators, waste pickers and recyclers) is another key factor to make the project successful. ULBs and municipalities along with local NGOs can play an important role in creating the awareness.
- The model used in pilot phase needs to be demonstrated to municipalities to make them understand that this could be a big revenue model for them as municipalities are the core players in waste management sector and can ask industries/ brand owners to pay for collection of MLPs and can ask from waste processing industries to pay for getting the raw material for operation of their plants.
- Apart from waste to energy plants and cement kilns, there is a need to explore the other alternative industries who can process such plastic wastes
- There is an urgent need to develop the quality control norms for RDF to be used by processing industries such as Cement kilns or waste to energy plants. At present the RDFs are of low calorific values, which hinders in maintaining the recommended temperature in processing plants and reducing their efficiency
- We Care pilot project model can be replicated to PAN India level with municipal corporations working in collaboration with industry partners. External agency can be hired to audit the project and compare the results.

"As prevention is better than cure, there is a dire need of a mechanism by which new forms of packaging should be tested and given a go-ahead by the government/relevant authorities before being introduced in the market, which would avoid the issue of developing technologies in response while the packaging piles up in landfills."

WE CARE

Waste Efficient Collection and Recycling

CONSORTIUM PARTNERS

PEPSICO | Nestlé | PERFETTI van Melle | DS GROUP | Dabur

SUPPORTING PARTNERS

cpcb | geocycle *For a zero-waste future* | IL&FS Environment

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