Better manage more than 85,000 MT of plastic waste
Improve the socio-economic conditions of 30,000 plus Safai Sathis (waste pickers)
Demonstrate a working model of Swachhta Kendras, blending social and technical approaches with strong governance mechanisms
Institutionalize collaboration between citizens, communities, central and state pollution boards, urban and environment departments & related stakeholders to find sustainable solutions

The project has four key components:

- **Socio-technical model** for packaging plastic waste management developed, supported and implemented
- **Pilot Material Recovery Centers** (Swachhta Kendras) for improved locally managed economic models
- **Institutionalize Swachhta Kendras** within governance framework structures and improved socio-economic conditions of waste pickers
- **Develop technology-supported Knowledge Management**: Project traceability, accountability and digital governance along the waste value chain. Mobile Apps would be created and used across stakeholders such as waste collectors, waste pickers, recyclers, ULBs, citizens etc.

### Focus Area
The partnership approach will be implemented in 50 cities & towns in different states across India. We expect to scale up the model to other parts of the country through partners.

**Project Duration:** 2018 - 2024
Integrated Approach to Plastic Waste Management & Recycling

Project: Education, Awareness, Skills & Capacity Building

Component 1
- Baseline, model design & adjustment
- LCA, consumption data, regulations
- Information and support by State Government
- Quantity of plastic better managed
- Replication to National Level

Component 2
- Swachhata Kendra supported through technology for traceability and accountability
- Plastic waste prepared

Component 3
- Improved living, respectfulness & dignity of Safai Sathis
- Self-help groups, Jobs + livelihoods
- Government: Extended Producer Responsibility, National, State-level regulations and policies

Component 4
- Knowledge management, reporting and digital governance
- Info and retro feeding

Partners: Baseline, Pilots, Technical Services, Livelihoods

Safai Sathi and communities

Back-end recyclers

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First Reprint December, 2018
PLASTIC WASTE MANAGEMENT PROGRAMME: A PARTNERSHIP

Swachhta Kendras (Plastic Material Recovery Facility)

The Swachhta Kendras (SKs) are defined in the project as an integrated handling facility for recovery and recycling all types of plastic waste; which is collected with support from the City Municipal Corporation (CMC) or equivalent, bulk generators and by the Implementing Partners (IPs) in the project in every city. The low-grade, thin plastic litter, bags, multilayered plastics will also be collected through the waste pickers (Safai Sathis) in the allotted areas/wards in the city.

The thin plastic, including all types of multi layered and styrofoam will be accepted at the SKs.

As required the project has set up a pilot in every city with support from the CMC. Largely, 4-5 MTs of plastic waste is being segregated, and value is added every day at each of the SKs. The value addition is being done on the collected plastic waste on the parameter of thickness, which is then re-processed (e.g. shredding, bailing, etc.) as per the end use requirement by the back-end recyclers (BERs).

SETTING UP THE SKs

Implementing Partner (IP) who acts as an aggregator largely will ensure:

- Land area equivalent to 2500 sq meters allocated for establishing the SKs on lease basis from the CMC/Equivalent supported by the project.
- Low-cost platform, covered shed and the necessary room, sanitary needs to be created for the management of the operations at the Swachhta Kendra.
- Plant and machinery needs to be installed, supported from the CMC/equivalent.
- Training & capacity building for the IPs and the waste collectors working on it - in the use, upkeep and maintenance of machines. Project provides technical support.
- All legal sanctions for the implementation of the SKs procured from the State Pollution Control Board; CMCs and related authorities, supported by the project.
- Insurance for plant and machinery; persons working to be undertaken by the IP.
- Requirements met with the concerned departments to register SKs as an institutional body under the MSME departments of the state/centre.
- All operations to ensure economic viability of the Swachhta Kendra as a revenue model.
- An end to end digital waste traceability maintained through the technology support; trainings.
- Different value added operations to happen at the SKs on the segregated waste transported to the backend recyclers.
- Requisite contracts, agreements done with back-end recyclers, City Municipal Commissioners / Municipalities / State Pollution Control Boards etc. for transport, and pick of waste.

Process of Implementation

Consideration will be given to development of innovative methods for mechanical recycling/upcycling; including improved segregation into 07 different types of plastic wastes as per Solid Waste Management Rules 2016.

SKs would ensure better rates are paid by recyclers to the NGO/Institution and the waste pickers per/kg of plastic waste.

Plastic Waste Collection Area for the SK

Project piloted in a smaller area - ten wards in each city; each one ward - consists of 10,000 HHs, shops, market yards, institutions, religious, academic institutions, hospitals etc. Strategies for scaling up and replication will be developed from results from pilot to cover the city.

Operations at the SK

Plastic waste operations would be classified as:

- PET, PE, HDPE, LDPE, PVC, PS and PP. Waste to be mechanically bailed category-wise and supplied to Recyclers (produce pallets or others), cement kilns (co-generation) etc.
- Plastic waste less than 50 microns, multilayered shredding these in 2.4 mm size goes for road making, after mixing with bitumen, or making lumber blocks/RDF used in construction, recyclers or to the cement plants for co-processing, etc.
Framework for Plastic Waste Collection, Segregation & Recycling

Collection & Segregation of all types of Plastic Waste by Registered Waste-collectors

SWACHHTA KENDRA (Material Recovery Facility)

Collection of Plastic Waste by Non-registered Waste-pickers

Small Collection Centre

Small Collection Centre

Small Collection Centre

Shredded Plastic-Enterprises

Air Blower Machine

Conveyor Belt Shredding Machine

Bailing

Strapping

Transport

Weight Bridge

Weighing Machine

Back End Recyclers – Fibres

Back End Recyclers – Granules

Back End Recyclers – Co-processing

Back End Recyclers – Granules

Back End Recyclers – Road Construction

Back End Recyclers – Granules

Back End Recyclers – Refuse-Derived Fuel (RDF)

Back End Recyclers – Composite Board

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Cloud-based Digital Governance

The Plastic Waste Management Programme considers technology as an important cornerstone of the project covering traceability, accountability and digital governance. Apps would be used across stakeholders such as waste pickers, recyclers, ULBs and citizens so as to integrate everyone into one digital cloud. This would enable access of real-time data from field for tracking the integrated plastic waste supply chain right from point of collection to the end recycler and a digital marketplace.

What We Aim To Do

Involving the range of stakeholders in every city within the cloud-based digital platform as:

- **Citizens as the communities of practice** access to apps - to request services, provide feedback, make digital payments, etc.
- **Waste collectors and waste pickers (Safai Sathis)** get registered in the system and get their ID card suitably authenticated by the concerned Urban Local Body (ULB) and the Implementing partner (IP).
- **Waste flow** is tracked at every stage, including at the material recovery centers/transit centres as well as to identify the source of waste and the concerned waste collectors/waste pickers. This is enabled through the Unique QR codes, GPS based tracking and Role-based access control to ensure security and easy governance.
- **Multiple reports** generated for various stakeholders of the programme such as municipal bodies, local implementation partners and operations team. This would help for analytics and to plan suitable interventions. All stakeholders will be provided access to online information.
- **Feedback and course improvisations**, the system is flexible and responds to meet and address any improvisations, feedback and additions.
- **Project provides fair price market access to waste pickers/collectors**, through an app which shall be created to enable different waste pickers/collectors from recyclers, companies to discover products and services and transact with each other at the best price in every city.
- **Dashboards**, created locally at the city and project levels for governance. Same integrated into external smart city applications, or with connected ULBs through API and data interfaces.
- **Call Centre**, established centrally in the project for troubleshooting, feedback and any grievances or other issues and support the implementing partner in every city. Access will be given to the related stakeholders in the city.
- **Data Analytics and Security**, data regarding all issues on city basis will be analyzed on monthly basis and necessary decisions enacted.
- **IEC activities, trainings, workshops, design campaigns etc.** undertaken in the wards in a city will be captured digitally on municipal ward maps; accessibility (to see the actions) will be provided to the concerned stakeholders and impacts shall be assessed for each action over a period of time.
- **Social media interventions** used for citizen sensitization and engagement during the program.
Technology Applications to Build Traceability, Capacity Building along the Waste Value Chain

- **MIS of entire process accessible by Govt also**
- **Citizen App for Awareness & Incentivization**
- **Geofencing for Optimized route**
- **Recycled Products**
- **Collection Points**
- **Waste Banks**
- **QR code system for error-free scanning**
- **End Recycling**
- **Overall recycling & Impact report**
- **Logistics to Authorized recyclers**
- **Swachhta Kendra**
- **Facility App will be used for stock mgmt & material sales**
- **Segregation & Aggregation**
- **Traceability of plastic flow at every stage**

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*First Reprint December, 2018*
The Partnership Approach

The project aims to create links, synergies and experiences with a wide range of partners and agencies at the city, State and National level. It emphasizes on the approach which is represented in the framework in which the role of each partner agency/institution as envisaged is briefly defined. This is an ‘evolving process’ and over time, more partners will join and more activities will be added into the project.

WHAT WE AIM TO DO

The project engages and creates systems, procedures and processes with different partners.

**Primary Stakeholders** - Citizens, institutions within the value chain for plastic waste management; Waste Pickers (Safai Sathis) being the key stakeholders in the chain.

**National and State Governments** – Ministry of Housing and Urban Affairs, Ministry of Environment, Forest & Climate Change, Central and State Pollution Control Boards, State Governments and Urban Local bodies create synergies and support directly or indirectly in the project-related activities.

**Baseline Agencies (BAs)** - Execute in developing the baseline for each of the cities and collect the necessary data, on a range of services, sources, systems and policies both from the primary and secondary data addressing different types of plastic waste. Analytics strengthen the implementation of the project.

**Implementing Partners (IPs)** – NGOs, institutions, private companies, CBOs who will implement and operationalize waste collection, segregation, and recycling of all types of plastics.

1. Coordinating the operations of the plastic waste recycling with support from ULBs, RWAs, waste collectors and waste pickers, recyclers, state regulatory agencies, and other related organizations.

2. Establishing need based collection and value addition centres, de-centralized, locally managed self-sustainable Swachhta Kendras (SKs).

**Technical Partners (TPs)** – Develop suitable cloud-based digital technology platform to capture data, analytics, and implementation of the services in the project.

**Livelihood Partners (LPs)** – Support IPs in capacity building, strengthening entrepreneurs, micro enterprises with waste collectors / self-help groups (SHGs) and other related stakeholders in the value chain.

**Monitoring Agencies (MAs)** – Develop ongoing monitoring tools and mechanisms to ensure achievement of defined project outcomes and impacts. Will also support in overall monitoring of the project activities of all partners and at all levels, stages of implementation.

**Private Sector** – The project explores scalability and replication of the private sector and enables the partnerships to take forward the agenda of responsible plastic waste management.
Responsible Engagement with Stakeholders

GOVERNMENT

- Smart Cities
- Swachh Bharat Mission
- Atal Mission for Rejuvenation and Urban Transformation - AMRUT
- Deen Dayal Antyodaya Yojana - NULM
- Divisions related to waste and environment in MoEFCC
- Central & State Pollution Boards
- Municipal Corporations/ Municipalities/ Urban & Environment Departments
- State Governments

Partner Agencies

- Implementing Partners (IPs)
- Technical Partners (TPs)
- Baseline Agency (BA)
- Monitoring Agency (MA)
- Livelihood Partners (LPs)
- Corporates & Institutes

Brief Activities

- Coordination with Urban Local Bodies, RWAs, waste collectors, recyclers, etc.
- Establishment of Swachhta Kendras and make them self-sustainable
- Improving socio-economic condition of Safai Sathi
- Development and implementation of a cloud-based technology platform
- Prepare and update an online dashboard
- Create capacities on dashboard, call centre operation, content management for IEC
- Knowledge Management for the IPs
- Develop the baseline methodology
- Collection of primary and secondary data for each city
- Analysis of data and baseline report finalization
- Develop a system for overall monitoring of the project activities
- Progress report of project activities through different stakeholders
- Assess missing gaps and ascertain sustainable solutions
- Support IPs in the setting up of Micro Enterprises with waste collectors/SHGs
- Capacity building
- Support scaling up and replication of approach
- Creating sustainable business model
- Ensuring strategic links

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