



INDIA'S LEADING COMPANIES IN MANAGING WASTE



CII 3R AWARDS COMPENDIUM

CONTENTS

FOREWORD

1. ABOUT CII 3R AWARDS
2. CII 3R AWARD CATEGORIES
3. WINNERS OF CII 3R AWARDS 2020- INDIA'S LEADING COMPANIES MANAGING WASTE MOST EFFICIENTLY
4. OTHER PARTICIPANTS OF CII 3R AWARD 2020-INDIA's COMPANIES IN WASTE MANAGEMENT

FOREWORD



The CII 3R Awards aim at recognition of Industry and start-ups which have embraced best practices for managing waste generated in industry from their own activities; innovating, designing, developing products those will generate minimal waste at the user's end, and; managing municipal solid waste and other urban wastes such as plastic and e-wastes in Indian cities and towns.

The purpose of these awards is to encourage, recognize and reward best practices of industry in order to set a benchmark of excellence in waste management for large number of industries to thrive to adopt these best practices.

Different categories of industry viz large, small, medium and start-ups have been encouraged to participate in the competition and the entries were evaluated by experts of the appraisal committee and further members of eminent jury.

This current compendium briefly presents waste management process & best practices of leading 08 companies which are winners of the CII 3R Awards 2020. It also presents the waste management process & best practices of other 57 companies which have participated in the CII 3R Awards 2020. It is expected to be a reference document for industry to learn and understand best waste management practices and ecosystem that is embraced and practised by the leading companies in India.

It is an extremely important initiative by CII to encourage 3R (reduce, reuse and recycle) practices amongst the industry for managing the wastes and extracting values, thereby promoting principle of circular economy.

Anil Kakodkar (Dr.)

Chairman, Grand Jury, CII 3R Awards

Chairman, Rajiv Gandhi Science & Technology Commission

Former Chairman, Atomic Energy Commission

FOREWORD



Chandrajit Banerjee (CB) is the Director General of the Confederation of Indian Industry (CII). CII is India's apex industry organisation, proactively enhancing the competitiveness of Indian Industry.

CB has been with the CII for over 33 years and has served as its Director General since 2008. In this post, he is responsible for the overall operations of CII.

CB is a Member of a number of important Government Advisory Bodies at the National and State levels.

As DG of CII, he is responsible for leading and contributing to many policy level dialogues and discussions to enhance the competitiveness of India Inc and towards the development of India.

He holds / has held Trusteeship and Board Member posts in many institutions which includes Institute of Economic Growth (IEG); Global Innovation and Technology Alliance (GITA); Bharatiya Yuva Shakti Trust (BYST); Society of Indian Defence Manufacturers (SIDM); World Economic Forum (WEF) Global Agenda Council of India; Commonwealth Enterprise and Investment Council (CWEIC); Indian Institute of Management (IIM), etc. He is also a Member of the Managing Committee of SPORTSCOM and Governing Council Member of Healthcare Sector Skill Council (HSSC). CII Foundation and India@75 Foundation, which are promoted and supported by CII, are also two institutions where CB is a Board level member. CB is also a Director of Singapore India Partnership Foundation (SIPF). He is a Director on the Board at the "Invest India" which is set up by the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India.

He is also Secretary for many bilateral CEOs Forums constituted by the Government of India like Australia, France, Malaysia, Indonesia, Japan, Sweden, South Africa, etc.

Prior to his appointment as Director General, CB held several leadership positions in key areas including sectoral verticals of Manufacturing, Services, Agriculture and Life Sciences as well as the SME sector. He has also led CII's policy work relating to macroeconomic policy, financial services and corporate governance.

He was the first Executive Director of the National Foundation of Corporate Governance (NFCG), an organization set up by the Government of India and continues to be Member of its Board of Trustees and Governing Council.

CB has been honoured with the China-India Friendship Award by the Chinese Premier for his contributions towards the development of bilateral ties between India and China. CB was conferred with the decoration of "Knight Commander" by His Majesty the King of Spain in recognition of his meritorious achievements and exceptional contributions towards promoting relations between India and Spain.

Chandrajit Banerjee is a Post-Graduate (MS) in Economics with specialisation in Economics of Planning and Econometrics from the University of Calcutta. Earlier, he did his Graduation from St. Xavier's College (Calcutta) in Economics (Hons). He has also been honoured with Honorary Doctorate (D. Phil Honoris Causa).

Chandrajit Banerjee

Director General

Confederation of Indian Industry (CII)



ABOUT CII 3R AWARDS / CATEGORIES



ABOUT CII 3R AWARDS

Whole world is adopting newer, innovative, cost-effective approaches and solutions to address the growing menace of Waste. It is important for a country like India, where the population is very large and waste management practices are not yet fully adhered adopts innovative and scientific management of waste that is socially, environmentally and commercially sustainable.

Many innovations and solutions are available and to some extent practised in many parts of the country to manage Municipal Solid Waste (MSW). However, large scale implementation of solutions is yet to be seen.

Similarly, Indian industry have adopted and practised processes and solutions to encourage Reducing, Reducing and Recycling of waste generated in industrial activities or waste generated from their own activities. Most of the industry follows stipulated guidelines of waste management through sanitary landfills and other processes. However, there are industry primarily MSMEs are yet to fully adapt such practices.

Industry is also conscious about the fact of waste generated by the consumers/users while consuming/using their products. Industry is in constant process of designing their products those will increasingly use non-polluting materials and will generate minimum waste at the users end. However, Industry's efforts in designing their products including its packaging are still not adequate.

Therefore, it is important to capture and disseminate the best practices for others to follow and at the same time to recognise and reward the industry who have setup benchmarks in (1) managing waste generated in by industry from their own activities (2) designing, developing products those will generate minimal waste at the user's end, and (3) managing municipal solid waste and other urban waste in Indian cities and towns.

With this background, CII has launched 3R (Reduce-Reuse-Recycle) Awards 2020 to recognise and reward best practices of industry in order to set a benchmark of excellence in waste management for large number of industries to thrive to adopt these best practices. Around 64 companies across the country has participated in this Awards in different categories.



CII 3R AWARD CATEGORIES

- a. Excellence in 3R for Industry (Managing Own Waste)
- b. Excellence in designing, innovation, producing products yielding zero/minimum waste at user's end
- c. Excellence in managing Municipal Solid Waste and other urban wastes including plastics & e-waste



**WINNERS OF CII 3R AWARDS 2020 -
INDIA'S LEADING 08 COMPANIES
MANAGING WASTE EFFICIENTLY**

WINNERS OF CII 3R AWARDS 2020-INDIA'S LEADING 08 COMPANIES MANAGING WASTE EFFICIENTLY

1 st Winner of Excellence in Managing Municipal Solid Waste	Zigma Global Environ Solutions Pvt Ltd
2 nd Winner of Excellence in Managing Municipal Solid Waste	SAAHAS Zero Waste
1 st Winner of Excellence in Managing Plastics Waste	NEPRA Resource Management Pvt. Ltd
2 nd Winner of Excellence in Managing Plastics Waste	SARTHAK Samudayik Vikas Evam Jan Kalyan Sanstha
Winner of Excellence in Managing E-waste	Exigo Recycling
Winner of Excellence in Design, Innovation and Developing Zero Waste	Praj Industries
1 st Winner of Excellence in CII 3R for Industry (Managing Own Waste)	Tata Steel Limited
2 nd Winner of Excellence in CII 3R for Industry (Managing Own Waste)	Mahindra MSTC Recycling Pvt. Ltd.

1st Winner of Excellence in Managing Municipal Solid Waste



Zigma Global Environ first converts haphazardly spread landfill site into equal sized windrows and turned frequently along with spraying of bio-culture and de-odouriser. The bio-culture catalyzes the degradation of organics as a result of which the waste gets stabilized, odour is controlled, scavenging of birds and animals stops, the pathogenic activity is subdued, moisture levels are reduced, and further leachate generation is controlled. The conversion of windrows in a particular fashion ensured there is controlled methodology of releasing the methane that is trapped inside the dumps. As a result of this, the waste now becomes ready for segregation and processing.

Afterward, the state-of-the-art segregation system consisting of trommel screens, combustible separators, magnetic separators, tornado separators, flip flow screens are used to separate the stabilized waste into combustible fraction, fine soil, coarse soil, stones and recyclables flawlessly. The machines are so customized that all aggregates that are generated could be either recycled, reused or re-purposed.

Finally, the aggregates that are generated are disposed responsibly as per methodology prescribed in the SWM Rules 2016, CPCB Guidelines for disposal of legacy waste 2019 with complete transparency and traceability to ensure there are zero rejects.

2nd Winner of Excellence in Managing Municipal Solid Waste



Under its “Zero Waste Program”, Saahas Zero Waste (SZW) works with large/ bulk waste generators (i.e. entities generating more than 100 kgs of waste per day) such as technology parks, residential apartments, educational institutions, malls etc. It implements strict segregation at source and manages biodegradable waste through onsite composting which is handled by its field staff. To the extent there is no space available at the generator’s premises, the biodegradable waste sent for biomethanation at an authorised facility. The non-biodegradable (dry) waste is transported to its materials recovery facility (MRF) for aggregation and further sorting. SZW has set up a first of its kind MRF in Bangalore, which has a capacity to handle 16 MT of non-biodegradable (dry) waste every day. The non-biodegradable (dry) waste is collected from bulk waste generators and smaller ULBs around Bengaluru such as Jigani and Bommasandra and aggregated at the MRF. Thereafter, this non-biodegradable (dry) is further sorted to more than 20 categories on a conveyor belt system, baled and sent to appropriate recycling facilities and cement kilns for co-processing. These practices ensure that minimal amounts of waste are disposed in landfills and maximum resources are recovered from waste.

1st Winner of Excellence in Managing Plastics Waste



NEPRA

NEPRA Resource Management Pvt. Ltd (NRMPL) carries out city-level waste management service under its initiative “Lets Recycle” and also functions as a Producer Responsibility Organisation (PRO), facilitating Extended Producers Responsibility (EPR).

NEPRA has its Material Recovery Facility and operates in the city of Ahmedabad, Indore, Pune, Jamnagar and Vapi. Its facilities in Mumbai and Bhopal are in pipeline. The operations can be broadly classified into- Collection, Segregation, Processing, and Recycling & other sustainable-end disposal. Different collection models have been implemented for each city. The dry waste is collected from various waste generators from across the city such as Residential Complexes, Commercial Establishments, Industries, Waste Pickers, etc. The waste is then brought to the Material Recovery Facility where it is segregated into different types based on the material and specification using air sorter, robotic sorting, trommel, magnetic separators, ballistic separators and manual specialisation. Post the segregation, the recyclable waste is processed, converted into marketable products and sent for recycling while the non-recyclable waste is sent to cement factories or waste to energy plants to be used as Refuse Derived Fuel. The entire operations outlined are such that makes NEPRA a Zero Waste to Landfill Company.

NRMPL has always focused on using state of art technology at all stages, as seen even in the segregation and sorting stage. A unique feature of it is that from collection to end-disposal, the operations are monitored the help of an ERP system. The ERP system is equipped with GPS, helping easy collection. The facial recognition feature has helped register and map waste-pickers who provide waste to the company on a daily basis in return of a fair payment transacted on the spot based on the weight of the waste. The ERP system has also enabled to keep records and data of all transactions, from collection to the material being sold to recyclers or sent for co-processing to cement plants. This feature enables to bring in transparency among all stakeholders.

2nd Winner of Excellence in Managing Plastics Waste



SARTHAK Samudayik Vikas Evam Jan Kalyan Sanstha has a team of Rag-pickers we refer as Sarthak Karmi. These teams are assigned to our collection centres. The Sarthak Karmis, whose welfare is our primary objective and our operations are designed to provide sustainable employment to the most under-privileged sections by imparting plastic segregation skill to them and empowering them to manage their assigned task. Unlike commercial recyclers whose rag pickers only pick the recyclable plastics, our Sarthak Karmis pick all sorts of plastics. Thus their yield, and therefore earnings are higher. The collected plastics are brought to our centres in small trucks, weighed, cleaned in the blower machine and readied for further processes.

The next step is segregation of these collected plastics into SUPs, MLP and recyclable plastics, which are further segregated according to its grade (i.e. PP, LDPE, HDPE, acrylic etc.). The recyclable plastics are then separately heated and shaped into lumps or extruded for various products, while the MLP is stored separately and sent to cement kilns to be used as alternate fuel and the SUP component is stored and sent to road construction contractors for roads.

Winner of Excellence in Managing E-Waste



Exigo Recycling is registered as a Recycler with Haryana State Pollution Control Board for recycling of all the e-waste and with Central Pollution Control Board as a Producer Responsibility Organisation (PRO) fulfilling Extended Producer Responsibility (EPR) requirements of Producers. The collected e-waste by Exigo is segregated and dismantled. Further the plastics, PCBs, Li-ion Batteries, PUF from refrigerators, ferrous metals, non-ferrous metals and glass is channelized for next process. Plastics are further sorted by colour and type to prevent contamination. Majority of it is pelletised in-house. The hard plastic/non-recyclable plastic is channelized to downstream vendors for further treatment. PCBs are graded as low, medium and high grade. Further they are depopulated through in-house designed and developed, cost-effective de-soldering machine and the blank boards are processed for extraction of copper and other metals including Precious metals, depending upon the grade of PCB. The components are crushed separately to extract Precious Group Metals (PGM) and other metals. As of now in India Precious Metal Containing PCBs are exported to other countries for processing or informal processes are used to extract these precious metals in India which also results in loss of PGM, environmental pollution and severe health hazards.

Li-ion batteries are discharged by dipping in salt-water solution to minimize fire hazards. Recycling of Li-ion batteries an innovative and novel process - physical beneficiation, leaching, solvent extraction, precipitation and electro-winning processes to extract end product Lithium, Cobalt, Nickle and Manganese -metals or salts. Poly Urethane rigid Foam (PUF), found in refrigerators is landfilled by default. Organized recycling solutions not available in India since decades. Our PUF recycling solution involves degassing, size reduction through shredders and adding certain additives to make cylindrical briquettes sent to cement kilns, to be used as fuel. The calorific value, residual value of the briquette is coal. The toner cartridges from printers are crushed through a low-cost, customised automatic process which further segregates it into plastic and toner ink. The plastic is processed, extruded into pellets. Minimal non-recyclable waste generated during the recycling process, if any, is channelized to a government authorised TSDF. It includes waste oil, toner ink, etc.

Winner of Excellence in Design, Innovation and Developing Zero Waste



Spent wash is residual liquid waste generated during bioethanol production. To minimize the pollution, currently spent wash is concentrated in multiple effect evaporator from 15 % to 60 %w/w. Due to increase in concentration to 60 %, it has been observed that the cleaning frequency in last effect evaporator is once in three days; due to which most of distilleries are operating at around 52-55 % concentration to increase the cleaning frequency to once in seven days.

Cleaning is required due to scaling- due to solid precipitation & increase in viscosity of concentrated spent wash. Reduction in the spent wash concentration leads to increase in supplementary fuel consumption (coal/bagasse) & higher emission of CO₂ from the boiler.

The reason to concentrate spent wash up to 55 %, because above 55 % there is sudden increase in viscosity and solid precipitation which is extremely difficult to handle.

Apart from scaling issue conventional incineration boiler face problems like Lower thermal efficiency, higher supplementary fuel consumption, high operational cost, ash disposal issue, health and environmental hazard due to particulate matter in fuel handling area.

To overcome aforementioned issues, Praj has developed innovative technology named as “Process Optimized Flexible Integrated Incineration Technology (PROFIIT). PROFIIT which not only reduces GHG emission but helps distilleries to create sustainable processes & make their business more profitable. The objective for the development of this technology to minimize the use of

supplementary fossil fuel like coal or sugar factory outlet stream like bagasse so that this can be used in other applications as a fuel to generate the energy. Reduction in supplementary fuel increases the sustainability and viability.

PRAJ had developed special evaporators for concentration of spent wash up to 70-72% w/w total solids. Specially designed evaporators are self-cleaning which ensures continuous operation of plant. This reduction in moisture content increases the boiler efficiency which intern substantial reduction in the supplementary fuel for the Boiler. Reduction in supplementary fuel leads to reduction in the CO₂ emission to atmosphere.

The technology helps in 25-30% Reduction of energy requirement for production of ethanol; 15-18% Reduction of Effluent quantity by lowering moisture content; 20% Reduction of cooling tower makeup water and DM water; 8 -10% Increase in Boiler Efficiency for steam generation; 50-60% reduction in Supplementary Fuel; and Reduction in CO₂ emission.

1st Winner of Excellence in CII 3R for Industry (Managing Own Waste)

TATA STEEL

#WeAlsoMakeTomorrow

Tata Steel has been pioneering value creation from the industrial by-products in its quest to contribute to a sustainable ecosystem in Iron and Steel industry. The integrated steel manufacturing processes generate industrial wastes or by-products across the value chain – during raw material beneficiation, in the Iron and Steel making process and in the making of final prime products at rolling mills. These by-products are managed through a dedicated profit centre called the Industrial By-Product Management Division (IBMD) – which operates with a ‘Zero Waste’ goal, with clearly defined environment and sustainability policies of the organization, and on the 3R principles of circular economy.

Slags produced during Iron and Steel making constitute ~85% (~5 MTPA) of total solid wastes. Blast furnace slag is used as substitute for clinker in cement-making, Steelmaking slag is processed through innovative technologies such as accelerated weathering to produce manufactured aggregates for use in road construction. By launching the first two branded slag products in India – Tata Aggreto and Tata Nirman, Tata Steel has pioneered the use of value-added steel slags. For other type of metallic waste such as scrap, material processing is carried out in facilities including lancing, bailing, shredding etc. Tata Steel realizes that solid waste management is not just a need for today but also will help in making a better tomorrow by reducing burden on natural resources and environment. With the help of technological interventions and continuous research, the organization is developing new uses of by-products in applications such as light construction, agriculture and fertilizers to minimize the by-product disposal as landfills while creating value from waste. Tata Steel has partnerships with premier institutions in the country for research on by-products. It has O&M contracts with renowned third parties in material and waste handling with a clear emphasis on safety of employees involved in operations. Tata Steel has achieved 100% Solid waste utilization in FY20 and aims to sustain this feat.

2nd Winner of Excellence in CII 3R for Industry (Managing Own Waste)



Mahindra group has always been committed to Sustainable growth as the way forward. Sensing that there is huge opportunity in being an organized player in recycling ELV space, Mahindra Accelo and MSTC (a Government of India enterprise under administrative control of Ministry of Steel) have set up Mahindra MSTC Recycling Pvt. Ltd. (MMRPL) to recycle these 'End-of-life' vehicles in a clean and environment friendly way. The company has been set up with twin objectives of 'making the roads of India cleaner and safer' and 'Reducing India's reliance on scrap steel imports'. Under the brand name 'CERO' which means zero in Spanish, the company has set up state-of-the-art vehicle recycling centres at Greater Noida, Chennai and Pune. Focus of the company is - strictly zero tolerance towards 'pollution while recycling the vehicles, untreated discharge and unsafe and unethical practices' - hence the name Cero. The automated plant has the capacity to recycle Trucks, Buses, Cars, Two / Three wheelers, Industrial scrap and Consumer durables. End of life vehicles are collected and then depolluted and dismantled taking complete care to follow environmental and legal norms.

Cero is an Authorized Recycler for Motor vehicles for NCR, certified by the Government of NCT of Delhi. Cero has also been approved by Uttar Pradesh Pollution Control Board (UPCB) and completely meets stringent guidelines set by CPCB for vehicle recycling.

Cero focuses on making the scrapping of old vehicles hassle-free for its customers. It handles the entire chain right from picking up the vehicle from Customers' home to towing it to the facility and recycling it. The customer gets certificate of destruction so that it is clear that the vehicle / engine is not being used illegally. All a customer has to do, is call Cero's toll-free number and register an inquiry. After that, the entire process is handled by the CERO team. Customers get fairly compensated for the salvage value of the vehicle. Customers can also donate their vehicle to CERO, which has tied-up with a Mahindra NGO dedicated to education of underprivileged girls. The NGO will provide owners 80G certificate for tax exemption. Cero facility follows Environmental compliances ISO 9001, ISO 14001, OHSAS 18001 and all international quality norms.



**OTHER PARTICIPANTS OF
CII 3R AWARD 2020 – INDIA’S COMPANIES IN
WASTE MANAGEMENT**

Excellence in Managing Municipal Solid Waste

1.	3R Management
2.	Blue Planet Yasasu Solutions Private Limited
3.	Eastern Organic Fertilizer Private Limited
4.	Ecogreen Energy Private Limited (EEPL)
5.	Geocycle
6.	Green Worms
7.	IL&FS Environmental Infrastructure & Services Ltd. (IEISL)
8.	Indian Oil Corporation Limited
9.	JBM Environment
10.	JITF Urban Infrastructure Limited (JUIL)
11.	Mahindra Waste to Energy Solutions Limited (MWTESL)
12.	Mailhem Ikos
13.	Nashik Waste Management Pvt. Ltd. (NWMPL)
14.	Organic Recycling Systems Pvt. Ltd
15.	Ramky Enviro Engineers Ltd. (REEL)
16.	SAAHAS Zero Waste
17.	Zigma Global Environ Solutions Pvt Ltd

Plastics Waste Management

1.	Apollo Tyres
2.	Dabur India Ltd. (DIL)
3.	Dalmia Cement Bharat Ltd, RGP
4.	Geocycle
5.	Hindustan Coca-Cola Beverages
6.	Indian Pollution Control Association (IPCA)
7.	ITC
8.	NEPRA
9.	Perfetti Van Melle
10.	Ramky Reclamation & Recycling Ltd. (RRRL)
11.	Recykal
12.	SARTHAK Samudayik Vikas Evam Jan Kalyan Sanstha
13.	Shayna Ecounified India Private Limited
14.	Shreerenga Polymer
15.	The Shakti Plastic Industries
16.	Uflex Limited

Excellence in Managing E-Waste

1.	Exigo
2.	GreenWaves Environmental Solutions
3.	Ramky Reclamation & Recycling Ltd. (RRRL)
4.	SARTHAK Samudayik Vikas Evam Jan Kalyan Sanstha

Excellence in 3R for Industry (Managing Own Waste)

1.	Amway India
2.	Beepee Coatings Pvt. Ltd.
3.	Bharat Fritz Werner Ltd.
4.	Dabar India Ltd.
5.	Infosys Limited
6.	JK Tyre – Chennai
7.	JK Tyre & Industries Ltd (Kankroli Tyre Plant)
8.	JSW Steel
9.	Knack Packaging Pvt. Ltd.
10.	Mahindra & Mahindra
11.	Mahindra MSTC Recycling Pvt. Ltd.
12.	Malati Autocast Pvt. Ltd.
13.	Menon and Menon Ltd.
14.	NTPC Dadri
15.	Pashupati Polytex
16.	RMZ Corp's
17.	Shree Cement Ltd.
18.	Steel Authority of India Limited
19.	Tata Consultancy Services
20.	Tata Motors Ltd., Jamshedpur
21.	Tata Steel
22.	Tenneco Powertrain
23.	Thirumalai Chemicals Limited
24.	Toyota Kirloskar

Excellence in Design, Innovation and Developing Zero Waste

1.	ELICO Ltd.
2.	Green Mitti
3.	Praj Industries
4.	The Shakti Plastic Industries

1. Excellence in Managing Municipal Solid Waste

3R Management

3R Management contracts with Urban Local Bodies, Municipalities for long term for taking care of their Municipal Solid Waste from end to end. It deploys an integrated model of solid waste management which includes (a) primary door to door collection of waste from all waste generators, (b) transporting it to secondary waste transfer station meant for material recovery, compaction and transporting further to (c) central waste processing plant where various processes are carried out from segregation of recyclables, biodegradables and inert, conversion of biodegradable waste into compost or biogas and processing of refused derived fuel, (d) final disposal of inert onto sanitary landfill.

In order to do integrated waste management, 3R Management deploys infrastructure including collection vehicles, processing plant and sanitary landfill.

Excellence in Managing Municipal Solid Waste

Blue Planet Yasasu Solutions Private Limited

Blue Planet Yasasu Solutions Private Limited is one of the pioneer companies in developing anaerobic digestion technology in India for MSW and with financial support from Singapore based Blue Planet Environmental Solutions pte.in further enhancing its technologies and offerings.

The company has 3 plants to process 10 TPD mixed MSW were installed at Bhawaniya Pokhri, Pahadiya mandi at Varanasi, one plant of capacity 1 TPD at Palli Hill (TPD) and 5 TPD at Delhi

The incoming MSW in Yasasu plant is segregated manually / mechanically depending on client's requirement. Further the organic waste shall be fed to the Pulverizer / Homogenizer where the material shall get homogenized and shredded. The waste is further fed into the AD (Anaerobic Digestion) unit.

The continuous high solid anaerobic digestion unit (Prefabricated containerized) is provided with recirculation. During the anaerobic digestion process, the material passes through the AD unit. The digested residue is extracted from the AD unit from the bottom. The biogas generated is collected at the top. The bio-gas generated through Biomethanation process will be passed through H₂S scrubber. The biogas can be used as fuel in canteens / kitchen or it can be converted into electricity through biogas engine. The residue left after the anaerobic digestion will be dewatered and dried. The dried solid can further be used as organic compost.

Excellence in Managing Municipal Solid Waste

Eastern Organic Fertilizer Private Limited

Eastern Organic Fertilizer Private Limited converts Kolkata's municipal waste into organic fertilizers. The company follows Aerobic Composting as per MSW Rules 2016 & CPCB Guidelines.

The Incoming Fresh Waste (heterogeneous city waste consisting of food, horticulture, household, paper, plastic, rags, metal, glass waste etc) is stacked over the compost pad, a non-permeable concrete platform, in rows called Windrows, ideal stack height being 2-3 metres for better mechanical turning. The waste is first dried under the sun for about 3 weeks with optimized cross-section surface area to volume ratio.

Next the waste is sprayed with bio-inoculums to accelerate the decomposition process. Bacteria digest organic Carbon and Nitrogen present in biodegradable waste in the form of macromolecules in oxygen under controlled conditions of air, water and temperatures (55 – 65 Degrees). This takes upto 2 weeks.

Active composting generates considerable heat which releases Water Vapour. This results in 40% weight reduction and the semi-finished product. This stabilized fermented waste then undergoes screening on line Rotary Sieves of 40 and 20 mm respectively. On further 4mm screening, we get our finished product, rich in bio-culture and chemical-free, a boon for the soil. The Rejects, plastics and inert are used as RDF or for landfills. Around 1.5 lakhs tonnes of waste is processed and 35,000 tonnes of organic fertilizer is manufactured annually in Kolkata at Dhapa in association with the KMC'.

Excellence in Managing Municipal Solid Waste

Ecogreen Energy Private Limited (EEPL)

EEPL is involved in collection, transportation, processing and disposal of municipal solid waste (MSW) in Gurugram, Faridabad, Lucknow and Gwalior cities.

MSW is collected from residential and commercial areas through door to door collection system on daily basis as per the designed route plan. The compartmentalized primary collection vehicles i.e. auto tippers, tricycles and boleros are used for collection of MSW in wet, dry and domestic hazardous waste fractions. The MSW collected through primary collection is transported to intermediate points equipped with material recovery facilities (MRFs) and Fixed Compactor Transfer Stations (FCTSs).

The segregated fractions of MSW received at intermediate points are processed through MRFs for resource management by implementing reuse and recycling mechanism and also to generate revenue from recyclables. The remaining segregated fractions of waste are compacted through FCTS separately and transported to processing facility with the help of hook loaders. Whereas the wet and dry waste fractions stored at market areas, bulk waste generators and street level community bins are collected separately and transported to processing facility using compactors. The collection and transportation services of all vehicles are monitored online through GPS enabled vehicle tracking system.

The wet waste received at processing facility is processed through windrow composting to produce compost; and the combustible dry waste will be utilized in the proposed Waste to Energy plant for power generation. The process rejects, bottom ash and fly ash will be utilized in various construction activities such as roads, brick making, and the unwanted inert material is disposed in sanitary landfill. Leachate generated from the processing facility is treated using Disc Tube Reverse Osmosis units and utilized for green belt development based on Zero Liquid Discharge model.

Excellence in Managing Municipal Solid Waste

Geocycle

Geocycle, a global waste management company of Lafarge-Holcim Group, represented by ACC Ltd. & Ambuja Cements Ltd. Geocycle has established 14 Geocycle state-of-the-art facilities comprising of 7 integrated pre & co-processing and 7 co-processing facilities to manage various waste streams across India.

For Municipal Solid Waste (MSW) Management, Geocycle has built a strong network for managing MSW across India by nurturing long-term relations with our strategic partners. The collected MSW is safely co-processed into our cement plants ensuring zero waste to landfills. It helps in solving societal waste challenges responsibly and in an environmentally sustainable manner. In doing so, we transform waste, create livelihood opportunities and offer gainful solutions for waste management, all of which ensures a cleaner environment.

Excellence in Managing Municipal Solid Waste

Green Worms

Green Worms was started in 2014, working in the area of waste-management. As a Waste Management company, our journey begins and ends with waste. We manage the Municipal Solid Waste and Specialised in Dry Waste Management, 85% of it being non-biodegradable, non-recyclable waste from the Municipalities & Grama Panchayats. Working mostly in the semi urban and rural areas, the main sources of these wastes include households, commercial establishments, industries.

The story of waste processing at Green Worms starts with a primary segregation i.e. segregation at source done into five main categories: plastics, papers, glass, electronics, combustibles and sanitary wastes. This segregation is ensured by implementing awareness campaigns.

The collection of these wastes from its source is carried out either by trained women SGHs, in case of households or by appointed vehicles, in case of commercial establishments and bulk waste generators. When it comes to the SHGs, Green Worms also purchase the segregated wastes from them for its market price.

The collected wastes are then transported to the Green Worms MRFs where a secondary segregation follows. At this stage, the segregation is carried out manually by adhering to a segregation manual prepared by Green Worms. It sorts the waste into more than 15-20 grades on the basis of composition and source. Each MRF segregates around 2-6 tons of waste in a day.

The process ends the final disposal or recycling of the waste. As responsible disposal is our top priority, we have made multi-dimensional partnerships with authorized recyclers, Co-processing companies, pyrolysis plants, hazardous landfilling facilities, common biomedical facilities, animal feeds and biogas plants. All of our processes are carried out complying with the laws and with the authorization from the State Pollution Control Board.

Excellence in Managing Municipal Solid Waste

IL&FS Environmental Infrastructure & Services Ltd. (IEISL)

IEISL is an integrated waste management organization engaged in managing over 8,000 Ton per Day (TPD) ton waste PAN India out of which 7,000 TPD operations are in the National Capital itself.

The Collection and Transportation (C&T) concessions collect waste from the doors and streets of the respective licensed areas through its collection vehicles like rickshaws and auto tippers. The recyclables from MSW are extracted by the rag pickers at the secondary collection points. The waste is then transported to the transfer stations where it is compacted in the big compactor trucks and transported to the composting facilities.

At IEISL's Waste to Composting facilities, the processing of MSW results in production of Organic Compost, a very useful product for agriculture that enriches crops with organic carbon and micronutrients. The composting process involves passing the waste through trommels with different sieve sizes. The plastic waste is separated as combustibles which is used by the cement and power industry.

The MSW reaching IEISL Waste to Energy (WTE) facility is pre-processed resulting in the separation of combustibles which is scientifically combusted in the boiler. The WTE has a EURO Norm Compliant Flue Gas Treatment System (FGTS) by Keppel Seghers, Belgium which is the most advanced FGTS technology for Emission control.

At IEISL's pioneering Construction and Demolition (C&D) waste processing facility, the C&D waste is sized and washed in an advanced wet line processing system. This way IEISL facilities convert construction debris into useful recycled products such as manufactured sand (m-sand), aggregates of various sizes, ready-mix concrete, kerb stones, hollow bricks, and pavement blocks that are used by the Construction and Landscaping Industries.

IEISL projects provide social and financial inclusion to the waste pickers around its projects. At the Ghazipur Waste to Energy project, the women waste pickers have been reskilled as artisans and now they are earning a dignified livelihood by selling recycled handicraft products. The waste picker kids have been provided with a schooling and crèche facility.

Excellence in Managing Municipal Solid Waste

Indian Oil Corporation Limited

Waste sources like Municipal Solid Waste (MSW), sewage treatment plant waste, etc. produce Biogas through the process of anaerobic decomposition. This Biogas can be purified to remove hydrogen sulphide (H₂S), carbon dioxide (CO₂), water vapor and compressed to produce Compressed Bio Gas (CBG).

'SATAT' (Sustainable Alternative Towards Affordable Transportation) scheme for CBG was launched on 1.10.2018. The scheme envisages to target production of 15 MMT of CBG from 5000 plants by 2023. An Expression of Interest (EOI) was released by IndianOil (search CBG in <https://iocletenders.nic.in/nicgep/app>) for production and supply of CBG from suppliers for marketing to automotive and industrial customers. IndianOil has initiated marketing of CBG from 9 retail outlets located at Pune & Kolhapur, Maharashtra; Namakkal, Tamil Nadu; Surendranagar & Anand in Gujarat.

The CBG Plant at Pune, Maharashtra produces CBG from MSW including food waste from hotels, canteens, residences, etc. The CBG is being sold by IndianOil under the brand name of "IndiGreen" to automotive customers. This is the first time an alternative of Natural Gas was being marketed by an Oil & Gas Company and was a pioneering step by IndianOil in starting CBG Sales under the SATAT scheme of Government of India. The feedback received from customers using CBG for their vehicles is encouraging. Improvement in mileage and ease of driving are the two common factors for which customers have expressed their satisfaction during various interactions. Several other MSW based CBG Plants are also planned to be set up under the SATAT scheme and few are under construction.

Excellence in Managing Municipal Solid Waste

JBM Environment

JBM Enviro, has been executing an Integrated Solid Waste Management (ISWM) Project in Sonapat Cluster, Haryana comprising of the cities of Sonapat, Panipat, Samalkha and Gannaur

JBM Enviro deploys over 400 vehicles for C&T in the 4 Cities of Sonapat Cluster and over 700 manpower. JBM deploy vehicles as per the requirements of the geographical area to be served within the Cities. In case of congested areas, JBM Enviro deploy manual vehicles and in other areas, MSW is collected and transported through Automated vehicles. The workers are dressed as per rules, are courteous and operate the C&T works in prescribed manner strictly. The Vehicles that perform primary collection of MSW are typically TATA ACE (capacity 1.3 tons) and such vehicles operate door-to-door from households and / or market areas till Secondary Points ('SCP') / Transfer Stations ('TS'). All the vehicles deployed by JBM Enviro in Sonapat Cluster has partitions, follow prescribed route-maps and operate strictly at pre-informed timings. The vehicles carrying MSW are always covered when it is en-route.

The wet / organic waste is collected and transported separately to the composting plants – Vermi compost and/or Mechanical compost. Typically, 5 to 10 tons of MSW is organic which is segregated and taken to composting plants of the Sonapat Municipal Corporation.

At the SCPs / TS, the segregation of waste is carried out with help of manual labour, JCBs and other equipment, the valuable materials are recovered and waste is processed / dumped further. In the process of sorting, all the valuables discovered are extracted and sent for re-processing. The Material Recovery Facilities (MRF) are operated and maintained by JBM Enviro.

From the SCPs / TS, secondary vehicles (compactors with capacity up to 14 tons) are deployed. Post segregation at the SCPs / TS, the remaining MSW is taken to the dumping site in each of the 4 cities and disposed off there. At the dumping sites, JBM Enviro deploy dozer and other equipment to keep the MSW in check and spread medicines regularly at the dumping sites.

Excellence in Managing Municipal Solid Waste

JITF Urban Infrastructure Limited (JUIL)

JITF Urban Infrastructure Limited (JUIL) is a pioneer company in India involved in the business of scientific processing and disposal of Municipal Solid Waste (MSW) and producing useful by-products such as green electricity, compost, recyclables etc. since 2012. Waste is transported by covered trucks and compactors to the project site where it is dumped into the covered pit. MSW is stored for a period of 5 to 8 days inside the covered pit where bio-inoculum will be sprayed over the waste. Due to spraying of bio-inoculum, the temperature of waste will reach about 50 to 60 Deg C and MSW will get dried up and leachate will get separated out from MSW. The dried MSW will be taken to Material Recovery Facility (MRF) where it will be segregated into four fractions- Processed MSW, Recyclables, Compost and Inert. Compost and Recyclables are sold in the open market while inerts are sent to the landfill. Processed MSW produced is fed inside the feed hoppers of boilers using grab cranes. Processed MSW is fed onto a reverse acting reciprocating grate where it gets fully combusted in a period of about 60 to 90 minutes and ash produced will be quenched and finally taken out of the grate using ash extractors. Boilers use reciprocating grate technology, which is a successful technology in MSW combustion and has been adopted in more than 500 facilities operating all around the globe. Steam produced in the boilers is taken to a TG set where the enthalpy of steam is converted into electricity using a turbine and generator. Electricity produced is stepped up at 33 kV and is fed into the grid. The plant has installed world class pollution control equipment comprising of a semi-dry scrubber and bag filter which captures all harmful pollutants such as NO_x, SO_x, HCl, HF, particulate emissions, heavy metals and dioxins and furans etc. Our plant follows all norms and regulations as per SWM Rules, 2016 and pollution control norms of CPCB and SPCB.

Excellence in Managing Municipal Solid Waste

Ramky Enviro Engineers Ltd. (REEL)

Ramky Enviro Engineers Ltd. (REEL) and its subsidiary companies across India have more than 18 sites across India that handle municipal solid wastes in a comprehensive manner. These sites have tie-ups with urban local bodies such as municipal corporations and employ dedicated vehicle fleet and trained personnel for door-to-door collection and transportation of municipal solid wastes. We also have more than 65 recycling facilities spread across India, which have capacity for sorting, segregation, and baling of collected wastes, which is followed by scientific methods of processing and disposal.

Organic wastes, which comprise the largest fraction of municipal solid waste are separated by size using trammels and processed into organic compost through our composting units. Recyclable materials such as plastic fractions (HDPE, LDPE, PP, etc.) are segregated from municipal solid waste and converted into recycled plastic granules or pellets, and non-recyclable wastes are sent for energy recovery. We have 43.8 MW capacity of Waste-to-Energy (WTE) plants which can handle 1200 to 1600 tons of feed per day of refuse-derived fuel and nonrecyclable plastic wastes. Residual ash from the WTE plants is regularly tested for toxics before being converted into bricks or sent to our sanitary landfill facility for disposal.

Excellence in Managing Municipal Solid Waste

Mahindra Waste to Energy Solutions Limited (MWTESL)

Mahindra Waste To Energy Solutions Limited (MWTESL) is primarily into converting Municipal wet waste to Bio-CNG and organic manure using home grown Anaerobic Digestion Technology. The Bio –CNG from the digestors are purified and compressed and stored in cylinder cascades using latest equipment with all safety precautions in place. The purified Bio CNG is being used for automobiles and in cooking applications successfully.

MWTESL has amply demonstrated in Indore, use of Bio – CNG in automobiles by enabling the city to run up to 10 buses every day. The uniform flame with nil losses is helping Bio - CNG to emerge as a good and green alternative for LPG in cooking applications. The organic manure from MWTESL plants meeting all necessary specifications helps in improving soil fertility and thereby increasing yield and is a boon to the farmers.

MWTESL ensures Zero discharge from all of its current 7 plants across India by diligently following circular economy principles. The technology used is scalable and MWTESL plans to expand its operations with maximum possible positive impact on society and sustainability.

Excellence in Managing Municipal Solid Waste

Mailhem Ikos

In 2018, a Bio-CNG Generation plant based on a waste intake capacity of 15 tons per day (TPD) of Segregated Organic Fraction of MSW was set-up by Mailhem. The said waste substrate is collected & brought to the site by Indore Smart City Development Limited (ISCDL). The inerts / rejects from the preliminary manual screening, if any, is taken back by ISCDL to other waste treatment facility for further treatment before disposal.

Over 180 tons of Bio-CNG/ CBG and around 450 tons of high-quality by-product in the form of digestate bio-manure is produced every year. The processes undertaken at the site are – Weighing, Record keeping, Primary manual-screening, Waste Conveying, Shredding to Slurry, Feeding to M-UASB digesters, Raw Biogas Storage, Biogas Purification, Storage into BioCNG Cascades, Fuelling station for regularly fuelling of Atal Indore Corporation buses.

Excellence in Managing Municipal Solid Waste

Nashik Waste Management Pvt. Ltd. (NWMPL)

Nashik's 500 TPD Capacity MSW Processing & Disposal plant successfully commenced its operations on January 2017 on Design, Finance, Build, Operate and Transfer (DBFOT) basis for a concession period of 30 years by Nashik Waste Management Pvt. Ltd. (NWMPL).

At the project site, nearly 1.9 lakh tons of legacy waste was firstly cleared through Bio-mining/ Bio-remediation. Soil-enricher obtained was used for capping of process-rejects and also to grow vegetation on capping; while combustible fraction was processed as Refuse- Derived Fuel (RDF). Bio-mining cleared and recovered ~8 acres of blocked land for future development.

Simultaneously, 500 tonnes per day (TPD) plant was re-engineered by NWMPL and started Fresh MSW Processing. It produces ~ 50 tons per day of compost and sold in the market. It has ~ 150 tons of RDF processing capacity per day.

Excellence in Managing Municipal Solid Waste

Organic Recycling Systems Pvt. Ltd

Organic Recycling manages municipal solid waste at Solapur facility. The anaerobic digestion of municipal solid waste is a process that has become a promising technology in waste management throughout the world. Biogas production from organic fraction of municipal solid waste (MSW) was investigated under thermophilic dry anaerobic digestion operation (DRYADTM process). Our technology has been validated by satisfactory results obtained from pilot plant running over more than one year and also results from existing 400 TPD MSW processing plant at Solapur Bio-energy System Pvt. Ltd, Solapur.

Our objective is to employ DRYADTM process as a sustainable technology for minimizing the organic fraction of municipal solid waste going to landfill, to provide the renewable source of energy as well as to reduce the potential greenhouse gases emission from landfill. The process established for 400 TPD capacity plant at Solapur Bio-energy System Pvt. Ltd, Solapur. The operation/process involved is Separation, Sizing, Homogenizing and Mixing to right consistency and temperature for feeding the DRYADTM digester.

Closed sheds and Digesters will ensure smooth operations all year round including monsoons. Process is not sensitive towards the moisture content in the raw waste as compare to thermal technologies. Bio gas generation per ton of MSW is on higher side which results in higher electricity / CBG generation. Captive consumption of electricity is low as compared to thermal technologies. Quality of compost is better as all inert are being removed during pre-treatment & pathogens free. Complete system is designed on basis of Indian waste scenario and indigenously developed.

Recyclable material mainly combustible material can be utilized for RDF production. The electricity generated from the 400 TPD capacity plant at Solapur plant is being wheeled to the grid for off take by DISCOM since July 2013 onward. The plant has been showcased as a case study for a model project under the "Swachh Bharat Abhiyaan" by MoHUA, Gol and has also been highlighted in Solid Waste Manual 2016 under best Solid Waste Management Practices. Our technology DRYADTM (Dry Anaerobic Digestion) has been validated by satisfactory results obtained from pilot plant running over more than one year and also results from existing 400 TPD MSW processing plant at Solapur.

Excellence in Managing Municipal Solid Waste

Ramky Enviro Engineers Ltd. (REEL)

Ramky Enviro Engineers Ltd. (REEL) and its subsidiary companies across India have more than 18 sites across India that handle municipal solid wastes in a comprehensive manner. These sites have tie-ups with urban local bodies such as municipal corporations and employ dedicated vehicle fleet and trained personnel for door-to-door collection and transportation of municipal solid wastes. We also have more than 65 recycling facilities spread across India, which have capacity for sorting, segregation, and baling of collected wastes, which is followed by scientific methods of processing and disposal.

Organic wastes, which comprise the largest fraction of municipal solid waste are separated by size using trammels and processed into organic compost through our composting units. Recyclable materials such as plastic fractions (HDPE, LDPE, PP, etc.) are segregated from municipal solid waste and converted into recycled plastic granules or pellets, and non-recyclable wastes are sent for energy recovery.

We have 43.8 MW capacity of Waste-to-Energy (WTE) plants which can handle 1200 to 1600 tons of feed per day of refuse-derived fuel and nonrecyclable plastic wastes. Residual ash from the WTE plants is regularly tested for toxics before being converted into bricks or sent to our sanitary landfill facility for disposal.

2. Excellence in Managing Plastic Waste

Apollo Tyres

The Clean My Village Project of Apollo Tyres is an environment initiative taken up to address the issues of collection and management of solid waste, especially plastic waste. The project runs in partnership with local bodies and is delivered through trained and skilled NGOs. The entire strategy of the project is to bring about behavioural change in the target population by educating them on waste segregation at source and ensure to manage the waste through proper channels and motivate them to adopt reduce and refuse strategies. The project has been divided into the following stages –

- a. Identification of site & beneficiary base and awareness generation** - This includes mapping the location, awareness generation, enrolment of households into the project and placing identification stickers at the gate of households, distribution of cloth bags to store the plastic waste.
- b. Collection of Waste** - The door to door collection is scheduled on a monthly basis by using push carts & pick-up trucks, and the collection dates are marked in the cards given to the households. To ensure community ownership, a monthly user fees is charged against the collection.
- c. Segregation & Sorting** - The collected waste is brought to designated sorting hubs for segregation and sorting. The sorted waste is stored in sacks and dispatched to the respective authorised recyclers once the required quantity is accumulated. Few refused plastics are used for making upcycled products such as grow bags, tiles etc.

Excellence in Managing Plastic Waste

Dabur India Ltd. (DIL)

Dabur India Ltd. (DIL) during its various products manufacturing generating different types of wastes viz. Hazardous, Liquid, Plastic, Solid, E-waste and Biomedical Wastes. Managing the generated wastes is a major challenge that can be met through innovative thinking and concerted efforts, jointly on part of the industry and the government.

DIL has taken following steps for managing generated wastes are as:

- Each waste is unique and required independent recycling and recovery system. We have installed system as mentioned below:
 - Hazardous Waste: Separate storage rooms and disposal to the authorized HW disposing agencies.
 - Liquid Waste: Being treated and re-utilized at STP & ETP.
 - Plastic Waste: Collect back from end user through engaging different Waste management Agencies at PAN India level and ensured its safe disposal or recycling till end of its life.
 - Solid Waste: Being treated through installed Composting Machines at each unit level.
 - E-waste: Separate collection rooms and ensured its safe disposal/recycling through authorized recyclers only.
 - Biomedical Waste: Separate storage room/bins and ensured its safe disposal through authorized recyclers only.
- DIL follow: Minimize waste, Segregate waste efficiently, Reuse materials, Eliminate waste and Disposal as per Law.
- DIL ensures its possible re-cycling or re-use by adopting best available technology and techniques.
- Each Unit Head and EHS Officers are primarily responsible to monitor each contractor as defined in unit level Waste Management Policy.

Excellence in Managing Plastic Waste

Dalmia Cement Bharat Ltd, RGP

Dalmia Cement Bharat Ltd is engaged in management of plastic waste. The waste is received from various waste generators. The waste generators are delivering waste at plant gate meeting the hazardous/ non-hazardous waste transport guidelines. The waste is stored in pre-processing area, where different waste is pre-processed together to achieve uniform quality called as Green fuel.

Pre-processing involves the series of unit operation like mixing, shredding, foreign material separation. Shredding operation achieved by means of hook shredder, loader and other transport equipment's. Unlike other fuel in Green fuel high level precaution is taken place for fire protection and fire prevention. The pre-processed green fuel used to replace coal in clinker manufacturing process. The green fuel is fed in PH calciner in controlled way through BRU and weigh feeders to minimise dozing fluctuation. In kiln –PH system green fuel is co-processed at 900 deg. C in alkaline medium for 5 sec. During this process all the heat value of green fuel is used and no residual is left. DCBL RGP unit ensures 100% waste utilization of receipt plastic waste.

Excellence in Managing Plastic Waste

Geocycle

Geocycle has established 14 Geocycle state-of-the-art facilities comprising of 7 integrated pre & co-processing and 7 co-processing facilities to manage various waste streams including segregated non-combustible waste consisting of non-recyclable plastic waste across India.

For Plastic Waste Management, Geocycle has built a strong network and collects non-recyclable plastic waste from 29 different locations across India through strategic partnerships. The collected non-recyclable plastic waste is safely co-processed into our cement plants providing an end-of-life solution. This helps in diverting significant volumes of plastics and packaging waste from the natural ecosystem while ensuring complete transparency and total compliance. Committed towards a cleaner future and contributing towards a circular economy, Geocycle offers solutions to help producers/brand owners to optimize resources, achieve EPR targets and create a positive impact in society & environment.

Excellence in Managing Plastic Waste

Hindustan Coca-Cola Beverages

Project Prithvi initiated in 2018 by Hindustan Coca-Cola Beverages, in partnership with UNDP, is a pan-India program working on a zero-landfill model of Plastic Waste Management. Currently operational in 30 cities, Prithvi works towards fostering collaboration between citizens, communities, urban local bodies & Government special vehicles for Waste Management, Government Departments & related stakeholders for sustainable solutions in plastic waste management.

The project engages with informal sector Safai Sathis (Waste Workers) to integrate them into formal economy through self-help groups and facilitate their linkages to various inclusive initiatives like banking; social inclusion & security like identity cards, insurance schemes, etc.

The project is executed by establishing Swachhta Kendras (SKs), which is an integrated facility for handling plastic waste and involves value addition processes like sorting, cleaning, shredding, bailing, bagging, etc. These SKs are established with support from Municipal Corporation or equivalent and operated by project implementing partners in every city. SKs receive waste from Municipal waste collection system, Safai Sathis, bulk generators, etc. Recyclable materials received at the SKs are sorted, cleaned, compacted and transported to material specific recyclers. The non-recyclable low-grade plastic material like thin plastic litter, bags, multi-layered plastics, Styrofoam are converted into gatta/lumps & transported to agricultural pipe making industry or sent to end-of-life processes like usage in cement kilns, road laying or conversion to fuel; thus making the project a zero-landfill operation.

The project aims to manage more than 85,000 MT of plastic waste per year and onboard more than 30,000 Safai Sathis by expanding to 50 cities by 2022.

Excellence in Managing Plastic Waste

Indian Pollution Control Association (IPCA)

Indian Pollution Control Association is an organization, which is actively working in the realm of waste management since 2001 and was the India's first recognized PRO by CPCB for executing EPR for Plastic Waste Management on behalf of brand owners and producers at PAN India. IPCA has developed a network of waste collectors, scrap dealers, aggregator, and recyclers across the country and develop a collection back mechanism for the collection and recycling of post consumer plastic waste.

IPCA has developed a network of waste collectors and scrap dealers in 24 States/UTs of India for the collection and segregation of different grades of plastic, which also include non-recyclable and non-commercial category of plastic i.e Multi-layer plastic (MLP). IPCA give in hand training to waste collectors on collection and segregation of plastic waste and educate them on different grade of plastic and its recycling properties and its commercial value. The flow of waste material is from the source of its generation to the recycling or co-processing unit. Waste collectors engaged by the IPCA directly or through its collection partners in different geographical locations collect waste from source of its generations like household, market, hotels, institutes and bring to the secondary segregation centre, where they do segregation of waste into different grades including paper, plastic, glass, metal etc. The waste collectors themselves or through their contractor/scrap dealer then transfer segregated plastic waste to the dry waste collection centre, where IPCA or its collection partner team do the tertiary segregation and packaging of plastic waste in to bale. The compact bale of MLP, PET, LDPE, HDPE, PP, and paper beverage cartons then transferred to respective recycling/co-processing industries for its end of life solution.

Excellence in Managing Plastic Waste

ITC

Within the scope of its operations waste generation is minimized through systematic monitoring and improvement of efficiencies in material utilization as well as by maximizing recycling. Upstream, ITC focuses on research for optimizing its packaging to ensure that environmental impact is minimized without affecting product integrity. Outside the fence, ITC's initiatives focus on tackling the enormous problem of municipal solid waste by evolving sustainable and scalable solutions based on the principle of circular economy.

ITC has implemented multiple models in MWM (municipal waste management) MWM: the Wellbeing Out of Waste ("WOW") programmes for large cities and small towns (e.g. Bengaluru, Hyderabad, Warangal, Muzaffarpur) and MSK (Mission Sunehra Kal) programmes for rural areas (e.g. Saharanpur, Munger, Haridwar) and temples. Since, its inception, the WOW model, which covers solid wastes only, has covered over 31.45 lakh households, 52 lakh school children and around 2,000 corporates. The programme creates a source of sustainable livelihood for over 16,200 waste collectors by facilitating an effective collection system in collaboration with municipal corporations and also supports over 189 social entrepreneurs who are involved in maximising value-capture from dry waste collection. Through continuous engagement by means of awareness camps, training of waste collectors and door-to-door propagation drives, about 80-90% waste segregation has been achieved in many of these locations. In 2019-20, more than 78,800 tonnes of dry waste was sustainably managed including 12,500 tonnes of multi-layered plastics and thin poly films. ITC's Mission Sunehra Kal (MSK) programme deals with both dry and wet waste. The programme spans 16 districts across 11 states covering 3,13,228 households and collected 22,757 MT of waste during the year.

In all the areas where ITC's interventions on municipal solid waste are operational, the models necessarily involve partnership with the urban local body for infrastructure and logistics and local NGOs for propagation and outreach and these have been replicated with some local variations across locations.

Excellence in Managing Plastic Waste

Perfetti Van Melle

PVMI leads a consortium – WeCare (Waste Efficient Collection and Recycling Efforts) comprising of over thirty five national and multi-national companies that are committed in meeting their EPR obligations as set out under the Plastics Waste Management Rules, 2016- as amended. Through various industry level initiatives WeCare was able to demonstrate that MLP is not a mere waste and has multiple uses i.e. fuel for cement kilns, as laminate, for road construction etc. The success of initial EPR pilot, of which Perfetti was an integral part, has helped in persuading the government in allowing the use of MLP for packaging. Such initiatives- targeted towards developing circular economy- are also helping improve standard of living of the waste collectors, by turning them into ‘Ecopreneurs’.

In their efforts towards creating a sustainable future for the present and future generations, PVMI had partnered with Trash to Cash, an NGO that works towards providing people with ‘special abilities’ (physical and mental) quality education and employment opportunities in September 2019. Through this initiative titled ‘Parishram’, the organization aims to create a scalable and sustainable model to incentivize reuse of unutilised packaging material and help augment earning & employment opportunities for differently abled individuals. PVMI has helped augment their earning capacity by converting boxes, bags, and office stationery and essential items of everyday use out of unused packaging material.

Excellence in Managing Plastic Waste

Ramky Reclamation & Recycling Ltd. (RRRL)

Ramky Reclamation & Recycling Ltd. (RRRL) provides EPR services and manages recycling facilities at all waste management facilities of Ramky Enviro Engineers Ltd. (REEL) and its subsidiary companies across India. We have access to more than 18 sites across India that handle municipal solid wastes in a comprehensive manner. These sites engage with urban local bodies and employ dedicated fleet for door-to-door collection and transportation of municipal solid wastes. We also have more than 65 recycling facilities spread across India, which have capacity for sorting, segregation, and baling of collected wastes, which are followed by scientific methods of processing and disposal.

We collect and responsibly recycle/dispose of recyclable and non-recyclable plastics in order to fulfil the EPR obligations of our customers. Recyclable materials such as plastic fractions (HDPE, LDPE, PP, etc.) are segregated and converted into recycled plastic granules or pellets, and non-recyclable wastes are sent for energy recovery. We have 48 MW capacity of Waste-to-Energy plants which can handle 1200 to 1600 tons of feed per day. Organic wastes are separated using trammels and processed into organic compost through our composting units. Residual ash is converted into bricks or sent to our sanitary landfill facility.

Excellence in Managing Plastic Waste

Recykal

Recykal is engaged in managing collection, channelization of all types of recyclable wastes like plastic, paper and e-waste. Recykal has built tailor made digital technology solutions consisting of web, mobile applications, SaaS products that connect all the stakeholders in the waste value chain onto one platform and enables transactions between them bringing transparency, traceability, efficiency, accountability to the entire waste ecosystem. Waste generators which include consumers, bulk generators can use the Recykal app to select waste type, quantity in units or Kgs and choose a convenient pickup slot to sell their waste material. These pickup requests go to Recykal's partner network of waste management companies, aggregators who can see the orders in their dashboard and assign them to the collection executives. They can also view their assigned pickups in their app and navigate to the pickup location using GPS. A notification mail is sent to the customer before the collection team starts his trip. The collection team weighs the material using digital scales and captures the waste data in their app. Corresponding value of plastic waste is paid to customer via online payments. The collected wastes are then sent to the collection centres where they are sorted, segregated and made into bales or chips based on plastic type. These materials are listed and sold to recycler via Recykal Marketplace app. Non-recyclable plastics like MLP wastes are sent to co-processing units for end of life solution.



Excellence in Managing Plastic Waste

Shayna Ecounified India Private Limited

Shayna Ecounified India Private Limited is a start-up which collaborations with NGO's and some scrap vendors collect and segregate plastic waste on our behalf. We procure the waste plastic from them. We also do waste plastic collection drives with school and colleges, then we segregate, clean and recycle it and manufacture them into HDCP tiles. These tiles can be further recycled again. There is no waste produced as it goes into recycling again.

Excellence in Managing Plastic Waste

Shreerenga Polymer

Shree Renga Polymers recycles PET bottles to Polyester Fiber, Yarn and Garments. PET Bottles are collected from rag pickers and accumulated to form bales. The PET bottle bales are separated for non PET items like paper, caps and undergo a crushing process where they are made into flakes of size less than 12 mm. These flakes are washed and dried in a 10 stage recycling process. The washed flakes are charged to the melt spinning line, the flakes are dried, melted at high temperatures and formed into fibers called spun tow. This spun tow is drawn to 5 times its length, heat set, crimped, cut and baled to make recycled polyester staple fiber (rPSF). This is further spun into yarn through a ring spinning process and that yarn is knitted to fabric. The knitted fabric is made into garments as per style and fashion requirements.



Excellence in Managing Plastic Waste

The Shakti Plastic Industries

The Shakti Plastics has formalized the Indian unregulated and unorganized waste management sector by sourcing plastic waste from the marginalized waste pickers, ensuring long standing relationships by providing fair and transparent prices. The company purchases material from Urban Local Body (ULB) or Material Recycling Facility (MRF) and channelize the material to our supplier which is forwarded to our inhouse recycling facility or coprocessing partner. The first step to any recycling is manual sorting then the material is sent in the washing line where it is wet washed and dried later so as it removes any contamination from the material. Then the material is agglomerated which means it is been cut into small pieces of 1-2 cm. The agglomerated material is then sent to extruder which is melts the plastic also allows to add adhesive to give it some color and then recycled granules of .5 mm to 2.0 mm is made out of it.

Excellence in Managing Plastic Waste

UFlex Limited

UFlex Recycling Plant has its Noida facility which aims to mitigate the piling plastic dumps in Delhi/ NCR by recycling collected post-consumer waste PET bottles and multi-layer plastic packaging into chips and granules, put into further use to make products with economic value. The plant has the capacity to recycle 10,000 tonnes of PET bottles and 20,000 tonnes of multi-layer plastic waste per annum.

The washing-recycling & Granulating lines at Noida plant includes: 1) PET Bottle Line (PCR Line): The Post Consumer Recyclate (PCR line) at UFlex is set up with the objective to recycle PET bottles, used and discarded by consumers, to form chips. The PET bottles go through the process of crushing and washing and will finally get dried up before it reaches the extruder to form chips. Since the PET bottles are transparent and virgin in nature, chips derived as a result of recycling process is further upcycled to manufacture a range of PCR grade BOPET film from UFlex called Asclepius. The Asclepius film can be used and reused for multiple applications like packaging and label material. 2) The MLP Film Line (PCPR Line): The other UFlex line is called its postconsumer plastic recyclate (PCPR) for multi-layered plastic (MLP) film. The PCPR line washes and recycle post-consumer MLP scrap and convert it into granules via a process of shredding, washing and drying. The granules derived is used to form more than 10,000 industrial and household products like flower pots, outdoor furniture, bucket, dustbins, paver tiles, road dividers etc.

The post-consumer MLP waste & used PET Bottles are collected from Delhi-NCR and is sourced from NGOs, Waste Collection Agencies, producer responsibility organizations (PRO) as well as producers and brand owners directly.

3. Excellence in Managing E-Waste

GreenWaves Environmental Solutions

Setting new benchmarks in maintaining the confidentiality of the business data and offering highly efficient e-Waste management services is GreenWaves Environmental Solutions - the first authorized (by Pollution Control Board, Andhra Pradesh) e-Waste collection and handling unit of Andhra Pradesh. Interestingly, besides a data destruction certificate, GreenWaves sends a video of storage device disposal to its customers. They consider e-Waste not as a waste but as a multiple-resource. It's a tool for social transformation giving paramount importance to the trust factor; GreenWaves offers free services to its customers for the first 45 days.

Focused on collecting all types of recyclable e-Waste, GreenWaves has built an app called ReByte. The app within mere touches ensures safe & environment-friendly disposal of recyclable wastes collected from the user's door-step, and also provides reverse-logistics. Additionally, clients are given a chart indexing the types of e-Waste and provided with assistance in custom clearance and filling of e-Waste's annual returns.

On the other hand, by passing-on the knowledge to its clients and the general public, GreenWaves is tirelessly creating public awareness. It regularly conducts workshops & several programs (E-Drives), in addition to framing creative portraits poised to inspiring people to utilize e-Waste in innovative ways. Furthermore, to impart the knowledge on the importance of proper e-Waste disposal and its ill-effects of mismanagement to every individual, the company has installed e-Bins in selected areas of Visakhapatnam for disposal & recycling of small electrical & electronic items.

Excellence in Managing E-Waste

Ramky Reclamation & Recycling Ltd. (RRRL)

Ramky Reclamation & Recycling Ltd. (RRRL) provides EPR services and manages recycling facilities at all waste management facilities of Ramky Enviro Engineers Ltd. (REEL) and its subsidiary companies across India. We collect e-waste from various locations across India, primarily in New Delhi. Collected e-waste is manually sorted & segregated according to type of materials for primary dismantling where all the hazardous waste (if any) will be taken out. This is followed by secondary dismantling with the objective of separating metals, plastics & other streams. Our e-waste dismantling facility is established with the best available technology. The process selected is proven across the globe and incorporates environmentally sound management principles. We have a joint-venture with Abington Reldan Metals USA for recovery of precious materials from the dismantle de-waste. The stages for collection and dismantling of e-waste includes Collection, receiving, segregation, Dismantling, and. Disposal to authorized recyclers (ARM).

4. Excellence in 3R in Industry (Managing Own Waste)

Amway India

Amway India is one of the largest FMCG Direct Selling Company in the country. The company offers products in Nutrition, Beauty, Personal Care, Home Care and Consumer Durables category. The company believes in sustainable practices including waste management all through its value chain from raw materials, manufacturing to consumers. They operate through a strong in-house and collaboration model to drive our waste management efforts. Key waste management efforts as below:

1. Practices being adopted to generate Less waste at the source itself by eliminating single use plastics and Process waste reduction. Our Manufacturing Facility at Dindigul district is a Zero Liquid Discharge Facility which ensures NO discharge of industrial water waste into the environment. Also, there is Zero waste for landfilling.
2. Hazardous Waste Management Process: Amway's factory collects, segregates & stores hazardous waste at dedicated area. We collect our ETP sludge waste from decanter and dump it in a solar dry pit & kept for a retention period. The dried sludge is then collected in bags & moved to waste storage area. Year on year with these best practices we have successfully reduced ~69 MT of sludge.
3. The segregated hazardous waste is then transported to approved pre-processor who processes & forward it to co-processing units after fulfilling the compliance requirements where it is used as a fuel.
4. We have hazardous & bio medical waste authorizations in place and monitoring effluents / waste generation daily.

As a Brand Owner, Amway India Enterprises Pvt. Ltd. is one of the first consumer good company registered with CPCB and practicing EPR for Plastic Waste Management form year 2018. All our plastic packaging materials (Printed / Unprinted) have recycling information. We have implemented plastic packaging weight reduction exercises for multiple product. Achieved annual polymer reduction up to 8.6 MT. Amway India also support & comply plastic waste management Initiatives of Govt. of India.

Amway India will continue its efforts by working with industry partners and other stakeholders to move towards a strong waste management model through innovative and tangible actions to achieve this goal.

Excellence in 3R in Industry (Managing Own Waste)

Beepee Coatings Pvt Ltd

Beepee Coatings Pvt Ltd is into manufacturing of Paints, Resins and Emulsions. The Company motto of the in the managing of the waste is as follows:

- **Source Reduction and Re-use:** Usage of Powder Spill generated through unloading, charging is collected and consumed in manufacturing of paints.
- **Segregation and Recycling:** Much of the waste is generated through process and packing, each of the waste is collected and segregated and sorted at the scrap yard. While much of the non-hazardous waste like Empty cartons are used in-house for prevention of Finished goods from damages and while empty drums, plastic barrels are sent to authorized recyclers.
- **Low cost distemper paint:** The Water Base sludge which is generated from mixer washing is collected from drains also emulsion waste and dispersed in HSD (High speed Dispenser). The material is then filtered in 40 mesh nylon and further additives and biocides are added. The final product is now filled in plastic carboys for in-house application of Paints. Therefore waste generated by mixer cleaning and leftover material is re-used in manufacturing of low cost distemper paint and used in-house. Further Paint Dry Sludge is also used for designing of Bricks, used in our gardens, therefore there is no waste generation from Water Base to Effluent Treatment Plant, as all waste is utilized to reduce, re-use and recycle

The Plant has entered in an agreement Ambuja Cement for Co-processing of Industrial waste where wastes like Cotton waste, Resin filter residue and process waste generated from cleaning equipments is sent as per consent norms.

The companies has also upgraded itself with newer methods of waste management and have in its facility Reverse Osmosis and Multi Effect Evaporator, Sewage Treatment Plant, Self-cleaning filter, GAF Filter and other such equipments to manage waste. The objective is to manage waste through reduction at source, segregation and recycling and upgradation with technology with zero liquid discharge concept

Excellence in 3R in Industry (Managing Own Waste)

Bharat Fritz Werner Ltd

Bharat Fritz Werner Ltd has a dedicated metal foundry for the casting of machine tools structural components. The foundry green sand is a major raw material which is used for the mould fabrication due to its excellent compaction capability. The burnt sand is major residue post-metal casting process and needs to be addressed before its disposal. The BFW re-uses this burnt sand multiple times until it completely loses compaction ability. The re-used burnt sand which turns into a hazardous waste product has been a major concern for BFW foundry as like any other foundry in the world. However, Dr. Kalam Center for Innovation which is a DSIR recognized R&D centre of BFW, have transformed this foundry waste burnt sand into a useful lightweight foam concrete block. The 100% foundry waste burnt sand, is mixed with cement and vegetable-based foam in an appropriate proportion, results into an earthquake-proof, sound-proof, fire-proof lightweight concrete block which can be used at the civil construction work. The other accessories required for the production of blocks such as sheet metal moulds and the releasing agent are also made out of scrap sheet metal plates and used spindle oil, respectively, both are industrial waste materials. As a summary, BFW has proposed an innovative approach wherein not only the issue related to the disposal of hazardous industrial waste has been resolved but also turned up it into a sustainable commercial option with an estimated yearly revenue up to INR 1 Crore

Excellence in 3R in Industry (Managing Own Waste)

Dabar India Ltd.

Dabur India Ltd. (DIL) during its various products manufacturing generating different types of wastes viz. Hazardous, Liquid, Plastic, Solid, E-waste and Biomedical Wastes. Managing the generated wastes is a major challenge that can be met through innovative thinking and concerted efforts, jointly on part of the industry and the government.

DIL has taken following steps for managing generated wastes are as,

1. Each waste is unique and required independent recycling and recovery system. We have installed system as mentioned below:
 - Hazardous Waste: Separate storage rooms and disposal to the authorized HW disposing agencies.
 - Liquid Waste: Being treated and re-utilised at SwTP & ETP.
 - Plastic Waste: Collect back from end user through engaging different Waste management Agencies at PAN India level and ensured its safe disposal or recycling till end of its life.
 - Solid Waste: Being treated through installed Composting Machines at each unit level.
 - E-waste: Separate collection rooms and ensured its safe disposal/recycling through authorised recyclers only.
 - Biomedical Waste: Separate storage room/bins and ensured its safe disposal through authorised recyclers only.
2. DIL follow: Minimize waste, Segregate waste efficiently, Reuse materials, Eliminate waste and Disposal as per Law.
3. DIL ensures its possible re-cycling or re-use by adopting best available technology and techniques.
4. Each Unit Head and EHS Officers are primarily responsible to monitor each contractor as defined in unit level Waste Management Policy.

Excellence in 3R in Industry (Managing Own Waste)

Infosys Limited

Infosys started its waste management journey in 2013, with a three-pronged strategy of Avoid, Reduce and Recycle aimed at our organizational goal of “Zero Waste to Landfill”. Consciously replacing single use consumables like paper cups and plates have led to 95% avoidance rate. The reduction strategy is furthered by educating our employees and systemic interventions to help reduce the percapita waste generation. Recycling is intrinsic part of our goal as we have installed systems for 100% segregation and to recycle 100% of our organic waste in-house, along with a strong external recycler network for recycling other waste types. Thereby recycling 91% of our municipal waste generated in FY19.

Waste is broadly classified into Hazardous and Non-hazardous waste with 25+ subcategories. We have 9 automated biogas system with an installed capacity of 3700 TPA to treat food waste and the gas is utilized in food court kitchens. As Infosys boasts of large landscapes, the yard waste generated is treated in 8 Organic Waste Converters with an annual capacity of 2500 tons, this rich organic compost is used as soil conditioner in our campuses thereby reducing the use of chemical fertilizers.

Infosys commissioned Automated Solar Sludge Dryers across 5 location to treat 3500 tons/year of sludge from our wastewater treatment plants making it first of its kind initiative in India.

Excellence in 3R in Industry (Managing Own Waste)

JK Tyre – Chennai

JK Tyre – Chennai Plant's emphasis on production of eco-friendly products with a focus on minimal waste generation driven by reuse and recycling of waste and our Waste Management strategies also centred around adopting the 3R's –Reduce, Reuse and Recycle methodology.

Waste generated from the tyre manufacturing process is in a solid and liquid form and classified as Hazardous and Non-hazardous and their Inventorisation enables the formulation of suitable targets. The Company has Short term and Long term targets for Waste reduction and is part of our Plant's Key Performance Indicator and to drive the same, individual champions are assigned for the Waste reduction activities. We continuously monitor the waste streams that result from our operations. Most of our residues produced are by-products and are reused in our operations, helping us decrease our material intensity. We also use about 5% of the recycled/regenerated materials in the virgin product. The Company achieved process scrap/waste below 1%.

Waste Management process starts with Collection and Segregation at source, Handling and Storage in Value Yard and Disposing to Authorized Recycler for Recycling of waste and the same has been ensured through auditing them on planned basis. We develop our Suppliers, Vendors and Contractors to adopt waste management practices by handholding them through trainings and engage them in our "Go Green" Initiatives so that they also travel in sync with us in this "Green" journey.

Our Plant has been assessed by third party certification body for "Zero Waste to Landfill" and declared that our Plant meets the criteria set for "Zero Waste to Landfill" stating that majority of the waste generated is recycled – turning waste into a new substance or product (cradle-to-cradle recycling), while rest of the waste goes for recovery.

Excellence in 3R in Industry (Managing Own Waste)

JK Tyre & Industries Ltd (Kankroli Tyre Plant)

Conserving Natural Resources and Energy by Optimizing Efficiency, Minimizing Waste and Supporting Environment friendly Processes is one of the principal components of JK Tyre Environmental strategy which has undergone numerous improvements over the last few years.

- Kankroli Tyre Plant is utilizing Tree Leaves/Horticulture waste as Boiler Fuel after conversion in to powdered form which is generated inside plant premises and were being disposed as landfill.
- Kankroli Tyre Plant is Zero Liquid Discharge Unit and is world benchmark Tyre Plant in Fresh Water Consumption. Kankroli Tyre Plant is having Waste Water Recovery through RO Plant. The RO Plant is custom designed to handle our Sewage & waste water.
- Process Scrap (Compound Scrap, Fabric Scrap, Green Tyre Scrap, Insulated Bead Scrape, and Cured Tyre Scrap) is being monitored on Daily/Monthly / Yearly Basis.
- Kankroli Tyre Plant is having 3.0 MWp of Installed capacity of Solar Plant and in FY 2019-20 there is 6.46% Power consumption is from Renewable Energy Sources.
- Elimination of stake by Conversion of DIP Unit Thermic Fluid Boiler (Indirect Heating system from Thermic Fluid to Air Heat Exchanger) to Direct Gas Heating (LPG) System .
- Uses of Heat Pipe to recover the waste heat from process exhaust towards atmosphere and reuse it in the same process itself, Recover the waste heat from Air Cooled Fluid Coolers and used it for Plant Heating in winter Season, Uses of Waste Exhaust Heat of Screw compressor and Re-Use it for Rubber Preheating before Mixing, Uses of Exhaust Heat of Water Cooled Screw Compressors and Re-use it for Boiler DM Water Pre Heating, Waste Heat Recovery from DOME drain from tyre Curing Presses and Re-Use it in to Boiler Deaerator are the key examples of Waste Heat Recovery system which has been installed .
- Kankroli Tyre Plant is having 100 % of its Lighting Load on LED, Replacement of Old & Conventional Motors with IE-3 Motors (More than 1500 kW of Load).
- Re-use of Compound, Fabric& Other in Process Tyre components by salvaging and rework to minimize waste.
- Use of Dust Collectors, Fume Extractors for better Environmental condition for operatives.

Excellence in 3R in Industry (Managing Own Waste)

JSW Steel

Increasing concern for environmental protection, growing cost of waste disposal, depleting natural resources, growing economic constraints have put the metallurgical industries under tremendous pressure to find ways and means for waste utilization and also to reduce waste generation. Steel industry produces large amounts of solid wastes like Iron ore fines, Bag filter dust, Coke Dust, Sludge, Slag through its various processes like Iron making and Steel making processes were mostly dumped. With increase in environmental restrictions, there has been significant thrust on developing technologies for their recycling and reuse.

In order to effectively utilize these wastes, JSW Steel at Dolvi works installed Pellet Plant, Sinter Plants and Cement plant for utilization of these wastes. With these facilities, JSW is recycling 100% of secondary waste material for iron making. Blast Furnace slag is 100 % utilized for cement making.

Steel Slag is presently used for Sinter Plant and land reclamation purpose after processed in Slag processing plant. The metallic portion of the slag is reused in Steel Melting Shop. Also utilization steel slag in scientific manner for Civil Construction, Soil Conditioner, Aggregates for Roads, making Blocks/Tiles as per BIS guidelines and for marine applications as per the BIS guidelines.

JSW Steel, shows the way of value addition through innovative solid waste management techniques. Recycling of the valuable components from the waste reduces production cost and improves the environmental condition.

Excellence in 3R in Industry (Managing Own Waste)

Knack Packaging Pvt Ltd

Knack Packaging Pvt Ltd are one of the eminent manufacturers, suppliers, and exporters of HDPE/PP Woven Sacks, Fabrics & Multicolor Printed BOPP Laminated PP Woven Sacks / Bags. The company believe in Green Environment and so takes care of all wastages like Plastic Process Wastages, Containers Waste, Cotton Waste, Water waste and ensure its safe disposal or Reuse/ Recycle / Reduce by zero dispose off of the wastages.

They manage the Plastic waste discharged from the various processes by safely recycling, reprocessing and reusing it. Waste materials from different processes are transferred to our Recycling Plant, where we store it by segregating in its own form in different sections of stores, which are moved for its reprocess to Recycling Plant.

Recycling Plant is our set up of well-organized Machinery set up with its accessories for conversion of waste materials into our so called "GREEN PRODUCT". Our Recycle Plant Set up starts by inclusion of different types of Plastic Processes Waste. It feeds the waste materials into shredder where it gets shredded into smaller pieces. Further, it needs to load the shredded waste onto conveyor belt, which moves the material to 6-barrel zone where it is melted and mixed with black color master batch.

In next step, movement of melted waste material through screen changer is followed by Dia, where the melted material passes through small holes. The pipe like structure of melted material which comes out of Dia is then cut into granule shape with face cutter using water as lubricant to prevent melted waste from stretching and creating long; hair like strands.

The use of water in cutting process cools down the material, which is then collected and stored for use in its final granules form which we reuse for manufacturing of woven bags which helps reduction of plastic bags by using it in multiple times and secondly we sell it to injection molding industries which use this as their raw materials for their product manufacturing. Furthermore, we have other wastages like Containers, Cotton waste, Paint residue which we dispose off to the registered vendors and do treatment on the water consumption used in our process and reuse it.

Excellence in 3R in Industry (Managing Own Waste)

Mahindra & Mahindra

M&M is committed to minimize the amount of waste that enters landfills from our operations, leading to more savings and less harm to the environment. We follow a zero-waste philosophy. The key is to manage waste at every stage is in the hierarchy– right from prevention to minimization, reuse, recycling, co-processing, re-processing & energy recovery.

We are creating a restorative, zero-waste economic model in which raw materials are used to their full capacity and natural systems are regenerated. M&M has been introducing a Zero Waste to Landfill program to promote circular economy model in its plants to not only improve the efficiency in manufacturing processes but also save physical and financial resources through energy conservation and reuse of raw materials.

The technology used in the manufacturing of our products shall not result in effluents or toxic waste being released, unless it is treated in accordance with the prevalent pollution control laws. Every possible effort shall be made by us to maintain the ecological balance, conserve scarce natural resources, and avoid pollution.

M&M received “Zero Waste to Landfill Certification” for 15 plant locations and ranked top 20 in the World, certified by only renowned certifying agency, M/s Intertek, USA for hazardous & non- hazardous waste. The journey continues for getting certifications for the remaining plants. It will surely contribute towards “Circular Economy” which is our end objective.

Excellence in 3R in Industry (Managing Own Waste)

Malati Autocast Pvt. Ltd.

Malati Autocast Pvt. Ltd. is committed to minimizing waste. This thought was embedded in the manufacturing process, from the planning till the execution stage. As a result, Malati Autocast Pvt. Ltd. is able to minimize waste through the following processes

1. Manufacturing Process

- a) Melting – Electric furnaces are used to form molten metal to produce castings. Unlike the traditional furnaces that use coal, electric furnace reduces the carbon footprint as well as the toxic gases that were sent out in the atmosphere.
- b) Molding – The process of making sand molds is done through recycled sand. The sand once used can be 100% recycled till it is completely coated with carbon deposits. 70% sand which is waste, is reclaimed.
- c) Fettling – Innovative technique is used while designing the patterns to make fettling less castings that reduce dust, metal waste and time.
- d) Water – Water used in the manufacturing process is recycled and only the evaporation component needs to be replenished.

2. Packaging and Despatch

- a) Transportation of castings to the customers requires packaging material which is mostly plastic. Malati Autocast Pvt. Ltd. has introduced use of reusable crates to minimize the use of plastic and packing material.
- a) The crates are reusable hence the waste generated at our clients is also minimized.

Malati Autocast Pvt. Ltd. has successfully achieved zero hazardous waste target as well as reduced the non-toxic waste to bare minimum.

Excellence in 3R in Industry (Managing Own Waste)

Menon and Menon Ltd.

Menon and Menon Ltd. Is certified for ISO 9001, ISO 14001, 45001, and IATF. Plant is having membership of CHWTSDF – Ranjangaon, Pune for waste disposal. Recycled water is used for gardening purpose for @ 700 plants planted in factory premises. Emission norm's checking frequency is Quarterly.

Different hazardous wastes are separately stored with identification. It is sent to Government approved agencies as mentioned above. ETP, STP, established in plant premises to recycle Waste water and used for gardening purpose. Waste core sand is reclaimed and reused by mixing with natural sand as per predefined mixing percentage.

Excellence in 3R in Industry (Managing Own Waste)

NTPC Dadri

NTPC Dadri manages the both the Industrial and domestic wastes. The industrial wastes include

- Ash is the major waste generated in coal-based power plants. Ash is being utilized in cement manufacturing, in ash-based products, road construction, etc. 100% ash of Dadri station is being utilized since 2013.
- Non-Recyclable Hazardous Waste: Hazardous waste is being sent to Treatment Storage Disposal Facility (TSDF, Kanpur) for final disposal.
- Recyclable Hazardous Waste: The recyclable hazardous waste like used oil generated in plant operations is being auctioned to registered recyclers.
- Electric & Electronic Waste: E-waste is being auctioned to registered recyclers.
- Coal Mill Reject: Coal Mill reject is one of the wastes generated in coal-based power station. Part of the mill reject (high GCV) is being recycled and remaining quantity auctioned to process industries.
- Metal Scrap: Metal scrap is being auctioned through M/s MSTC.

The domestic wastes include:

- Biodegradable Waste: The kitchen waste generated from township being segregated at source and being fed to Bio Methanation Plant for bio methane gas generation.
- Non-Biodegradable Domestic Waste: The non-biodegradable domestic waste is collected separately and used in Waste to Energy plant for making of torrified pellets which is being used for power generation
- Horticulture Waste: The horticulture waste is being converted in to biomass pellet and the same is being utilized for power generation.
- Biomedical Waste: Bio medical waste is managed through 3rd party M/s Synergy Waste Management Pvt. Ltd.

Excellence in 3R in Industry (Managing Own Waste)

Pashupati Polytex

In Pashupati packaging solution unit which manufactures Woven Fabric, Master Batch, Bags, Filler & Additives, we recycle the total process waste generated in our manufacturing process in in-house recycling facility and consume the recycled products in our own process. The waste is processed through cutting, washing, drying, agglomeration, extrusion and granulation.

The company first process Post Industrial & Post-Consumer waste through mechanical recycling to remove all major impurities, clean the waste to smoothen the forward process. The waste which is not mechanically recyclable is then chemically recycled by fine filtration & Glycolysis Process to convert it into rPET Granules. We recycle and reuse filter waste and process waste generated during chemical recycling process to manufacture RPET granules. We control our process through DCS system to minimize waste generation.

The company has redesigned our polymer melt filters in such a way that the PET waste generated has been reduced to 50%. The company processes the PCR bottle fines waste generated during mechanical recycling of PCR and recover the RPET and do chemical recycling of same to convert it in to rPET granules. Fiber Line & Spinning waste generated in rPSF manufacturing process is agglomerated and used in RPSF manufacturing process again.

The waste generated during rPSF manufacturing process which can't be agglomerated is first passed through the vibro/mechanical recycling processes to remove the impurities and put through our own extrusion recycling plant to get converted into granules and reused in own process.

They are in process to recycle non-PET waste generated during mechanical recycling of PCR. Strand waste, Lump waste & Dust waste is generated in Master batch (MB) manufacturing process. Strand waste & Lump waste is grinded and mixed with dust and reused in MB manufacturing process. We are working on "Zero Process Waste dispose of "policy.

Excellence in 3R in Industry (Managing Own Waste)

RMZ Corp's

RMZ Corp's aim is to achieve a zero-waste campus and hence, in association with Saahas Zero Waste team and with the support of all the occupants, a Zero Waste Management Policy and Environmentally Preferable Material Purchase policy has been developed and implemented across all the facilities. RMZ Corp has implemented the following strategies in every facility to manage waste:

- Reduction of waste by preferring reusable products and eliminating single use items. Cloud based MIS is being used to capture site and tenant data for enhanced traceability, analysis, and report generation. Plan of action, based on constant feedback and trainings conducted for all stakeholders involved, is prepared to assist in managing the waste better to ensure maximum recovery of waste as a resource and near zero diversion to landfills
- The operations are managed at site by field staff and supervisor deputed by SZW and further monitored by Project Manager to ensure adherence to SOP. Segregation of 100% waste at source and minimum 96% sent for Reuse and Recycling. Major segregation done at site are dry waste [paper, plastic, metal], wet waste including food waste, landscape waste, hazardous waste, soiled Paper towels, diesel, and E-waste.
- Re-earth the biodegradable waste to convert it to useful manure to support plant growth both on-site and off-site by installing organic waste converters and Biogas converters
- All the recyclable products are recycled and converted to as usable products some of which are used at the site itself. Products such as notepads, pens, bags, and furniture are made thus eliminating waste and reducing the virgin use of materials
- Engagement and training programs on zero waste management strategies are organized periodically for RMZ Corp employees, occupants and other stakeholders involved
- Annually 2,744 tons are minimized from 1,67,44,301 sq. ft. of built space which houses around 1,60,259 occupants Pan India.

Excellence in 3R in Industry (Managing Own Waste)

Shree Cement Ltd.

Shree Cement is a zero-waste discharge organization. Company by virtue of its innovation has been able to develop methods and practices which enables it to progress towards circular economy. Various processes which company has adopted to manage its waste are as under

Overburden from mining activities: During mining procedure generation of certain level of fine limestone also happen which is not optimum for utilization in clinker manufacturing process. This constitutes a part of overburden in limestone mining. This overburden is utilized for production of synthetic gypsum.

Scrap: Scrap is either reutilized as per the specific requirements in periodic maintenance activities in integrated plants/ Cement Grinding Units. The scrap which is could not be reutilized is sold to commercial buyers. The details of our Scrap utilization can be read in Company's sustainability report 2018-19.

Power Plant Flyash: The fly ash from our power plants is completely reutilized for production of PPC cement.

Waste Heat: Shree Cement became the first cement company in India to trap this waste heat and convert it into electricity. Company has installed largest waste heat recovery based power plants in cement industry outside of China.

Reject water of Reverse Osmosis plant: RO reject water is completely re-utilized in manufacturing of synthetic gypsum. Synthetic gypsum replaces mineral gypsum in cement manufacturing process, thereby saving the natural mineral gypsum

Used Oil and other hazardous wastes: Used oil is completely co-processed in our cement kilns. Our plants also generate various types of hazardous and non-hazardous waste including, biomedical waste, E-waste and battery waste. After collection, these wastes are sold to registered CPCB/ SPCB vendors and recyclers.

Excellence in 3R in Industry (Managing Own Waste)

Steel Authority of India Limited

SAIL has a well laid down Environmental Policy which reaffirmed its commitment towards sustainability and conservation of natural resources through integration of 4R principles, i.e. Reduction, Reuse, Recycling and Recovery. The material efficiency of SAIL has been improved consistently over the years and recorded at more than 95.5% in 2019-20, which bears the testimony that SAIL is managing wastes in a sustained manner.

Use of more imported low ash coal in Coal blend, increased percentage of prepared burden in BF, use of Slag Splashing technology to increase the lining life of the converters, use of Low Silica limestone etc. are some of the major initiatives towards reduction of waste generated by SAIL.

Apart from these, SAIL has also deployed various technologies for improved Recovery, Reuse and Recycling of wastes. Major initiatives that has attributed to the improvement in material efficiency include magnetic separation of metallic wastes from BOF slag, granulation of BF slag in Cast House Slag Granulation Plants (CHSGPs) and use as a raw material for Cement making, use of BOF slag internally in the Sinter Plant as a replacement of limestone, Recycling of ferruginous wastes internally mainly through Sinter Plants. Refractory wastes are sold for gainful reuse.

SAIL has recently installed 1.2 MTPA Slime Beneficiation plant through which the low grade slime(Fe < 54%) is being converted to fines with Fe content more than 64% and is being gainfully utilised in the steel plant replacing Iron ore fines. This is a step towards conservation of precious natural resources and waste to wealth.

Excellence in 3R in Industry (Managing Own Waste)

Tata Consultancy Services

THE CONCEPT OF “ZERO WASTE” has emerged as a new pillar of sustainability for TCS. The Closing the Loop refers to the success story of TCS efforts towards innovative way of implementing biotechnologies for Bio-degradable /Organic Waste(Food &Garden waste) generated at TCS sites into environmentally sustainable products i.e. Bio-gas, Electricity, &Organic Manure & its reuse on- site to achieve the goal of Greening the IT Operation for Sustainable Development.

The Road map involves implementation of site-specific Waste Management Technologies i.e. Bio-digester (12), Organic Waste Converter (24) for food waste while vermi-composting (14) for garden waste across 35 location in India. Environmental benefits of project include, on-site recycling of 7149.39 tons of biodegradable waste & diverted from land filling. Total 59% of biodegradable waste is processed through bio-digester, 23 % vermi-composting and 18 % Organic Waste Converter. It generates 96.69 tons of Biogas through bio-digester, which is used in canteen as replacement to LPG to some extent. The Bio-digester at Siruseri, Chennai generated total 4323 kWh units of electricity in form of Biogas. Recycling of waste resulted in avoidance of 3391.06 tCO₂e GHG emission. Besides this, 1,000 tons of Organic Manure generated, which utilized for developing landscapes. On socio-economic front, it also resulted to creation of Green Jobs for 81 unskilled & semi-skilled laborer's & improves their Quality of Life.

Excellence in 3R in Industry (Managing Own Waste)

Tata Motors Ltd., Jamshedpur

In line with the Environmental Policy and ISO 14001:2015 (Environment Management System) standard's requirements, Tata Motors Ltd. Jamshedpur plant proactively initiated 3R to ensure continual improvement. Waste management policies and strategies adopted are clearly mentioned in our environment policy to minimize waste generation, enhance recovery and recycling of material and develop ecofriendly waste disposal practices along with the use of environmentally sustainable technologies and practices for prevention of pollution and continual improvement in environmental performance. Some of the initiatives to achieve excellence in 3R mentioned below:

- **Hazardous Waste Incineration** Ash is being utilized for Pavement Block Manufacturing and is being utilized inside the plant premises and township. Thickness 80 mm, shape Hexa, compression strength M 15 to M 20. Till FY 2019-20, Nos. of Paver's Block Manufacturing from Incineration Ash & Foundry Burnt Sand are 1135810 Nos. i.e. 49383 m² i.e. **3975 MT of Ash used.**
- **Paint Sludge Recycling by conversion into secondary paint** i.e. Epoxy black and Cast sealing, specification approved by Quality and is being used in process.
- **Paint sludge recycling or reuse for energy recovery** as an alternate fuel through co-processing in cement kiln to ensure no residue remains on earth.
- **Phosphating Sludge, ETP sludge, Grinding Sludge, Incineration Ash are being utilized in cement manufacturing process** as material recovery as an alternate resources.
- Similarly, **non-recyclable plastic waste is also being co-processed** for energy recovery.
- **New initiative to recycle & reuse of plastic waste** of >50 microns thickness in manufacturing of Pavement tiles having 40 MT load bearing capacity.
- To **generate Value from Hazardous Waste (VfHW)**, number of initiatives started through Idea Generation workshops, collating higher value suggestions, tracking the progress in GEAR (Generation Evaluation Approval & Realization) Format. Realization to know the exact saving is being vetted by Finance and

Excellence in 3R in Industry (Managing Own Waste)

Top Management reviews monthly progress against target using Glide path.
Value realized INR 5.46 Cr. in FY 2018-19.

- **Maximize paint transfer efficiency** to reduce paint sludge generation.
- **Segregation at source** to enhance recyclability.
- **Specific Hazardous Waste performance** in Kg / Equivalent Vehicle is 0.3 against Target of 0.43 in FY 2019-20 **(30% Reduction)**.
- **Thermal Sand Reclamation Plant** to REUSE waste core sand a Natural Resource since Foundry grade sand is a scarce commodity today. **Annual Saving @5MT /day INR 7.05 Lakhs.**
- **Zero Waste to Landfill**

Excellence in 3R in Industry (Managing Own Waste)

Tenneco Powertrain

Tenneco Powertrain is committed to reduce, reuse, recycle and eliminate the wastes by adopting best in class/ latest technologies, recycle and reuse options along with life cycle improvement of the products manufactured. Few insights in to 3R program is given below:

Reduce- Water consumption, electric energy, Coolant Consumption, Hazardous waste Generation by Scrap reduction and new process Technology adaption, landfill (by co processing of waste). Energy reduction by adopting Day skylights & LED light, IE3 motors, VFD, Unity power factors. Gas Switching from LPG to Piped Natural Gas (PNG). ETP sludge reduction by complete automation and optimization of chemicals Improvement in plating section by adopting Auto dechrome technology which resulted in chemical consumption.

Grinding sludge reduction by process improvement (Double Cut to Single Cut). Compressed Air improvements by replacement of Low efficiency compressor to Screw compressors with VFD, MS pipe replaced with Energy efficient Aluminum pipes, Auto power factor controller

Reuse- RO Reject water utilization, Coolant management, Oil Filtration system, Chrome targets, Chromic acid

Recycle – Remelting of Aluminum chips, Utilization of waste water in process cooling. and toilet flush. The industry is also focused for reduction of Natural resources such as water by adopting water balance study, implementing on line monitoring system, reuse of RO waste water wash rooms & tray washing area. And Argon gas replaced with nitrogen.

Resource conservation – Aluminum chips utilization back in the process. Reuse of waste chemical from the Dechrome area (HCL) for treatment of chrome waste water. Copper Chips re-utilization by melting. Gasket center utilization. Improvement in plating section by adopting technology to recycle the waste water and utilize the same for plating process.

Excellence in 3R in Industry (Managing Own Waste)

Thirumalai Chemicals Limited

Thirumalai Chemicals Limited (TCL) gives importance to the principles of Recover, Reduce, Recycle and Reuse. Our waste management philosophy is built on Greening of existing processes by adopting New Technologies in manufacturing & Waste Treatment.

RECOVER: Food Ingredients from Off gases: The off-gases of our manufacturing process contain chemical products. Elsewhere, these industries incinerate these off gases. We scrub the off gases and recover a high value product, which is used as a food ingredient. The recovered product contributes a revenue generation of Rs. 500 million per year.

Energy Recovery: The manufacturing process of Phthalic anhydride is exothermic. The waste heat is recovered as steam. 90% of the electricity demand of the premises and all the process heating needs are met from the recovered Heat.

REDUCE: 12 MWH turbines are cooled with a closed evaporative cooling water system, resulting in loss of water. Installation of an air-cooled condenser in place of water-cooled condenser reduced the specific water consumption from 6.2 KL/Ton to 4.3 KL/Ton.

REUSE: Treated trade effluent is processed by Reverse Osmosis into de-mineralized quality water. This is reused back into the process. (85% is recycled.)

RECYCLE: Packing materials viz., Bulk bags, PVC and Wooden pallets are recycled between us and our Customers.

Excellence in 3R in Industry (Managing Own Waste)

Toyota Kirloskar

Toyota globally has committed towards carbon neutrality through Toyota Environment Challenge 2050 which is in line with the SDGs announced by United Nations. As a part of Environment Challenge 2050 – Challenge 5 (Establishing a recyclable society and system), TKM is committed towards management of waste by adopting CRADLE TO CRADLE approach by implementing initiatives focused towards resources optimization, efficient value management and End of life vehicle management.

The waste generated in Toyota is segregated at source, stored as per the legal norms & disposed to an authorized end user. Toyota believes in manpower development; hence we provide detailed training to all the employees including contractors that indeed helps in efficient management of waste. The waste generated is stored at intermediate centers where it is weighed and based on this annual target on waste reduction is announced that in turn provides reduction opportunities. Then, the collected waste is disposed to an authorized waste handlers or recyclers.

Total waste generated is categorized as Hazardous & Non-Hazardous waste and then disposed to authorized vendor for recycling or complete dispose thru' co-processing or incineration. There are 58 categories of value waste which generates approx. 38 million per year. Waste disposal cost is considered as a cost center which is monitored by a team. This team is engaged in improving the recyclability of the waste generated and its profitability & reduce paid waste that is disposed through incinerator or co-processing.

5. Excellence in Design, Innovation and Developing Zero/Minimum Waste

ELICO Ltd.

ELICO is proactively incorporating 3R (reduce, reuse, recycle) initiatives for Product designs aimed at effective use of limited resources, reducing waste and promoting recycling. With strong establishment of Environmental Management System ISO14001:2015, design, development and manufacturing of various products & services are carried out to reduce environmental impacts throughout their life cycle. By adopting the 3Rs, potential cost saving is achieved by waste minimization and reduction while contributing towards environmental sustainability.

Promoting Modular Design, Reducing material Intensity, Reducing dispersion of toxic substances, Enabling the ability to recycle, Extending product durability, Design for low-power, Design for Small foot-print, Design for durability, Design for serviceability, Design for maintenance are the key principles followed by ELICO in Design & Development cycles to improve the applicability of 3R concept to all its products. ELICO targeted over making the Products smaller by pursuing optimal size and reducing the number of parts.

In manufacturing process, 3R best practices are adopted in achieving the best results- Reduce the power consumption by implementing LED lighting & effective use of power, Zero water wastage by effective monitoring & auto control systems, Minimize paper consumption by implementing ERP software across all process operations, Zero defect material by proper supplier sourcing & effective inspection process, Reduce pollution of air, water and noise by maintaining Green environment, Promoting Buy-back policy to customers.

Going forward, ELICO will continue to adopt various approaches to conserve natural resources and incorporate sustainability in the product design to minimize environmental impacts over the entire product life cycle.

Excellence in Design, Innovation and Developing Zero/Minimum Waste

GREENMITTI

GREENMITTI is dedicated to minimize the electronic waste along with promotion of efficient waste management, proper education through practical works and Green conservation. The company works mainly on E-waste management and Zero Waste Management in the states of Andhra Pradesh, Telangana and Goa. We are also Andhra Pradesh Pollution Control Board, authorized Recyclers. Improvement of social livelihood is possible with phase wise implementation of sustainable flower waste management in the city. As a part of Zero waste management, the company has come up with a novel idea of converting floral and coconut waste into natural Eco products, flower manure and handmade soaps from flower powder. A pilot project on making Dhoop sticks and manure from flower waste has been tested successfully with women staff. This project is being planned to be implemented on a large scale under Women empowerment program.

Paper and cloth recycling are also tested by our company. The staff made seed bands and seed rakhi's using paper as recycled material for Rakshabandhan and also working on seed paper making from trash. They have around 16 women working on waste cloth recycling like cotton cloth into yarns. And covert waste cloths into bags, mask, key chains etc.

Excellence in Design, Innovation and Developing Zero/Minimum Waste

The Shakti Plastic Industries

The Shakti Plastics being a recycler of industrial and post-consumer waste Shakti Plastic Industries have generated zero waste from both its factory operation and administration. We have absorbed over 27000 MT per annum and made recycled plastic granules and recycled plastic products out of it. The company is looking for to establishing 10 upcycling facilities across the country so we can channelize more waste from landfills and incineration.



Confederation of Indian Industry
125 Years - Since 1895



CII 3R AWARDS (REDUCE, REUSE, RECYCLE)

'EXCELLENCE IN WASTE MANAGEMENT AND MINIMIZATION'

3R AWARDS CATEGORIES

Excellence in 3R by Industry

Excellence in Municipal Solid Waste (MSW) and Other Urban Waste Management (Plastics & E-waste)

Excellence in design, innovation and manufacturing product (s) yielding zero/minimum waste at user's end

WHO CAN APPLY

All large industry, medium industry, small & micro enterprise and start-ups which are

Managing wastes generated in—from their own manufacturing/ operation/ services activities by adopting 3R practices

Efficiently managing municipal solid waste and other urban wastes i.e. plastics and e-wastes in the whole value chain of C&T, processing/ recovery and scientific disposal

Developing or Manufacturing products which generate minimum/zero waste at the user's end

SECTORS*

Aerospace & Defence | Automobile | Cement | Chemicals & Petrochemicals | Construction Material and Industry | Consumer Goods | E-waste Operators and others | Electronics and IT | Fast Moving Consumer Goods (FMCG) | Food Processing | Healthcare | Hotel and Restaurants | Manufacturing Municipal Solid waste/ Plastic Waste Operators | Paper Packaging | Plastics | Steel

*The list is illustrative

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Confederation of Indian Industry
125 Years - Since 1895

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government and civil society, through advisory and consultative processes.

For 125 years, CII has been working on shaping India's development journey and, this year, more than ever before, it will continue to proactively transform Indian industry's engagement in national development.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, with about 9100 members from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 300,000 enterprises from 288 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, livelihoods, diversity management, skill development, empowerment of women, and sustainable development, to name a few.

With the Theme for 2020-21 as Building India for a New World: Lives, Livelihood, Growth, CII will work with Government and industry to bring back growth to the economy and mitigate the enormous human cost of the pandemic by protecting jobs and livelihoods.

With 68 offices, including 9 Centres of Excellence, in India, and 9 overseas offices in Australia, China, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with 394 counterpart organizations in 133 countries, CII serves as a reference point for Indian industry and the international business community.

Confederation of Indian Industry

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