



Confederation of Indian Industry

INDIA'S LEADING COMPANIES IN **MANAGING WASTE**



CII 3R AWARDS COMPENDIUM 2021

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FOREWORD



Sustaining healthy ecology on earth, which is vital for our existence has become a critical issue. The CII 3R Awards aim at recognising Industries which have embraced best practices for managing waste generated from their own activities; developing minimum/ zero waste yielding products; managing municipal solid waste; and other urban wastes such as plastic and e-wastes under EPR strategies.

The awards also recognize the start-ups which are offering innovative solutions for sustainable waste management; and Municipal Corporations which are effectively managing the municipal solid waste in respective cities/ towns.

The purpose of these awards is to encourage, recognize and reward best practices of industry, start-ups and municipal corporations in order to set a benchmark of excellence in waste management for large number of players to thrive to adopt these best practices and improve upon them.

Different categories of industry viz large, MSME's, start-ups and Municipal Corporation have been encouraged to participate in the competition and the entries were evaluated by experts of the appraisal committees and further members of eminent jury.

This current compendium briefly presents waste management processes & best practices of 16 companies and start-ups which are winners and recipients of Merit Award of the CII 3R Awards 2021. It is expected to be a reference document for industry and start-ups to learn and understand best waste management practices and ecosystem that is embraced and practiced by some of the fellow companies and start-ups in India.

It is an extremely important initiative by CII to encourage 3R (reduce, reuse and recycle) practices amongst the industry, start-ups and municipal corporation 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



One of the fastest growing economies, India is seeing a rise in volumes of waste generated as a by-product of increased activities. To mitigate the impact of this on economic growth, public health and the environment, a robust and efficient waste management system and effective practices need to be inculcated among all sections of society, including industry.

Waste management is attracting many enterprises and startups which are adopting newer, innovative and cost-effective approaches and solutions, and acting to reduce, reuse, recycle, and extract value from waste.

Confederation of Indian Industry (CII) in its continuous endeavour to promote sustainability of industry has undertaken many initiatives to help firms manage their environmental impact and become more efficient. It has prioritised waste management as part of its efforts towards promoting a circular economy and has been working on various 'waste to worth' activities.

As part of this mission, the 3R Awards were instituted to recognize and reward companies, start-ups, and municipal corporations for their waste management efforts. With the 3 Rs of Reduce, Reuse and Recycle, the Awards are aimed at setting benchmarks of excellence in waste management with a view to identifying best practices for dissemination in industry and municipal corporations.

I believe the 3R Awards would raise awareness on the benefits of efficient waste management among enterprises and would encourage wider adoption of the practices. They would enable industry and municipal corporations to extract value from waste and ensure its better disposal for minimal impact on the environment.

I congratulate all companies, start-ups and Municipal Corporations who are consciously and actively engaged in waste management initiatives and look forward to adoption by others for a cleaner and healthier environment.

Chandrajit Banerjee

Director General

Confederation of Indian Industry (CII)



Confederation of Indian Industry



ABOUT CII 3R AWARDS / CATEGORIES



ABOUT CII 3R AWARDS 2021

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 by industries, start-ups and ULBs 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, reusing, and recycling of plastic & packaging waste, e-waste and 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, start-ups and ULBs 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, (3) managing Municipal Solid Waste (MSW), (4) managing plastic & packaging and e-waste through better EPR Strategies, (5) Innovation by Start-ups for Sustainable Waste management, and (6) Excellence of MSW management by ULBs.

With this background, CII under its waste to worth initiative, this year has launched **2nd edition of 3R (Reduce-Reuse-Recycle) Awards** to recognise and reward best practices of industry, start-ups and ULBs in order to set a benchmark of excellence in waste management for large number of industries to thrive to adopt these best practices.

CII 3R AWARD CATEGORIES 2021

Categories	Sub-categories
Excellence in Managing Municipal Solid Waste (MSW) by private sector	
Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies	a) PIBOs b) PROs c) Recyclers/Co-Processor
Excellence in Managing E-waste by EPR Strategies	a) PIBOs b) PROs c) Recyclers/Co-Processor
Excellence in Innovative solutions by Start-ups for Sustainable Waste Management	
Excellence in developing the zero/minimum waste yielding products	
Excellence in 3R by Industry (Managing Own Waste)	a) Manufacturing b) Services and Other c) Aluminium
Excellence in Managing Municipal Solid Waste (MSW) by ULBs/ MCs	

**WINNERS AND RECEIPTS OF MERIT
AWARD OF THE CII 3R AWARDS 2021-
INDIA'S 16 COMPANIES AND START-UPS
MANAGING WASTE EFFICIENTLY**

WINNERS AND RECEIPTS OF MERIT AWARD OF THE CII 3R AWARDS 2021- INDIA'S 16 COMPANIES AND START-UPS MANAGING WASTE EFFICIENTLY

Winner of Excellence in Managing Municipal Solid Waste by Private Firms	Geocycle
Award of Merit for Excellence in Managing Municipal Solid Waste by Private Firms	Antony Lara
Award of Merit for Excellence in Managing Municipal Solid Waste by Private Firms	ITC Kolkata
Winner of Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies (PIBOs sub-category)	Godrej & Boyce Mfg. Co. Ltd
Winner of Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies (PROs sub-category)	Recykal
Award of Merit for Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies (PROs sub-category)	NEPRA Resource Management
Award of Merit for Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies (PROs sub-category)	The Shakti Plastic Industries
Winner of Excellence in in Managing Plastics and Packaging items/ wastes by EPR Strategies (Recyclers sub-category)	Ramky Reclamation & Recycling Ltd
Winner of Excellence in in Managing E-waste by EPR Strategies in (Recyclers sub-category)	Exigo Recycling Pvt Ltd
2 nd Winner of Excellence in in Managing E-waste by EPR Strategies (Recyclers sub-category)	Cerebra Green
Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management	Ishitva Robotic Systems



Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management	Genrobotics Innovations
2 nd Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management	Rekart Innovations Pvt Ltd
2 nd Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management	The Kabadiwala
Winner of Excellence in Developing Zero/ Minimum yielding products	Greenwaves Environmental Solutions
Winner of Excellence in CII 3R for Industry- Managing Own Waste (Manufacturing Sub-category)	Tata Steel

WINNERS OF THE CII 3R AWARDS 2021- MUNICIPAL CORPORATIONS MANAGING MUNICIPAL SOLID WASTE EFFICIENTLY

1 st Winner of Excellence in Managing Municipal Solid Waste by Municipal Corporations/ ULBs	Municipal Corporation, Durg
2 nd Winner of Excellence in Managing Municipal Solid Waste by Municipal Corporations/ ULBs	Municipal Corporation, Risali
3 rd Winner of Excellence in Managing Municipal Solid Waste by Municipal Corporations/ ULBs	Municipal Corporation, Rajnandgaon
3 rd Winner of Excellence in Managing Municipal Solid Waste by Municipal Corporations/ ULBs	Municipal Corporation, Silvassa



RECEIPT OF LETTER OF APPRECIATION FOR CII 3R AWARDS 2021

A. Excellence in Managing MSW

Ecogreen Energy

Excel Industries

Godrej & Boyce (G&B)

Mahindra World City Developers Limited

B. Excellence in Managing Packaging or Plastic Waste by EPR Strategies

Producers/ Importers/ Brand Owner Sub-category

Dabur India limited

Hindustan Cola Cola

PepsiCo India

Producer Responsibility Organization Sub-category

Rekart Innovations

Sahaas

CopRec Solutions LLP

Recyclers/ Co-processor Sub-category

Geocycle

Lucro

C. Excellence in Managing E- Waste by EPR Strategies

Producers/ Importers/ Brand Owner Sub-category

Samsung

Producer Responsibility Organization Sub-category

Recykal

Recyclers/ Co-processor Sub-category

Greenscape

D. Excellence in Innovative solutions by Start-ups for Sustainable Waste Management

Recylean

Greenwaves

3R Zerowaste Pvt Ltd

NEXT ERA Energy

E. Excellence in 3R by Industry (Managing Own Waste)

Manufacturing Sub-category

Welspun Flooring Limited

Larsen & Toubro Limited TLT Factory Pithampur

Plant Lipids Private Limited

Tamilnadu Newsprint & Papers Limited

RIL - Hazira Manufacturing Division

JK Tyre & Industries Ltd, Vikrant Tyre Plant

JK Cement, Nimbahera



E. Excellence in 3R by Industry (Managing Own Waste)

Services Sub-category

NTPC Netra

Tata Power Delhi Distribution Ltd.

Aluminium Sub-category

Hindalco Belagavi

Hindalco Aditya

Winner of Excellence in Managing Municipal Solid Waste by Private Firms



With the enabling policy landscape municipalities have the budget to look for more sustainable solutions, yet competent organizations able to handle the complex waste generated in our cities do not exist and this is the gap Geocycle is filling.

Pre-processing and co-processing

Geocycle's technology for managing waste is co-processing - a globally recognized technology through which waste is treated in energy intensive industries such as cement. During coprocessing, the mineral part of the waste replaces primary mineral materials (such as limestone, clay or iron) and the combustible part provides the energy needed for cement manufacturing. As a result, 100% of the waste input is recycled and recovered without producing any residue.

Before it can be safely co-processed, the waste generally needs to undergo a preparation process i.e. pre-processing, so that the resulting product complies with the technical specifications of cement production and guarantees that environmental standards are met. Pre-processing is done by techniques such as size reduction, screening, impregnation, blending etc

Geocycle's Infrastructure and projects

Geocycle India leverages its global competence, specialized assets, and expertise to handle complex waste including municipal waste. Geocycle's global experience and expertise has enabled it to safely set up state of the art facilities for processing and co-processing sorted municipal waste including RDF and SCF. These facilities include Waste co-processing and Pre-processing facilities at ACC and Ambuja Cement plants at Wadi (Karnataka), Kymore (MP),

Bhatapara Chhattisgarh), Rabriyawas (Rajasthan), Maratha (Maharashtra) Ambujanagar (Gujarat).to manage the wastes from the respective states.

Geocycle India is partnering with various ULBs like Goa, Chennai, Noida, Nagpur, Bilaspur, Visakhapatnam, Vadodra, Trichy and Erode for managing SCF/RDF generated from fresh MSW and from cleaning of legacy dumps. In the near future, Geocycle has plans to extend its services to Dehradun, Bangalore, Kochi, Gurugram, Lucknow, Srinagar, Kolkata, Bhubaneswar, Mangalore, Hyderabad and Bhopal in addition to the above-mentioned cities. Through coprocessing RDF from fresh MSW processing and from legacy dumps by 2025 Geocycle aims to move close to 10 lakhs tonnes of MSW per annum away from landfill and help remediate hundreds of acres of land.

Award of Merit for Excellence in Managing Municipal Solid Waste by Private Firms



M/s Antony Lara Enviro Solutions Pvt Ltd (ALESPL) is subsidiary company of M/s Antony Waste Handling Cell Limited (AWHCL). AWHCL is 1st Indian Waste Management company entered IPO and succeeded in Stock market.

We are providing services in Mechanized Sweeping, Collection, Transportation, Processing and Disposal of Municipal Solid Waste in 9 states primarily catering to Indian Municipal Corporations.

Through our 14 ongoing C&T Projects, we have collected and transported during 20-21 is 1.28 million tons of waste by Closed compactors to Processing facility or Sanitary Landfill. We deployed various types and sizes of closed vehicles for transportation of the waste.

We have developed various Online Monitoring Systems such as RFID Reader and Tag, GPS tracker & Fuel Monitoring systems. Deployed CNG based small vehicles and maintained PUC to adhere BS VI Norms.

Through our 3 ongoing MSW Processing work, we have processed 2.06 million tons of waste during 20-21 involves Material Recovery Facility, Composting, Bioreactor Landfill and Sanitary Landfill. We minimized environmental emissions of 250 Cum of raw leachate is treated daily at the Leachate Treatment Plant and reduced Greenhouse gas emissions from processing plant are captured and converted into energy thus reducing the emission of 72,208 Carbon dioxide per year is controlled.

Site odor is handled and managed using ecofriendly enzyme sprays to minimize the odor, applying daily topsoil cover on top of garbage to avoid bird menace.

Daily collected Leachate is treated with aim of reducing BOD, COD and heavy metals to recirculate in our Bioreactor landfill cell and the excess amount of Leachate dispose of permissible limit as per MPCB norms.

Providing regular training of employees on various topics ranging from Construction hazards, Waste handling, Fire safety to material handling if in case of emergency and heavy vehicle safety purposes.

Providing IEC activities in all our projects to promoting the source segregation at source and educating citizens to do not littering or throwing garbage on rivers, canals and roadsides.

We being responsible corporate citizens are committed to make positive contribution towards society. We spent over 1.23 Cr under CSR activity for Empowerment of Girl Child, Disaster Management, Education and Skill Building, Health and Wellness and Environmental Sustainability.

Award of Merit for Excellence in Managing Municipal Solid Waste by Private Firms



ITC through its Social Investments Programme - “Mission Sunehra Kal”, implements large scale Solid Waste Management (SWM) interventions, focussing on “minimising waste to landfills” by processing it closer to the waste generators, in a financially sustainable manner. The Company has models for towns, rural catchments and temples, currently operational in 16 districts across 11 states.

As per SWM Rules 2016, ‘Temple’ generating 100 kg per day waste is considered a bulk generator and hence has to manage its waste. However, most of the waste generated is either thrown in water bodies nearby or municipal bins from where it reaches to landfill. To address the intensifying problem of temple waste, ITC launched ‘Green Temple (GT) Programme’ which has covered 210 temples in Tamil Nadu, Uttar Pradesh and Uttarakhand by March 2021, cumulatively managing 907 MT waste with only 9% going to landfill.

Programme Objective and Approach

ITC’s GT model focuses on closed-loop, decentralised waste management system, based on Circular Economy Principles, which processes temple waste into products that can be used within the temple premises. The overarching objective is to ensure “Zero Waste Temples” by:

- Mobilising, sensitising and educating temple authorities on managing temple waste within the temple premises, based on the 3R principles – Reduce, Reuse and Recycle.
- Helping temple authorities and citizen committees choose and implement appropriate waste management technologies.

- Developing Green Temple as a resource hub to impart knowledge and raise awareness on 'Community- owned SWM' among other nearby temples, market associations and residents.

The Process

Segregation of waste into biodegradable and non-biodegradable is done within the temple:

- Temples with Goshalas install bio-digesters to generate bio gas, and use it in the temple kitchen, thus replacing fuelwood (which is polluting) or LPG cylinders savings costs.
- Temples without Goshalas install composters to process waste into high value compost, which is used as manure in the temple garden or sold to devotees, thus generating revenue from waste.
- Plastic waste is segregated and handed to authorized recyclers. This way, it does not end up in landfills.

Institutional system for participation, ownership and sustainability

- Members from temple authorities, RWAs, market associations and devotees are organized into temple committees, and their capacities built for planning, implementing and monitoring SWM interventions. Vendors supplying offerings near the temple are also sensitized and encouraged to opt for eco-friendly packing material.

The GT Programme reduces or eliminates avoidable handling, transportation and storage, which not only reduces associated waste management costs, but also avoids GHG emission from transportation and landfills. To make the Programme cost effective and scalable, various types of low-cost composters are identified for temples to choose from, depending on the quantum of waste generated.

Having demonstrated the efficacy of the model and the impact, ITC signed a MoU with Hindu Religious and Charitable Endowments Department, Government of Tamil Nadu in March 2020, to build capabilities and facilitate the implementation of the GT Programme in over 36,000 temples across the state. This unique collaborative GT Programme will over the years become a key component of SWM interventions.

Winner of Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies (PIBOs sub-category)



Godrej & Boyce (G&B) has been recycling more quantity of plastic waste equivalent to the packaging quantity due to the sale of its products since 2018. G&B has always been proactive on Plastic waste EPR and has recently joined the 'India Plastics Pact'. The G&B's goal for Plastic Waste EPR-

- To help Develop and Boost Plastic Waste Management Ecosystem in India by appointing partners PAN India
- Type-wise Plastic waste offset: treat all types of plastics. Since 2021-22 G&B plans to offset equivalent amount of all the types of packaging plastics put in the market through EPR.
- To achieve geographical spread to offset quantity and type in proportion to the sale of our products across India.
- G&B has continued with higher EPR targets though actual plastic waste generation was much less

Starting implementation of EPR in FY 2018-2019, G&B had proactively transitioned to latest amendments requirements of the rules. EPR is implemented under the Registration of Producers, Importers & Brand-Owners (PIBOs) under Plastic Waste Management Rules 2016 (as latest amended) requiring PIBOs to fulfil EPR in all the States/UTs in which they introduce their products.

Of the three alternatives in the rules for implementation of EPR plan for Plastic Waste Management (PWM) in the States/UTs in which a PIBO introduce their products, G&B has adopted EPR through Waste Management Agency engagement methodology. Steps followed:

- a. Engagement of Producer Responsibility Organisation (PRO)
- b. Assigning Targets considering G&B business volume in the state and PRO capability like ULB tie-up



- c. Quarterly review of Progress and documentation
- d. Quarterly EPR Reporting to CPCB in specified format and queries are addresses promptly

Winner of Excellence in Managing Plastics and Packaging items/ wastes by EPR Strategies (PROs sub-category)



As a registered PRO we act as a trusted partner for PIBOs for management of plastic waste along with a transparent digital data source and tracking solution for local and national government authorities. We have built tailor made digital technology solutions consisting of web (EPR Loop), mobile applications (Recykal Marketplace), SaaS products (Smart Centre) that connect all the stakeholders in the ecosystem.

Waste Collection: As a PRO we assist PIBOs and ULBs in conducting awareness campaigns across the country targeting all stakeholders - Corporates, Waste Workers, Students, RWAs, Communities and ground-level workers in the ecosystem. We connected 400,000+ consumers across India.

Waste Processing: Through Recykal, PIBOs enable waste collection of post-consumer plastics from waste generators, which are channeled to the nearest MRF/DRCC or a Recykal Point. Using the Recykal's Smart Centre Solution the material entering and leaving the facility is tracked. It digitises the local waste management centers creating visibility of material flow. We partnered with 47 municipalities and 67 ULBs in India.

Waste Channeling: The incoming waste is sorted, baled, and stored. Meanwhile, a suitable recycler (for the recyclables) is found using the Recykal marketplace application. Whereas the Non-recyclable plastics like MLP wastes are sent to a co-processing unit for end-of-life solution.

Recykal Marketplace effectively bridges the gap between Recyclers and Aggregators. The solution has connected more than 280 recyclers and aggregators in India. The baled waste is transported to the recycler for further processing.



Waste Tracking: It should be noted that digital platforms such as EPR Loop help PIBOs effectively manage, track, and implement suitable actions for their EPR requirements. This also helps them plan their processes, & operations providing a holistic transformation which enables the creation of a sustainable circular economy.

Our end-to-end digital solutions help PIBOs effectively manage their post-consumer waste which is a key target as per the EPR Rules.

Award of Merit for Excellence in Managing Plastics & Packaging wastes by EPR Strategies (PRO Subcategory)



NEPRA

As a PRO, NEPRA encourages sustainable end of life disposal of post-consumer plastic packaging waste. NEPRA has been one of the first PROs in the country aiding to help all stakeholders of EPR meet compliance with ease, minimizing their challenges by sensitizing them on the law, its implications, and applicability as well as supporting its implementation. NEPRA works closely with PIBOs, government bodies (ULBs/PCBs), collection partners, end-disposal partners and the informal sector. It has been successful in providing a complete EPR Solution, focusing on the essentials- Compliance, Monitoring, Documentation and Reporting.

Our methodology consists of 6 different steps- Step 1: Association with PIBO; STEP 2: Awareness/ Knowledge sharing to stakeholders; STEP 3: Waste Collection; STEP 4: Disposal; STEP 5: Audit and STEP 6: Take-Back Credits.

With experience comes several learnings that has led NEPRA build on its technology, making functioning of the company as a PRO efficient. Our software EPR Connect is built to ensure transparency, traceability and timely management of EPR requirements. We have also included features of AI verification using OCR & IDP. To have an inclusive approach, we have included the feature of facial recognition in our system, used to map waste pickers and include them in the channel of collection system.

Realizing the importance of external audit for better governance, NEPRA has hired a big four for its audit.



NEPRA at present is connected to over 150+ PIBOs, 2000+ Aggregators and waste pickers, 600+ women workers at its MRFs, 50+ end disposal companies, 50+ ULBs, working with CPCB. SPCBs in 29 states and Union Territories pan-India. In the last 4 years, NEPRA has travelled extensively, as a PRO, to conduct training program for various government officials as well as Plastic Manufacturing Associations etc. It has also been a part of various forum as speaker on plastic waste management across the country. NEPRA also penned down its own draft guidelines for EPR Implementation, which were much appreciated in the industry. Several of the aspects laid by NEPRA are also seen as covered in the latest draft on EPR regulations by MoEFCC on 6th Oct 2021.

Award of Merit for Excellence in Managing Plastics & Packaging wastes by EPR Strategies (PRO Subcategory)



The Shakti Plastics has Pan India wide presence now collection centres in almost all States & Union Territories. Shakti is most entrusted company for EPR service of plastic waste under PWM rules and Recycling. The company has transparent and traceable system in place for waste management. It has recycling unit installed in Palghar, Mumbai equipped with best technologies known to plastic recycling industry. Shakti has 10+ upcoming recycling units across different states and have already started installations in Gujarat, Madhya Pradesh and Odisha. With over 60+ULB tie-ups and 30+ Disposal centres at Pan-India level, we have devised a systematic channel for proper scientific disposal of the post-consumer collected plastic waste.

The collected post-consumer recyclables are either reprocessed at our recycling facility at Palghar or are sent to our Recycling partners. The non-recyclables are sent for safe disposal to Cement Kilns/Waste to Energy plants.

We have introduced “**Digital Documentation System**” which would facilitate to store all EPR related documents with detailed monthly reports on our Cloud Server which can be accessed as and when needed maintaining traceability & avoid duplicity.

Third-party audits are done at recycling and collection center to ensure **transparency & authenticity**. Invoice of Collection Center to Recycling Plant, Weight Slips, Inwards at Recycling Centers/Plants, Disposal Certificates, E-way bill/LR Copy, Co-Processing Certificates, etc.

Winner of Merit for Excellence in Managing Plastics & Packaging wastes by EPR Strategies (Recyclers / Co-processor Subcategory)



Of the 6.3 Billion tonnes of plastic waste produced since the 1950s only 9% has been recycled and another 12% incinerated. We, at Ramky have developed an innovative & two-pronged approach to address the burgeoning plastic problem. While we accelerate the transition towards circularity by recycling of plastic waste for making new products, we are also focussed on material and product redesign, consumer behaviour and circular waste management stimulating waste reduction. The two-pronged approach is an attempt to create a bigger positive impact.

We are working with Municipal corporations across 20+ states for plastic waste management. To ensure ethical sourcing & sustainable recycling, we have developed innovative social inclusion models wherein the informal worker, waste collectors work as our extended enterprise. The segregated material is processed at the Material Recovery Facility (MRFs) by deploying self-help groups, thus providing an inclusive ecosystem. Our best-in-class Waste-to-Energy and Plastic recycling plants are equipped to improve the recyclability and reduce the footprints of waste on Earth. At our facilities, the post-consumer plastics is recycled into granules, chips, pallets, and bags. Our R&D Teams in collaboration with academia and brand owners are working to develop recycled materials which are being used as secondary and tertiary packaging materials. This significantly helps reduce the plastic footprints, contribute to plastic neutrality thereby reducing the EPR obligations for the brand owners. We have also initiated collaboration with European Business & Trade Centre to adopt technologies which can help us manufacture food grade granules from recycled plastics thereby significantly reducing pressure on virgin plastics.

We enable industries, manufacturers, and brand owners to navigate through the challenges and implement robust EPR practices to our partner organizations to not only achieve their EPR goals with absolute compliance but also contribute to the global sustainability agenda.

1st Winner of Excellence in Managing Electronic wastes by EPR Strategies (Recyclers Subcategory)



Exigo as a recycler has been supporting EPR initiative by harnessing its pan-India network of e-waste collectors, aggregators, and Bulk Consumers to collect, store, ship different types of e-waste from various locations across India to its recycling plants.

Exigo's end consumer trade-in and buy-back programs, through multiple channels, across India, encourages formal direct sourcing, eliminating the leakages to informal sector, hence reducing the unhealthy practices for recycling of e-waste.

Exigo's awareness programs and collection drives for multiple stakeholders like, schools, colleges, corporate institutions, etc. brings in a behavioural change. Education on the right disposal methods and the health hazards of un-scientific disposal of e-waste helps safeguard health and environment.

Exigo's indigenously developed low-cost, high-yield recycling and refining technology and processes, is helping the EPR ecosystem in offering environment friendly sustainable solutions.

Exigo offer recycling services for e-waste, plastics, li-ion batteries, solar PV modules and waste to energy. Spent Li-ion batteries from portable electronics devices are recycled. Black mass is refined to extract salts of cobalt, which can further be processed into cell grade salt (to be reused in manufacturing cells).

The recyclable polymers from e-waste are processed into pellets (can be used in manufacturing). The non-recyclable polymers like, the separator film in li-ion batteries, the Polyurethane Foam (PUF) in refrigerators, phenolic resin from Printed Circuit boards plastics, etc., are processed using its carbonization plant to obtain light Diesel Oil (LDO) or Synthetic gas (Syn gas) which can further be used as a fuel. Exigo's sustainable practices include transparent upstream and downstream processes for better traceability.

2nd Winner of Excellence in Managing Electronic wastes by EPR Strategies (Recyclers Subcategory)



YOUR E-WASTE SOLUTIONS EXPERT

Cerebra is India's largest recycler and has the capability to handle 97000MT of e-waste annually and has got KSPCB (Karnataka State Pollution Control Board) licensing for processing E-waste, recycling and management activities. The first phase of the same has been completed on a 12-acre property, acquired through KIADB at Narasapura, Kolar District. The completely automated plant ensure 100% recycling of all the e waste with zero landfill commit, supported by a team of over 150 dedicated professionals. Cerebra is also R2 certified adhering to the highest norm of recycling. We have recycled close to 26000MT of e-waste working with the leading OEM's and helped them to fulfil the EPR mandate successfully.

The Office of Sustainability at Cerebra works closely with our customers to spearhead the effort through a combination of recycling, refurbishing and reuse programs, Consumer Awareness program: We partner with our esteemed customers to create effective awareness in various levels to reduce the adverse impact on environment and health arising out of the polluting technologies used in recycling e-waste in the unorganized sector thus promoting the core philosophy of EPR : Reduce, Reuse and Recycle

We are the only recycler in India with ISO27001 certification and at Cerebra we ensure no data theft from devices like computers and smartphones, recovery of expensive metals that can be reused for manufacture of electronic components and many more such problems. We are also ISO9001, 14001, 27001,45001 and R2 certified organisation. In addition to this we have also

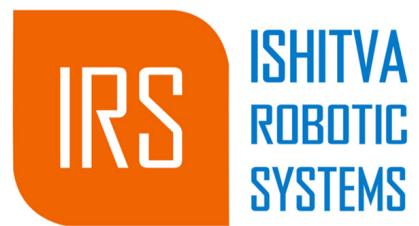
hired the services Global Quality services to audit the process and ensure that we are adhering to the stringent quality norms,

We reengineered every process that industry had defined and customized it to our requirement. We moved away from the collection from large aggregator model to informal Collection partner network who are exclusive partners of Cerebra We discuss and determine options for partnering with formal organizations and informal collectors through the collection partner network program. We have more than 30 collection partners across district HQ's across all the southern states in India Working out the right agreements and protocols (including payment systems) is a key to the success of formal-informal partnerships. Ensuring transparency is paramount for entering successful partnerships with producers and PRO.

At Cerebra we have built our in-house online tracking system S.P.O.C.K which tracks the entire journey of every piece of e-waste from the generation to its movement until its final disposal and technology plays an important role in identifying and tracking all goods until its final disposal. This covers all goods that are We built the best-in-class factory to provide better and safe working conditions to the workers working in this field.

1st Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management

(Category supported by Blue Planet Environmental Solutions)



Only 10% of waste is recycled in the World and the balance goes for dumping in land, water bodies, oceans and Incineration. Most of this is avoidable, if different plastic polymers are separated from each other so that they can get recycled and re-used. The scenario is even more problematic for developing countries, like India and Southeast Asia. None of the existing developed world automation technologies, like Optical sorting, are economically viable and practically suitable for Indian conditions.

Ishitva took on this challenge and has built an original optical unit NETRATM which uses AI and machine vision to recognize the objects on a high-speed conveyor. It has processed and trained on millions of waste classifier images and continues to learn and get better every day. With the help of this AI Vision system, Ishitva has built innovative AI powered Air Sorting solution SUKA® to segregate dry waste at a very high speed. With the help of AI and Machine vision, these systems not only able to provide more accurate and cost-effective identification, but also, are able to add a very powerful information layer with sorting operation including brand wise sorting data etc. Ishitva is able to provide answers to various sorting challenges faced by the industry including: Black Plastic, Multilayer packaging, Objects with sleeves, Objects with dirt layer on top, Brand identification and quantification etc. Ishitva has now introduced another industry changing concept which is fully automated MRFs which provided last level of segregation without any human intervention. Such system aims to transform how dry waste is being handled in our country: automation to bring scale and which in turn to increase the waste collection demands and therefore reduce material flow to landfills and waterbodies.

1st Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management

(Category supported by Blue Planet Environmental Solutions)



Genrobotic Innovations is the National award-winning startup primarily focused on designing & developing robotic solutions to address the various sanitation and healthcare issues such as manual scavenging, rehabilitation of paraplegic patients.

Proper sewage wastewater management is essential in the smooth running of every city. Any kind of inattentiveness in the maintenance of sewer lines, that connected to the Sewage Treatment Plant adversely affects the city's whole functioning and makes the sewage network out of order. Manholes are designed for the proper maintenance of sewer lines, the uneasiness in it caused by blockages which are identified through these manholes. Humans are needed to enter inside the manholes for taking timely actions. The irregularity of water flow due to the blockages in the manholes results in making the humans enter inside deep dangerous manholes to remove the blockages in order to reoccupy the natural flow, so many innocent lives have lost their life by inhaling toxic gases inside it.

Our Innovation - Bandicoot is the world's first robotic scavenger that is designed to eliminate the human intervention inside the manhole cleaning process and establish sewage waste maintenance in a sustainable and automated way. Bandicoot's unique features like the multipurpose human comparable robotic arm can do the picking, grabbing, shoveling, unclogging etc. by eliminating the complete requirement of manual intervention. With the help of an integrated bucket system, the collected waste can be lifted out easily from the manhole. Bandicoot improves STP Processing followed by the removal of blockages in the sewer lines and helps in proper channeling of the sewage water towards the sewage water treatment plant for further recycling process in a sustainable way.

2nd Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management

(Category supported by Blue Planet Environmental Solutions)

Rekart

Rekart has developed an organized and structured government-linked, private companies (brand owners) funded an independent, transparent, traceable, and sustainably compliant Single Use Plastic National-level collection network. As an innovative start up Rekart is scaling like a company where we currently working with more than 100+ brands, dealing with more than 1 lakh tons of waste, connected with 122+ ULBs in 27 states.

Rekart is a registered PRO under CPCB for Electronic waste and is connected with 10+ recycler PAN India. Under the jurisdiction of Jodhpur Nagar Nigam, Rekart has engaged 40 Waste workers to collect segregated solid waste through the door-to-door collection channel from 13,000 households.

In collaboration with UNDP India and Hindustan Coca-Cola Beverages Private limited. Rekart is working in Army Cantt area of Jodhpur where they have given employment to 35+ waste workers with a majority of women to collect waste from 5500 households.

For the first time in India, Rekart has developed a resource recovery project at 30 stations of Indian Railway, Delhi Division. Rekart is collecting dry waste from trains, tracks, yards, and platforms of the station and has established a centralized resource recovery centre/ MRF at the New Delhi railway station. Rekart is having its own MRF plant at Barmer, Jodhpur and in New Delhi.

Rekart is having 5 huge contracts for bioremediation of legacy waste with North Delhi Municipal Corporation, South Delhi Municipal Corporation, Pipad City Municipal board, Kullu Municipal Council and Manali municipal Council.

From these 5 projects, Rekart will process and divert more than 5 lakh MT of old, dumped legacy waste in the next year.

Under the guidance of Himachal Pradesh UDD, an MRF network was established in the state with the alliance of 9 ULBs. The post-consumer plastic waste is transported to UltraTech Cement Limited (Aditya Cement Works, Chittorgarh, and Rajasthan).

Rekart is currently doing AFR business with major Cement plant such as Ambuja Cement, ACC, Ultatech Cement and Dalmia Cement. Some of our future projects include management of Construction & Demolition Waste and Pre- processing of Hazardous Waste.

2nd Winner of Excellence in Innovative solutions by Start-ups for Sustainable Waste Management

(Category supported by Blue Planet Environmental Solutions)



thekabadiwala

Each year India generates around 63 million tonnes of waste and a number as insignificant as only 5% is getting recycled, the rest is being dumped into hazardous landfills causing pollution to spread across land, Air & water. Looking at this, The Kabadiwala discovered an urgent need to treat recoverable waste into resources and maximize recycling to eliminate such landfills and conserve natural resources for future generations.

The Kabadiwala is a waste-management startup operating its services through both the mediums of ground-level network & technology platform that streamlines collection, segregation & recovery of post-consumer waste from each section of society like residential communities, Small to big businesses or other bulk generating organizations or institutions.

The advance technology driven App of The Kabadiwala enables users to sell their dry waste in more than 40+ category available from the comfort of their homes with its cost-effective free pickups in just few clicks on the screen with flexible payment modes. As far as INNOVATION is concerned, our technology platform is infusing transparency and traceability into the waste management chain & organizing the sector through best logistics. This innovation takes a swift, when a scrap seller can trace the environmental impact of the waste sold and recycled in terms of energy & resources saved on the App.

The same innovation technology seems to excel when it is served as a great assistance in compliance with Extended Producer Responsibility as one of the waste solutions provided to organizations to offset their carbon footprint. The

Kabadiwala also manages city's 4 huge dumps at Material Recovery Facility (MRF centres) and employs more than 150 waste pickers from lower socio-economic background and provide them regular health & hygiene workshops with monthly rewards & incentives, we proudly showcase them across all our social media platforms as Green Superheroes and all of this is helping them live a dignified life.

The social awareness programs & experiments of The Kabadiwala are inclined towards motivating society to practice daily waste segregation as one of the easy sustainability habit since the household dry waste that includes used Plastic, Metal or papers can be recycled, once sold to a recycling partner like The Kabadiwala while the wet waste can used as a compost at homes but mixing the two end the good possibilities. This way, The Kabadiwala is bringing a change in disposal habits making it more SUSTAINABLE.

This Innovation and sustainability have helped The Kabadiwala recycle more than 50,88,000+ Kg of waste and the green cause has generated 250+ employment opportunities.

Winner of Excellence in developing the zero/minimum waste yielding products



Greenwaves is dedicated minimizing 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 3R by Industry (Managing Own Waste) (Manufacturing Subcategory)



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 by-products generated across the Steel Value chain 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. Since years, the company has been investing in research to develop technologies for reuse of iron and steel slags. The research has been aimed at maximizing value creation through development of diverse applications having minimum environmental impact while opening opportunities for various stakeholders of company and the community. The journey of Tata Steel can be comprehended through the pioneering and materialized technologies as well as the innovation pipeline pertaining to slag-based products. Through an in-house developed process of accelerated weathering of steel slag (LD slag), Tata Steel developed manufactured aggregates branded as Tata Aggreto. This is India’s first steel slag based branded product extensively used in road and light construction applications. Tata Nirman, another product based on steel slag fines has been established as a raw material of choice for brick manufacturing industry. Through innovative initiatives aimed at supporting farming sector, a multi nutrient fertilizer (branded as Dhurvi Gold) has been developed by a process of acid leaching of steel slag, which serves to provide low-cost soil conditioning solutions. Besides steel slag, various downstream products have been developed from blast furnace slag such as Ground Granulated Blast Furnace Slag (GGBS) and activated GGBS which can be used as partial



replacement of Ordinary Portland Cement (OPC) for making concrete, thereby positively impacting carbon footprint of cement manufacturers. For other type of metallic waste such as scrap, material processing is carried out in facilities including lancing, bailing, shredding etc.

Tata Steel 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 been engaging with various industrial, government bodies, research, and standardization agencies, to formalize the processes and applications in the form of codes to benefit steelmaking sector.



Confederation of Indian Industry

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.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, with over 9000 members from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 300,000 enterprises from 294 national and regional sectoral industry bodies.

For more than 125 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. 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.

As India marches towards its 75th year of Independence in 2022, CII, with the Theme for 2021-22 as **Building India for a New World: Competitiveness, Growth, Sustainability, Technology**, rededicates itself to meeting the aspirations of citizens for a morally, economically and technologically advanced country in partnership with the Government, Industry and all stakeholders.

With 62 offices, including 10 Centres of Excellence, in India, and 8 overseas offices in Australia, 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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