

Confederation of Indian Industry

Resource Conservation Initiatives by Indian Industry

"Green Makes Business Sense"

29 May 2018, Kolkata

A typical industry



Sales – Operating Cost = Profit



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Increasing sales vs Reducing Operating cost

Increasing Sales

- Results unpredictable
- Dependent on external factors

Reducing Operating Cost

- Reasonably predictable
- Dependent on internal factors

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Key Operating Costs

- Raw material
- Man power
- Energy
- Transportation
- Waste Management & Pollution Control











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How to Reduce Operating Cost for Waste Management & Pollution Control?



Resource Management Trends : Indian Industry

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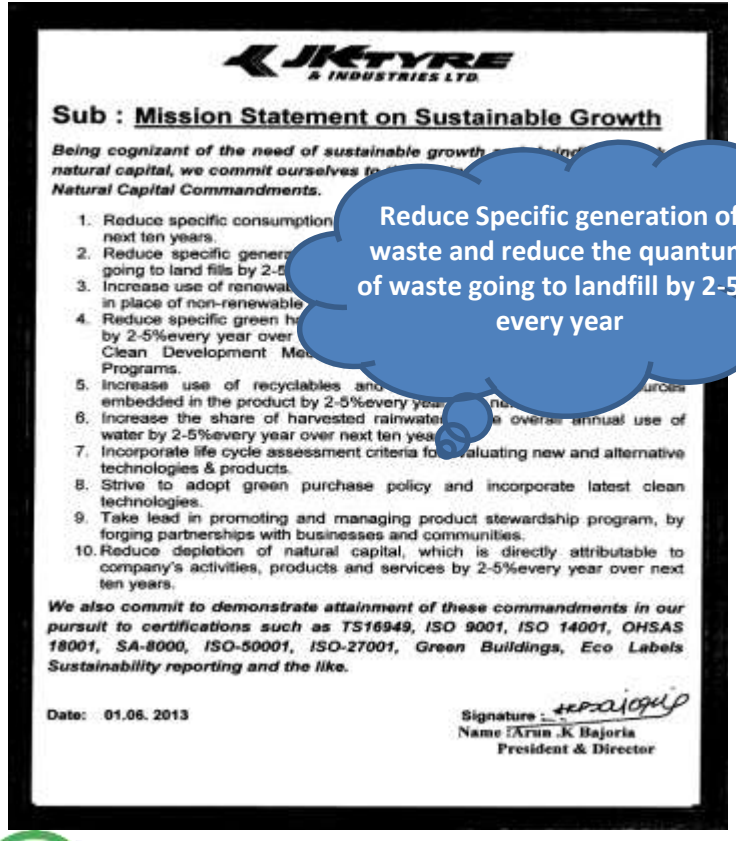




Trend # 1. Change in Mindset : "Waste Management" as part of Corporate Strategy

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Top Management Commitment



JK TYRE & INDUSTRIES LTD

Sub : Mission Statement on Sustainable Growth

Being cognizant of the need of sustainable growth ***natural capital, we commit ourselves to*** ***Natural Capital Commandments.***

1. Reduce specific consumption ... next ten years.
2. Reduce specific genera... going to land fills by 2-5...
3. Increase use of renewa... in place of non-renewable...
4. Reduce specific green h... by 2-5%every year over ... Clean Development Mec... Programs.
5. Increase use of recyclables and ... embedded in the product by 2-5%every yea...
6. Increase the share of harvested rainwate... overall annual use of water by 2-5%every year over next ten yea...
7. Incorporate life cycle assessment criteria fo... valuating new and alternative technologies & products.
8. Strive to adopt green purchase policy and incorporate latest clean technologies.
9. Take lead in promoting and managing product stewardship program, by forging partnerships with businesses and communities.
10. Reduce depletion of natural capital, which is directly attributable to company's activities, products and services by 2-5%every year over next ten years.

We also commit to demonstrate attainment of these commandments in our pursuit to certifications such as TS16949, ISO 9001, ISO 14001, OHSAS 18001, SA-8000, ISO-50001, ISO-27001, Green Buildings, Eco Labels Sustainability reporting and the like.

Date: 01.06. 2013

Signature :
Name :Arun .K Bajoria
President & Director

Reduce Specific generation of waste and reduce the quantum of waste going to landfill by 2-5% every year



TATA STEEL

TATA

- Uphold the Ta... growth and de...
- Engage with lo... lives in areas ... community pr... and values.
- Motivate our human resources for ... and by providing them a safe, fair and challenging ... work environment.
- Commit to conserve natural resources and ecology by (a) striving to be a global industry leader in efficient management of natural resources, energy and wastes, and (b) minimizing the impact on the Ecology in our areas of operations.
- Promotes research and innovation, adopt cutting-edge technologies, green infrastructure, and clean energy wherever possible to:
- Develop and provide value added products and services to ensure customer delight
- Deploy safe and environment friendly processes for our products and services
- Ascertain and continually improve the safety and environmental efficiency of our customers and their products which uses our products and services.
- Continuously engage with our employees, partners in the supply chain and other stakeholders to build awareness on sustainability, identify opportunities and promotes adoption of Sustainable practices.
- Perform better than applicable legal requirements in the socio-economic and environmental areas.
- Measure and Report our Sustainability performance and initiatives to our stakeholders annually.

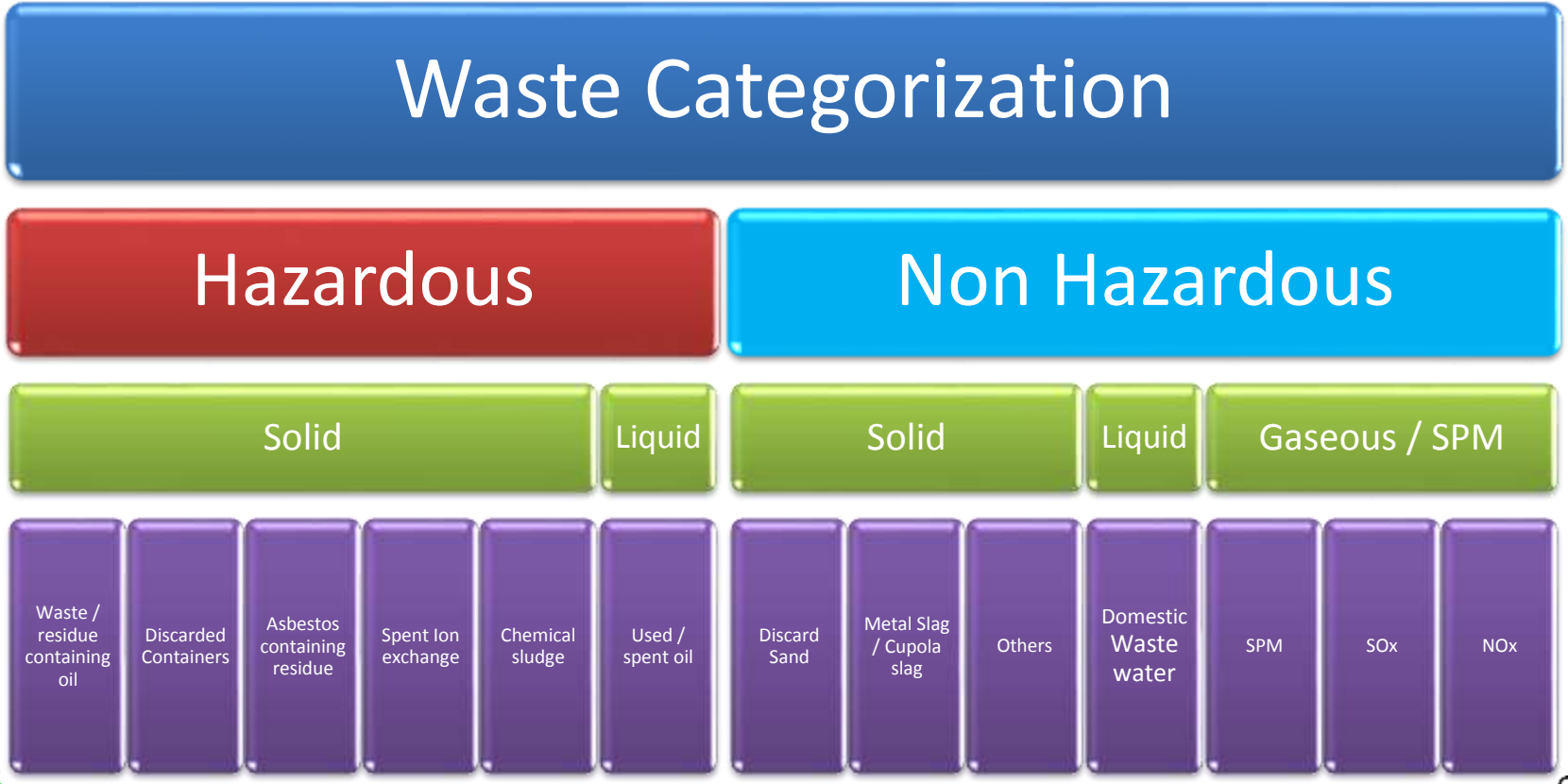
Date : November 1, 2013

T V Narendran
Managing Director

Commit to conserve natural resources and ecology by a) striving to be a global industry leader in efficient management of natural resources, …..

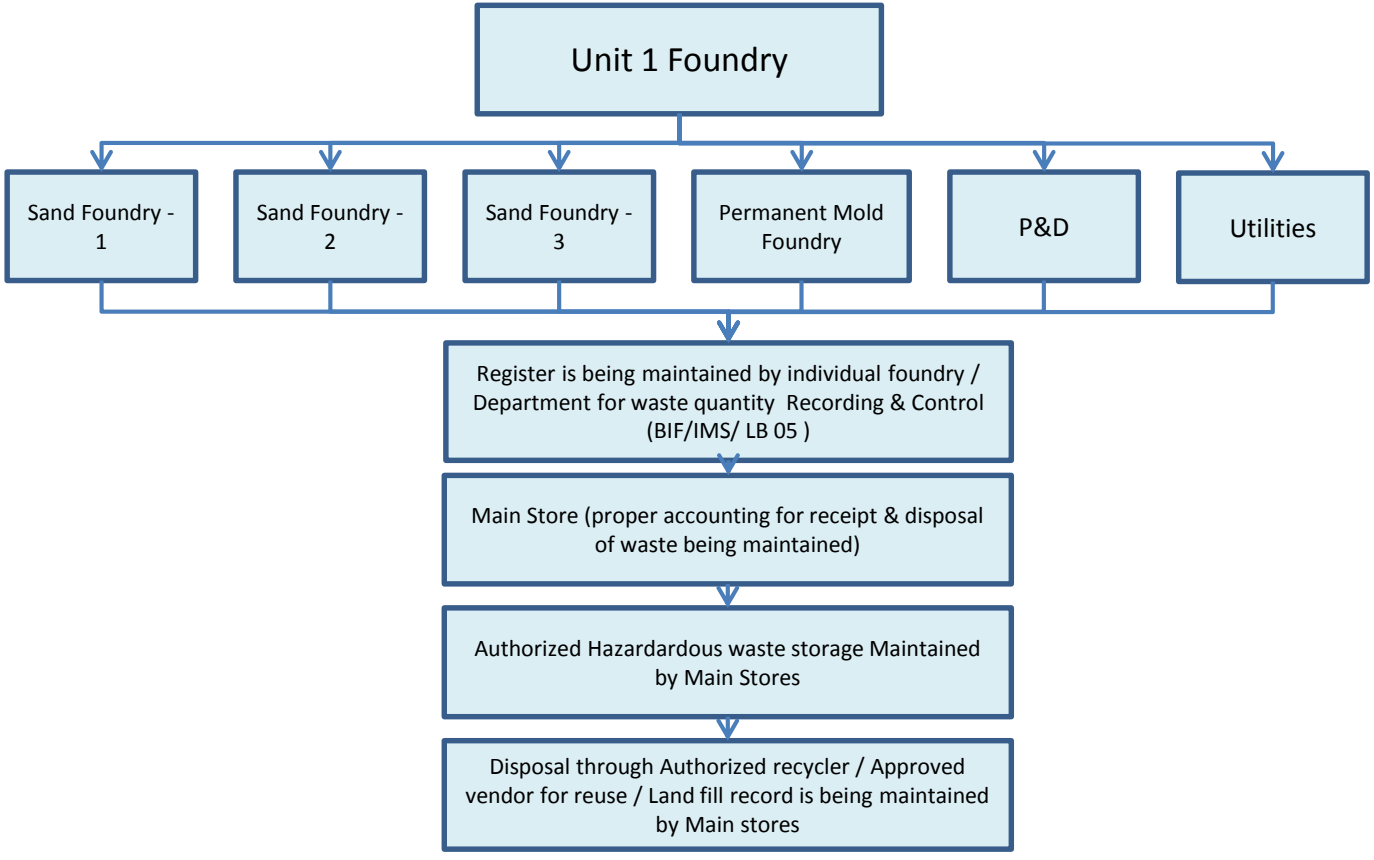
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Waste Mapping



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Waste Management Flow Diagram in a Foundry (*example*)



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Hazardous Waste Generation Listing / Target (*Sample Datasheet*)

S. No	Waste Type	SPCB Approved Quantity 2017-18	Unit	2013-14	2014-15	2015-16	2016-17	2017-18	Proposed Target 2018-19
1	Used / spent oil (cat. No.5.1)	70000	Kg	26678	30941	24875	18321	15260	14497
2	Wastes / residues containing oil	6000	Kg	3422	3897	5957	4672	3639	3457
3	Discard containers	100000	Kg	56754	46278	29107	37478	35292	33527
4	Asbestos containing waste	8000	Kg	557	370	146	0	0	0
5	Spent ion exchange	750	Kg	0	300	291	291	320	304
6	Chemical sludge	2000	Kg	35	0	1007	1007	0	0

Year	Solid Waste (in Kg)	Liquid Waste (in L)
2013 – 2014	60768	
2014 – 2015	50845	30941
2015 – 2016	36508	24875
2016 - 2017	43448	18321
2017 – 2018	39251	15260
2018-2019 (proposed Target)	**37288**	**14497**

Target : Zero Waste Disposal

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Journey from “Grey” to “ Green”









Courtesy : Amber Enterprises Pvt Ltd., Ranjangaon

“Scrap Yard” to “Waste Management & Control Area”



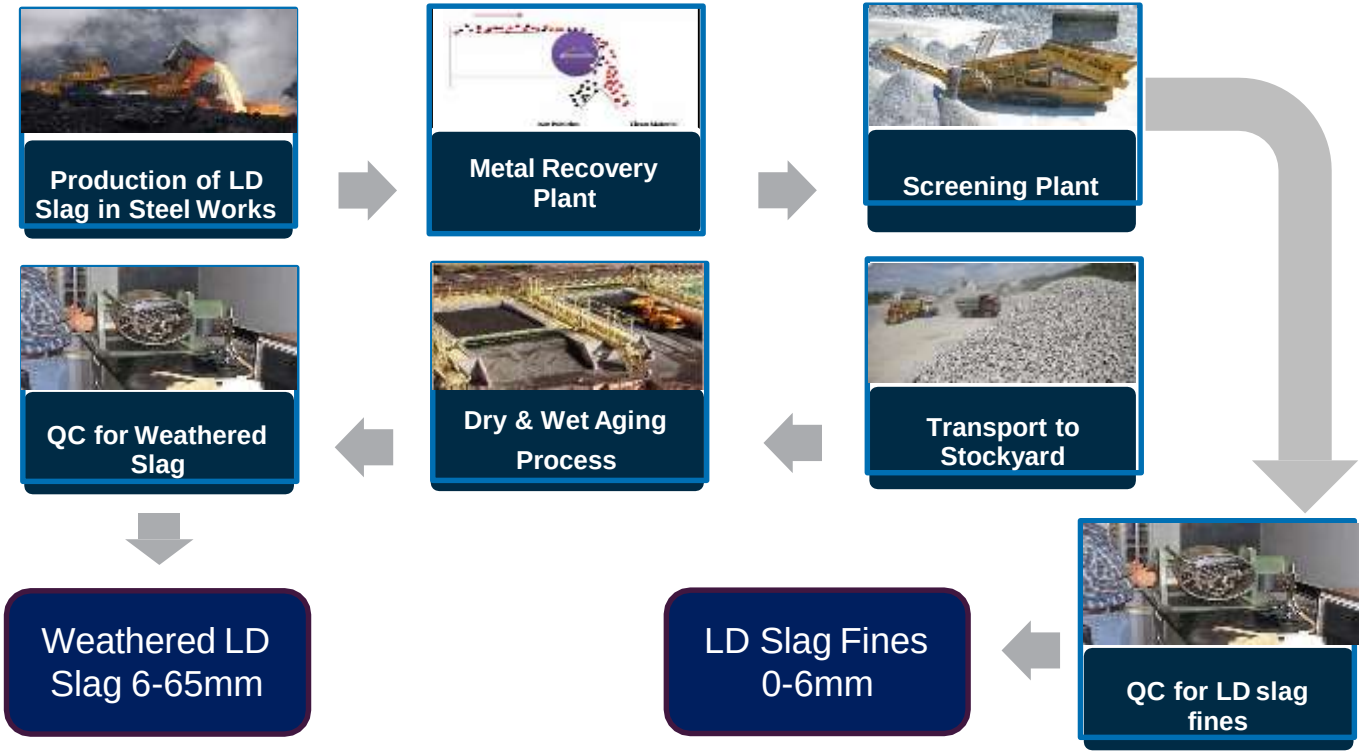




Trend # 2. Utilization of Waste as "Raw Material" or "Alternate Fuel"

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Utilization of LD Slag (*as generated during pig iron to crude steel processing*) as useful raw material (*example-1*)



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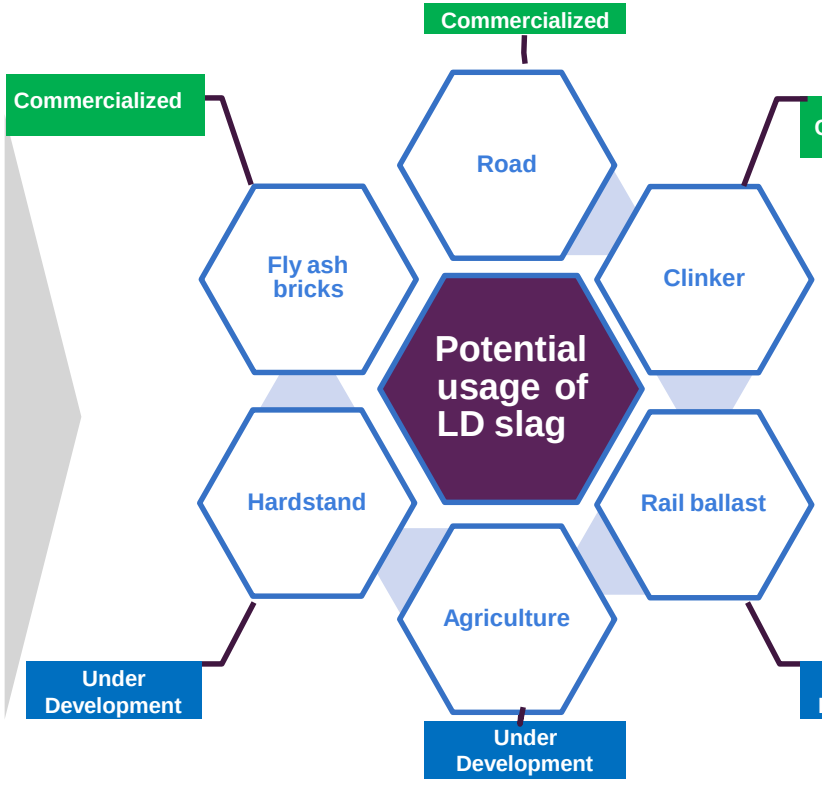
Properties of LD Slag

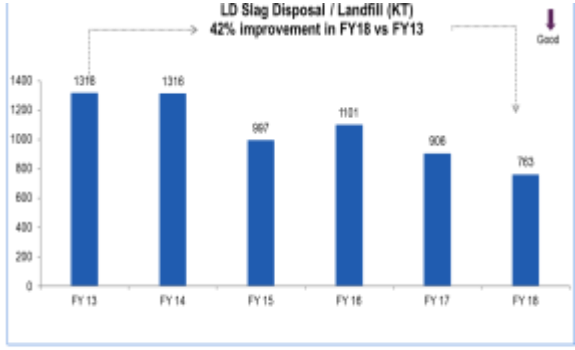
Physical Properties
- Highly angular in shape
- Rough surface texture
- High bulk specific gravity

Mechanical Properties
- Good abrasion resistance
- Good soundness
- High bearing strength

Chemical Properties
- Alkaline
- Soluble silicate content

Possible application areas

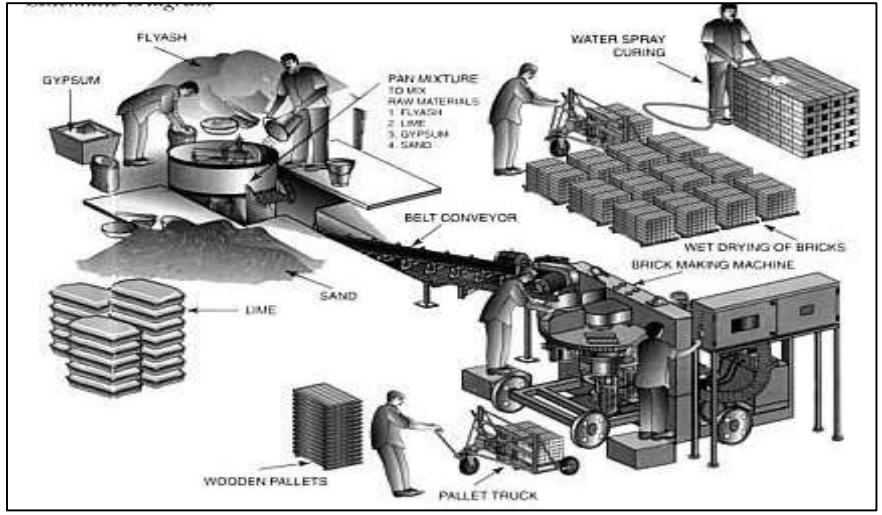




LD Slag Disposal / landfill ‖ Unutilized LD Slag
This LD Slag is being stored for further use after Processing (Wet & Dry Cycle Weathering) and Segregation

59% Utilization of LD Slag as Raw Material

Alternate use of Boiler Fly Ash as Raw Material in Brick Manufacturing Process (*example-2*)





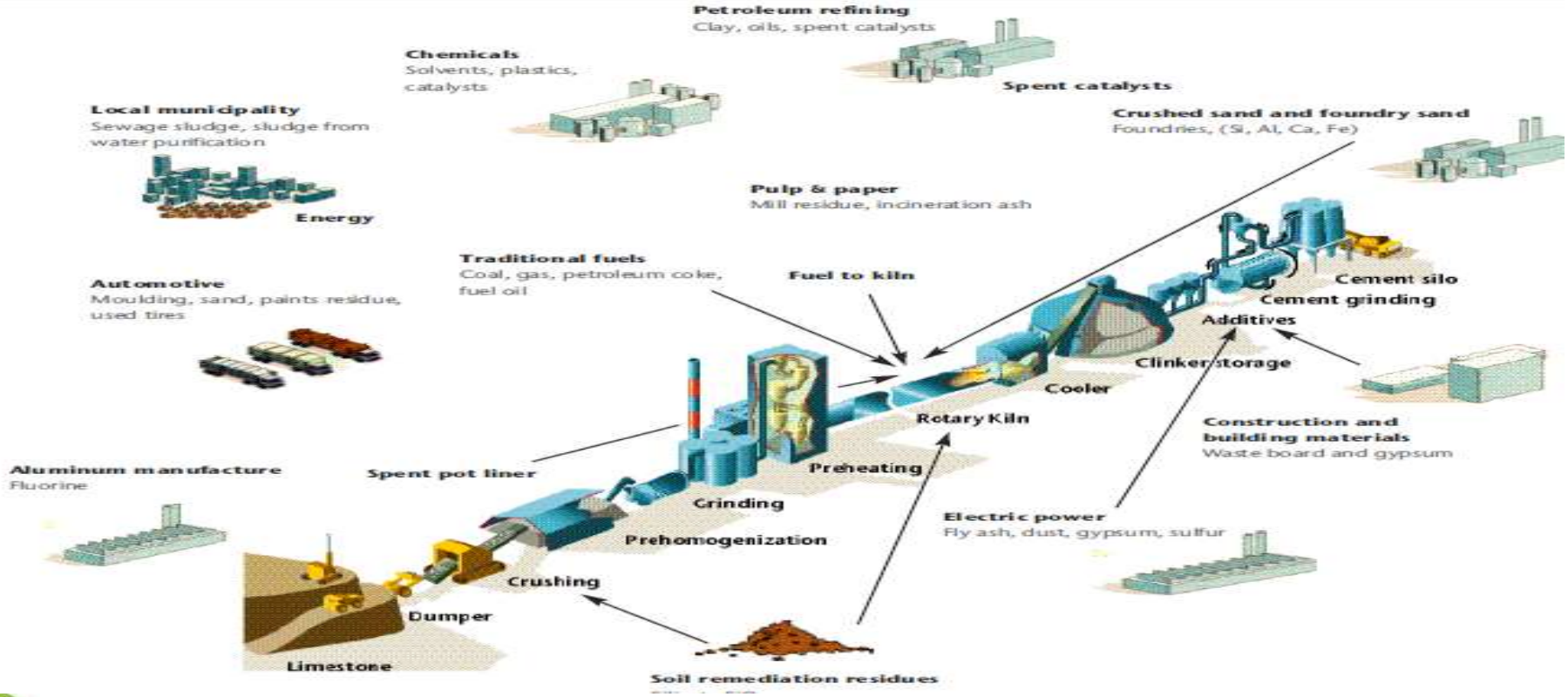




High Demand Green Building Material

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Use of Waste as Alternate Fuel /Raw Material in Cement Manufacturing (*example-3)*



Target : To Achieve 25% TSR by 2025, by Indian Cement Industry







Trend # 3. Reduction in Virgin Material Consumption, by Design

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Recess formation for Material Conservation (*example: 1*)

BEFORE



AFTER

RECESS TO A DEPTH OF 3.0 MM



RM SAVING = 1 - 3 g/product

Reduction in Packaging Material in Tyre Manufacturing (*example: 2*)

BEFORE

Weight of Packing Material = 4*25gms= 100 gms



Metal strips

80% reduction in packing material

100% recycled material (poly-liner)

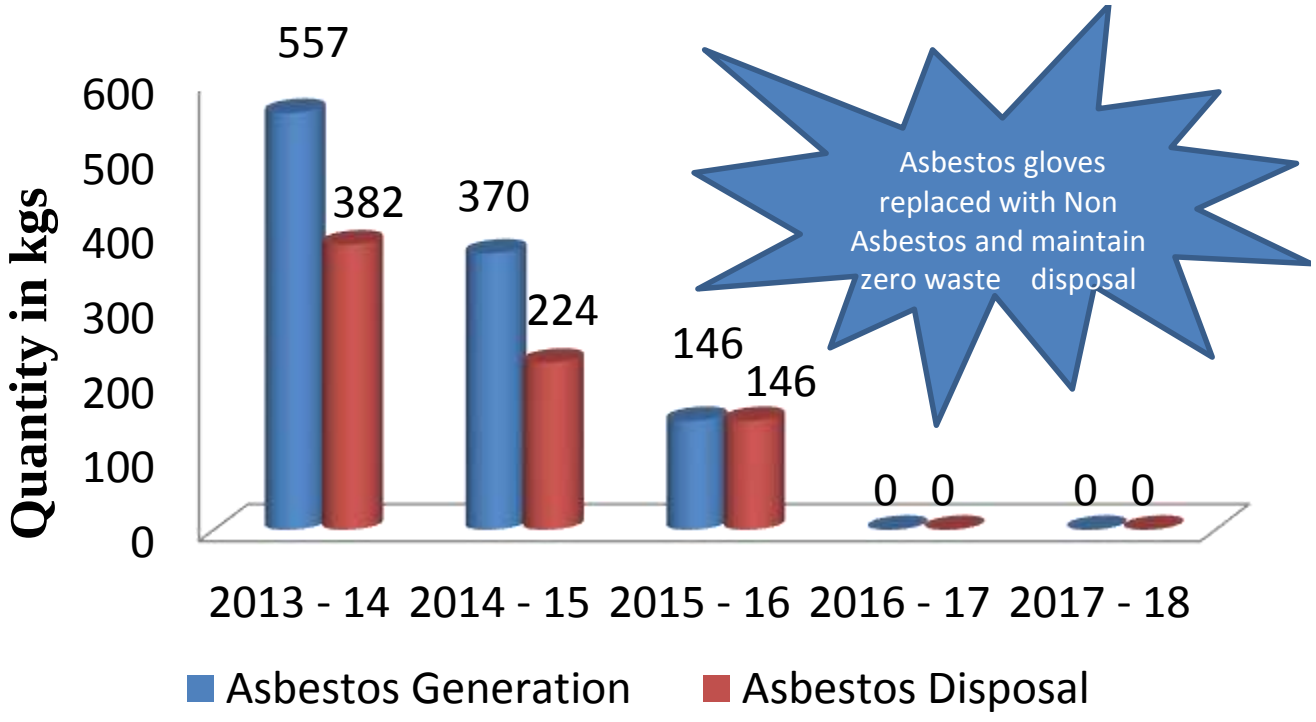
AFTER

Weight of Packing Material = 4*5gms= 20gms



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ASBESTOS WASTE GENERATION & DISPOSAL IN A FOUNDRY (*example:3)*



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Trend 4. Green Packaging







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Green packaging / Sustainable packaging

- Sustainable Sourcing of Material
- Recycled content
- Recyclable
- Bio-degradable
- Optimum use material
- Resource efficient manufacturing process
- End-of-life management of packing material

- **Alternate Materials**
  - Wood to corrugated boxes
  - Corrugated boxes to Reusable Pallets
  - Styrofoam / thermocol to recyclable / biodegradable material
- **Weight Reduction**
  - Design improvements
  - Eliminating Tertiary , secondary packing
  - Resizing of packing
  - Thinner packing material

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Returnable packaging





Cardboard boxes to reusable PP boxes

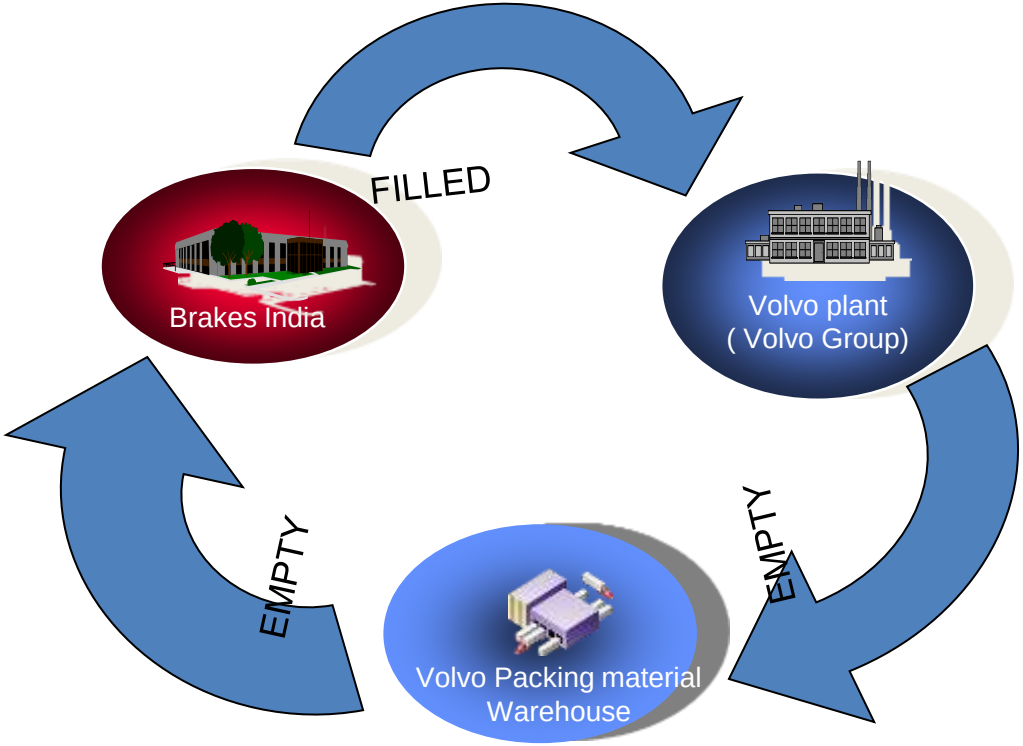
Cardboard boxes to returnable trolleys





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CLOSED LOOP PALLET HANDLING – VOLVO CONCEPT



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TOTO

Conventional packaging (inside)



The award-winning packaging (inside)
A 48% reduction in the amount of packaging material used

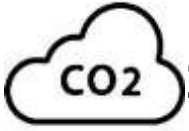




48% reduction in packaging material

Reduction in packaging cost by **30%**

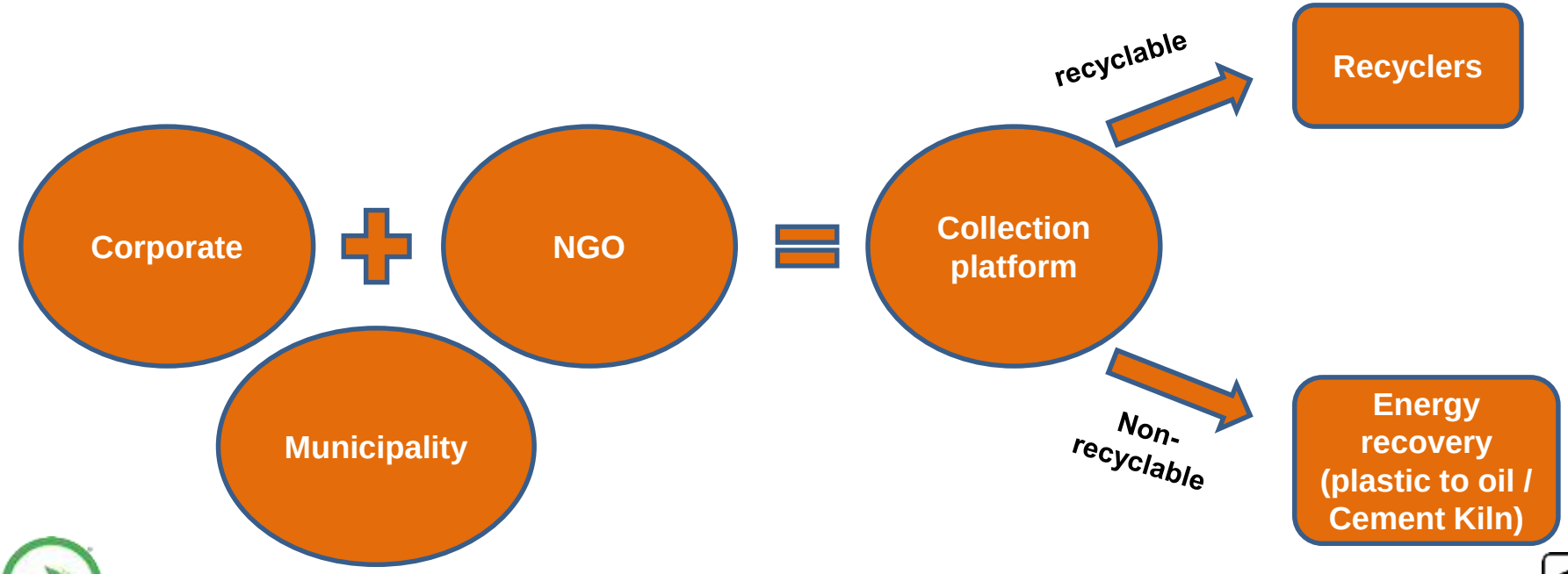




129 tons/year CO_2 emission reduction

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Godrej Industries Ltd –Pilot Project on Extender Producers' Responsibility



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Trend # 5. Innovation

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Handling of Metal Chips, Turning & Boring Scrap (*example*)

Conventional Approach



Tedious in Handling, Storage & Disposal and also considered as Hazardous Waste (*Category 5.2 of HWM Rule 2016*)

Metal Chip Compactor- Comprehensive Hydraulic Solution

Cast Iron



Steel



Non- Fe









- Storage space reduction: 4 : 1 for steel and up to 20 :1 for other metals (depends on the chips)
- Recovery & Reuse of Cutting Oil and Coolant
- 80 % Reduction in Chip Handling & Logistics Cost
- ~10 to 100% Increase In Chip Selling Price
- 95% reduction in fume emission, from furnace

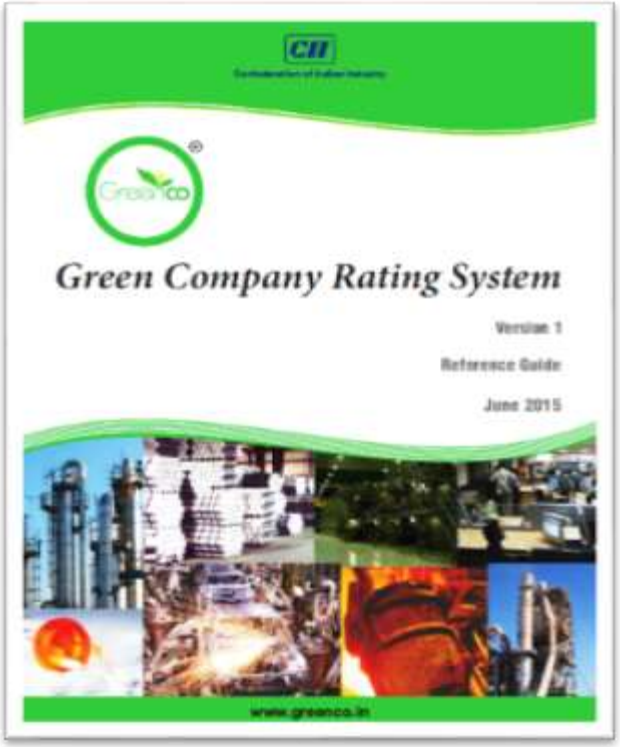
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Approach towards “Resource Efficiency”

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About - GreenCo Rating System

- **The system is a framework to**
  - Assess the performance
    - How green is your company?
  - Provide improvement opportunities
  - Achieve savings and sustain “Green” initiatives
- **Approach**
  - Life cycle approach
  - Highly performance based
- **Scope**
  - Manufacturing / Service sector
  - Unit / Facility level rating



First of its kind in the world

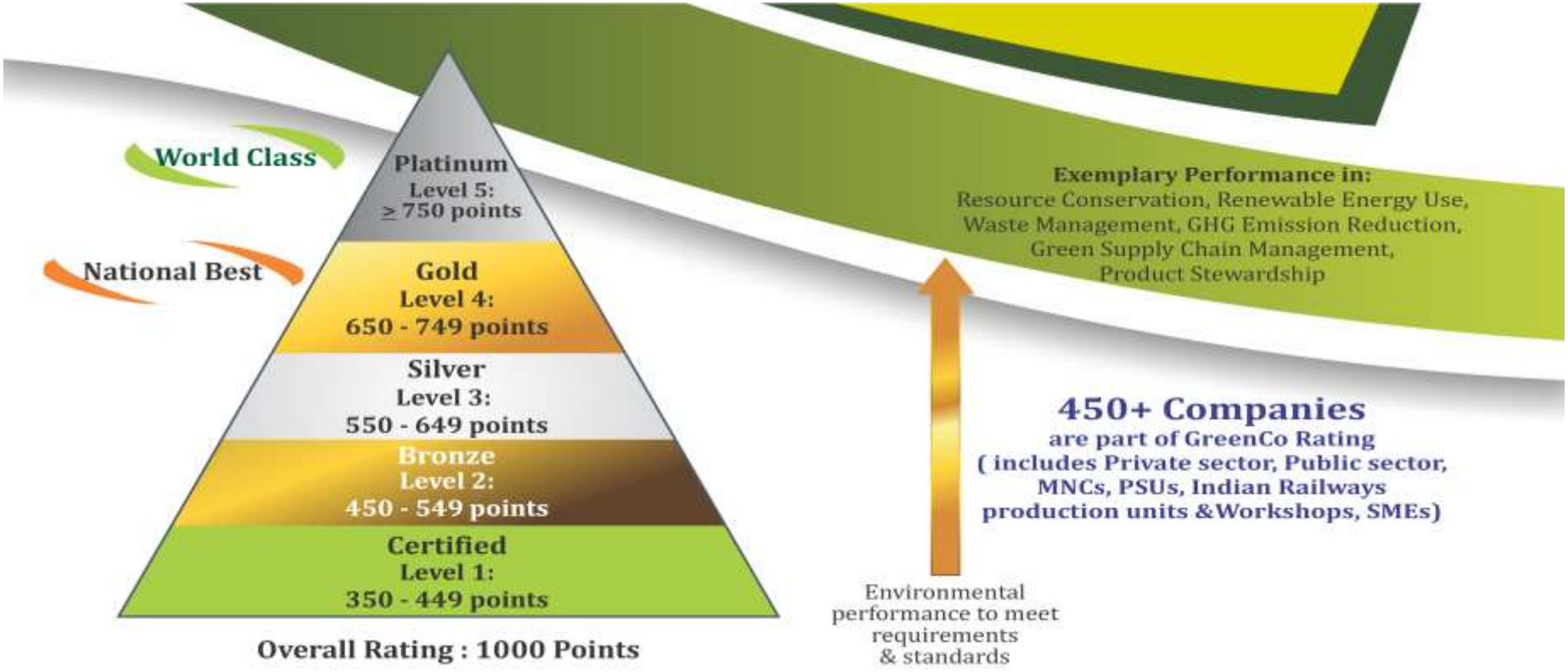
GreenCo Rating Framework

S.No.	Parameters	Points
1	Energy Efficiency	150
2	Water Conservation	100
3	Renewable Energy	100
4	GHG Reduction	100
5	Waste Management	100
6	Material Conservation, Recycling & Recyclables	100
7	Green Supply Chain	100
8	Product Stewardship	75
9	Life Cycle Assessment	75
10	Others (Ventilation, Site Selection, Green Belt & Innovation)	100
	Total	1000



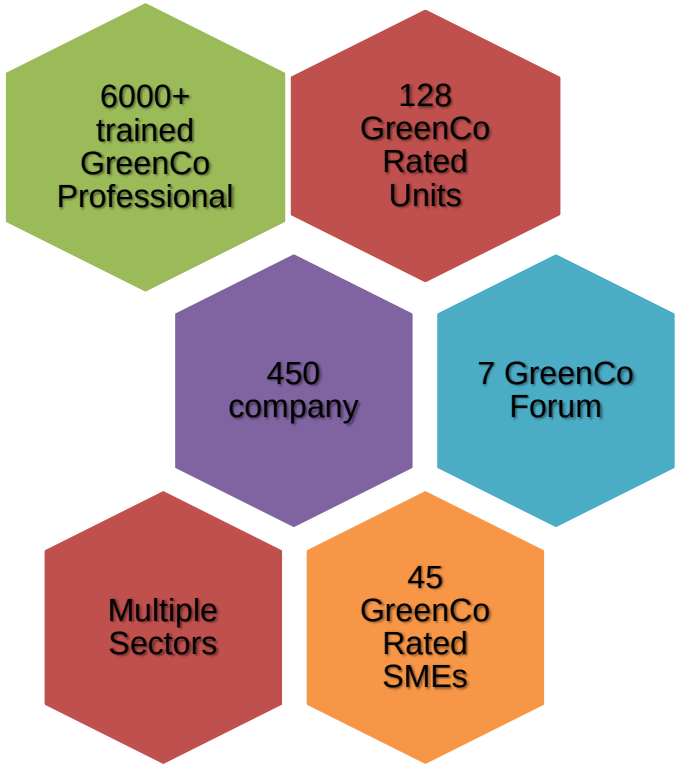
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GreenCo Rating Levels



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“Green” Makes Excellent Business Sense



- 20 Companies saved 50 Million kWh
- 30 Companies saved 20 Million KL of water
- 35 Companies added > 350 MW
- 35 companies reduced 0.45 Million tons of CO2 emission
- 41 companies saved Rs. 800 lakhs

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GreenCo is a Journey towards World class performance





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India Can Emerge as a Global Leader in Green…!

Together we can make it happen

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Sabyasachi Sengupta
Senior Counsellor
Confederation of Indian Industry
CII - Godrej Green Business Centre,
Hyderabad, India

E-mail: sabyasachi.sengupta@cii.in
Mobile: +91 8978110085
www.greenbusinesscentre.com / www.cii.in