



Approach towards Resource Conservation by Indian Industry



15th AGM Seminar - IWMA

16th September 2017

Green Park, Chennai



CII – Sohrabji Godrej Green Business Centre, Hyderabad

Unique activity of CII supported by the Government of Andhra Pradesh, USAID and Pirojsha Godrej Foundation




“Centre of Excellence”

Energy, Environment, Green Buildings, Renewable energy, Water & Climate change activities in India



© Confederation of Indian Industry





Pollution = Inefficiency

How to Manage Pollution?

Pollution = Inefficiency

- Michael Porter

"Green" Approach

Conventional Approach

Focus on Root Cause of inefficiency

Treatment & Compliance

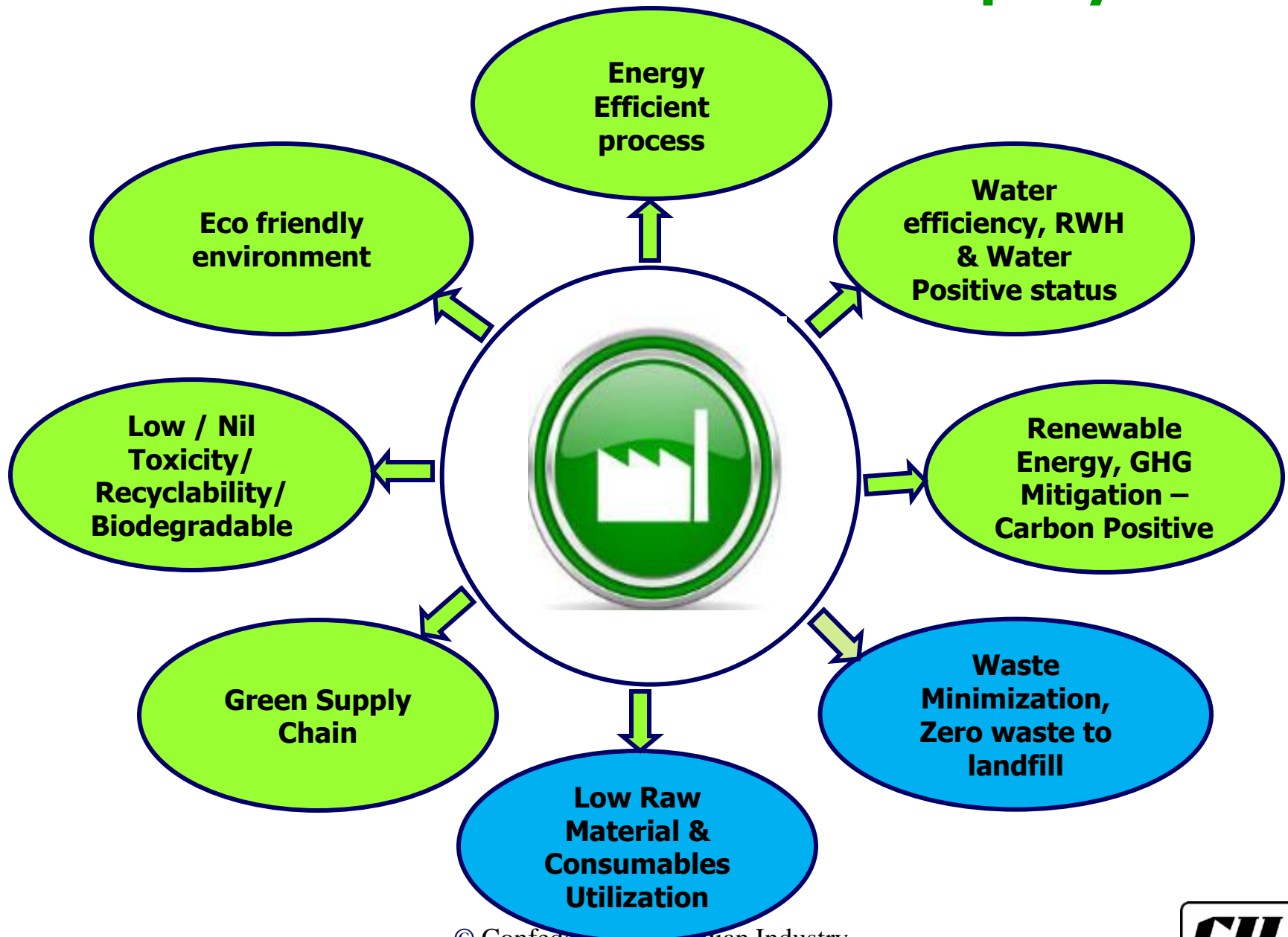
Add cost & No value

Identify opportunities for resource conservation & cost saving

Green Makes the Business Sense



How to define a "Green" Company?



GreenCo Rating System



Confederation of Indian Industry



First-of-its-kind in the world



GreenCo Rating parameters & Levels of excellence

Levels of GreenCo Rating



GreenCo Rating Framework

S. No.	Parameters	Weightage (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

Holistic mechanism to evaluate environmental performance and define the way forward



Trends of Resource Efficiency: Indian Industry



Trend # 1. Change in Mindset : “Green” as part of Business Strategy

“Green” as part of Business Strategy

- ❖ **Godrej Group : “ Good and Green “ Vision**
 - **Creating Greener India**
 - ❑ **Energy Efficient Business, “Zero Waste to Landfill”, carbon neutrality, positive water balance & 30% renewable energy source**
 - **Innovating for Good & Green Products**
 - ❑ **Third of portfolio revenues comprising good and/or green products and services – “low or no toxic”**

**Savings achieved by one of their Businesses : Rs. 3.5
Crore/Annum**

"Green" as part of Business Strategy

93 % Bill of Material Content for all Product Categories Consists of,

Steel (53%)

- Recycled Content = 25%

Plastics (28%)

- Recycled Content = 23%

Copper (5%)

- Recycled Content = 20%

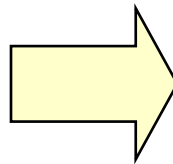
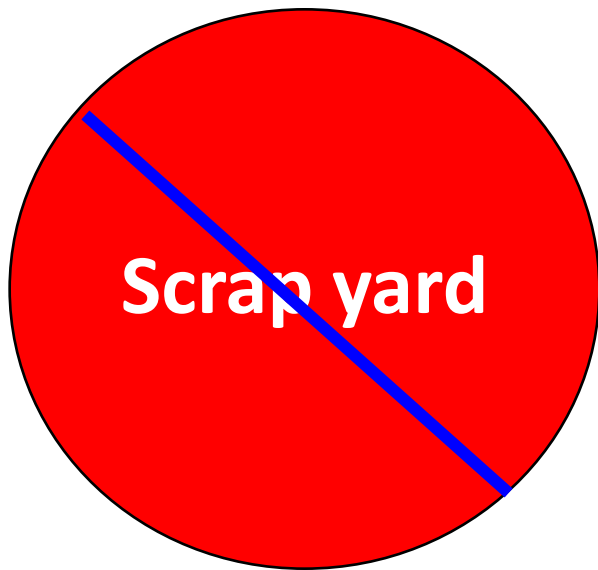
Aluminium = (5%)

- Recycled Content = 40%

Glass = (2%)

- Recycled Content = 15%

“Green” as part of Business Strategy



“Green” as part of Business Strategy





Trend #2

Approach towards “ Zero Waste to Landfill”

Kempegowda International Airport Ltd (KIAL), Bengaluru



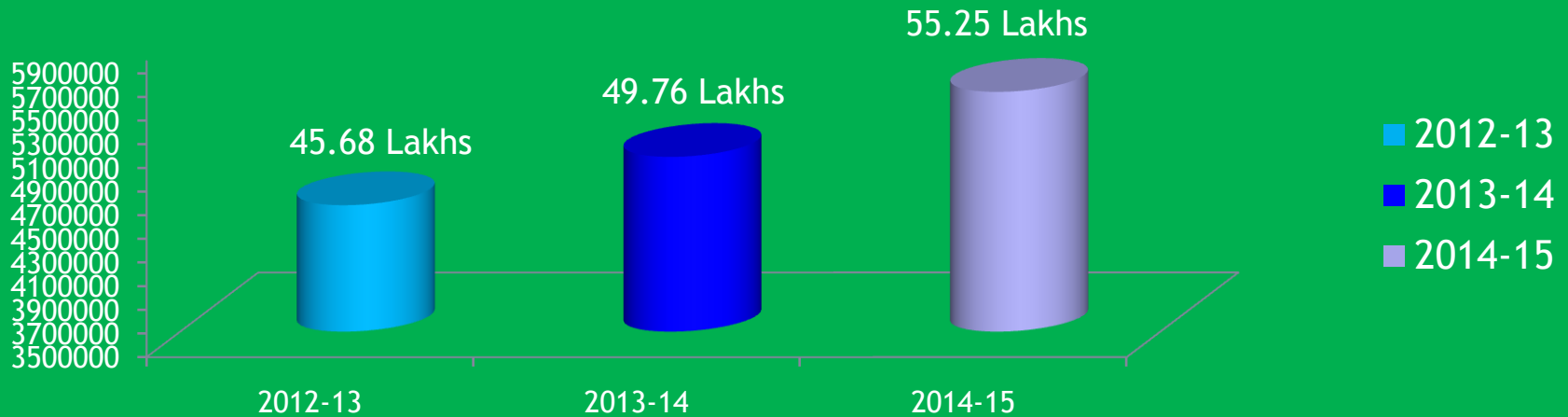
“GreenCo Platinum” : First Airport in India

Waste Generation and Processing at KIAL

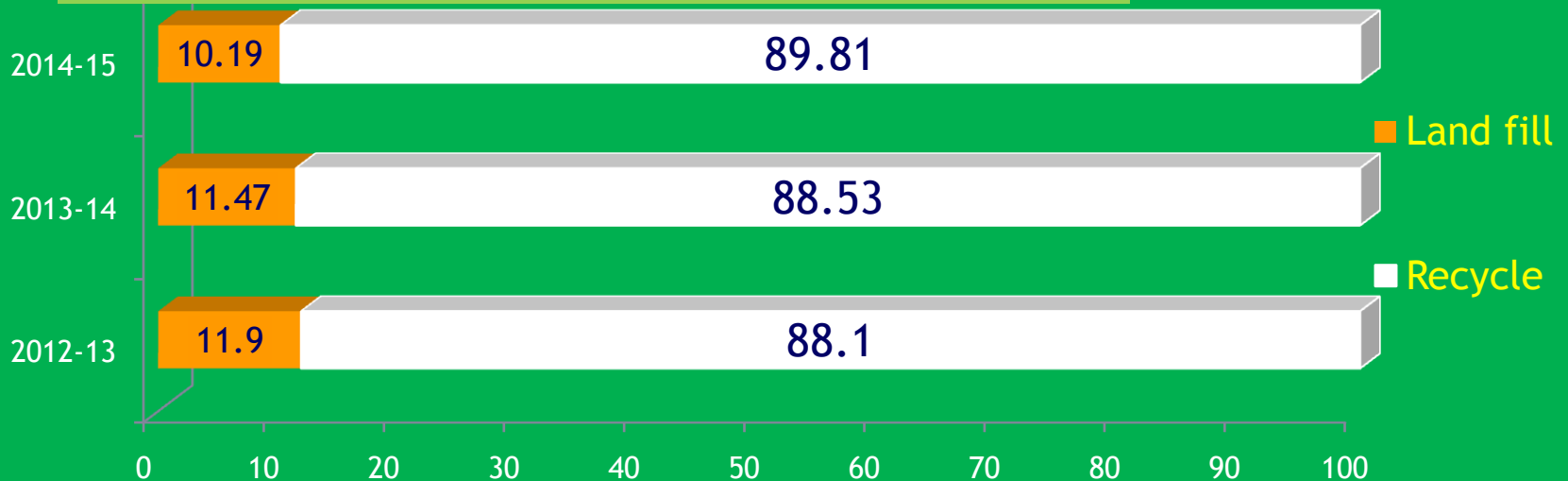


Economics & % Reduction in landfilling

Yearwise Expenditure SWM @ KIA



Specific Reduction in Landfill Qty. (%)





Trend # 3.

Utilization of Waste as

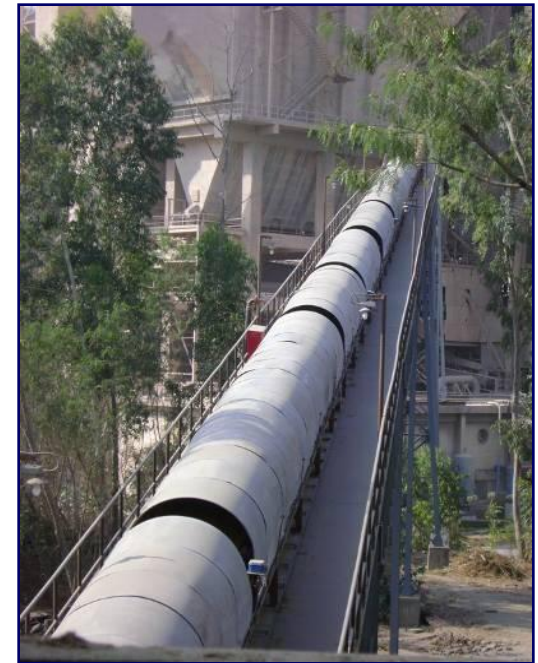
Alternate Fuel / Raw Material

– Leading to “Green Business”

Sense

Waste as Fuel

- ❖ **Utilization of Alternate fuels**
 - **Managing the waste of others**
 - ❑ **Alternatives to raw materials**
 - **Sustainable Solution for treating hazardous waste**
- ❖ **Geocycle India (A division of ACC Ltd)**
 - **Co – Processing**
 - **Utilizing industrial waste**
 - ❑ **Chemical, pharma, Engineering etc.**
 - **Substantial reduction in coal consumption**
 - ❑ **Waste co-processed : 5lakh Tons Processed (2013)**
 - ❑ **Cost Savings: Rs. 300 Million (approx.)**



Dedicated Pre-Processing & Co-Processing Facility ACC Ltd, Kymore Cement Works

❖ **Achiever of “ GreenCo Gold”
rating (2014)**

❖ **Salient features;**

- **Modern facility with state of the art handling and processing equipment**
- **No effluent or by product generation - Zero discharge and non-polluting**
- **Waste to product**

❖ **Achievements (2015)**

- **Ever Highest TSR 4.77% Cumulative (Highest in ACC)**
- **Successfully completion of Dream Run, Total 1860 MT with TSR 27.51% / week**



Saved 60,394 Tons of tradition fuel and raw material in 2015

Co-Processing of ETP Sludge As Alternate Raw Material Ultra Tech Cement, Reddypalayam

❖ Achiever of “ GreenCo Gold” rating (2015)

❖ Key issues;

- ETP Sludge from CETPs of textile dyeing wastewater (Tirupur / Erode) : *app 2 L MT*
- Successful discussion with Textile Industries and TNPCB > Trial run in presence of TNPCB and CPCB

❖ Technical Challenges

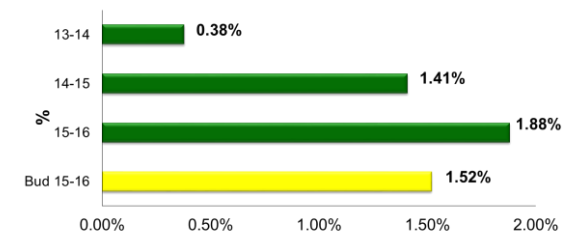
- Variation in chemical properties of ETP sludge (Cl (0.16% to 13.65%) , Na₂O (0.8% to 9.3%) and SO₃ (0.3 %to 6%).
- Tendency of ring formation in rotary kiln due to adhesion of alkali melt at pre burning zone

❖ Benefits

- Reduction in GHG emission: 23 MT CO₂/year.
- Conservation of limestone by 2% (25707 MT/year)



Classification of ETP sludge		Usage %
CATEGORY		Usage %
GREEN	(<1.5 % SO ₃ , <1.5%Cl)	15
YELLOW-H1	(>1.5<4.0 SO ₃ , >1.5<4.0%Cl, >20% CaO)	15
YELLOW-H2	(>1.5<4.0 SO ₃ , >1.5<4.0%Cl, < 20% CaO)	10
RED -H1	(>4.0 SO ₃ , >4.0%Cl, >20% CaO)	35
RED -H2	(>4.0 SO ₃ , >4.0%Cl, >10 < 20% CaO)	15
RED -H3	(>4.0 SO ₃ , >4.0%Cl, < 10% CaO)	10





Trend #4

Approach towards “ Zero Liquid Discharge”

Root Zone Treatment of Waste Water using Vetiver Tata Motors Ltd, Jamshedpur

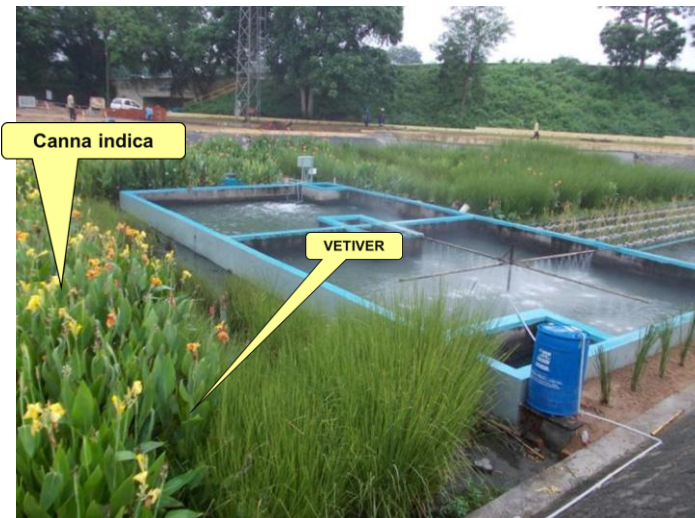
❖ Achiever of “ GreenCo Gold” rating
(2015)- First Company in Eastern India

❖ Salient features;

- Vetiver , popularly known as Khus is a tough, natural, non-invasive plant
 - ❑ Deep penetrating fibrous root structure that grows up to 5 meters deep
 - ❑ Can bind the soil together , improve soil shear strength by as much as 39%; prevents soil erosion
- Pollution control by absorbing even the heavy metal traces from soil and water
- Treated water from recovery well pumped to storage cum percolation pond (scp) of rain water harvesting system
 - ❑ Utilized for non – critical operations

❖ Benefits

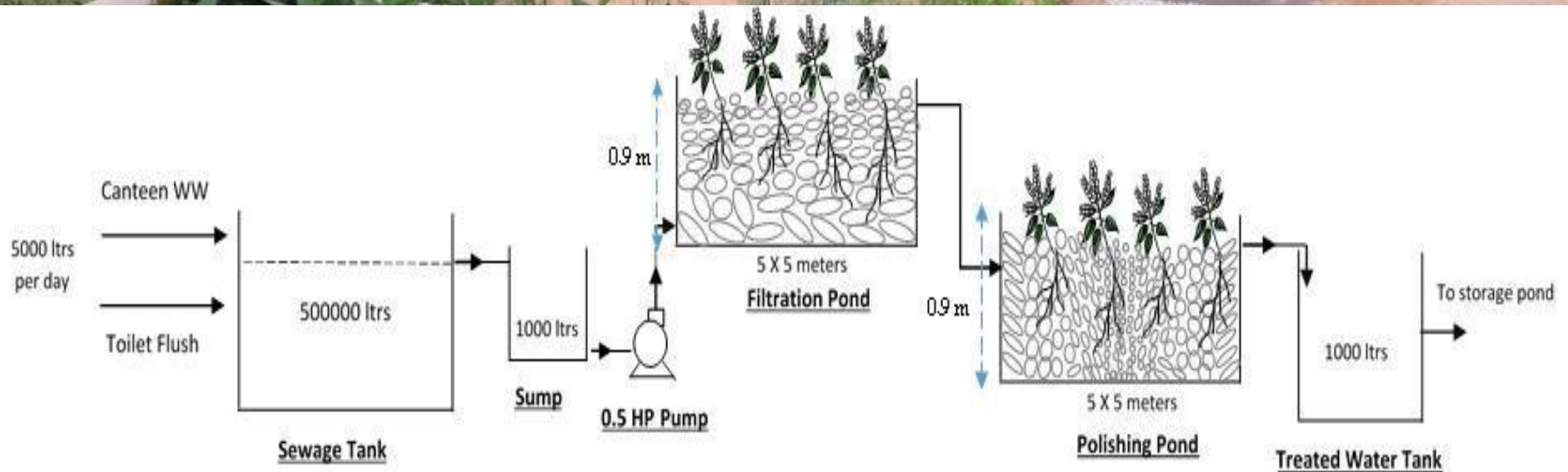
- Quality Parameters (*pH, TDS, TSS, Hardness, Cl, CaCo3, Nitrate, Coliform*) : Less than the norm



Phytoremediation – Nature at its Best!

Phyto= plant, Remedium = restoring balance

Implemented at CII – Godrej GBC





Trend #5 Reduction in Virgin Material Consumption

Godrej & Boyce, Tooling Division

❖ "GreenCo Silver " rated Unit (2016)

❖ About the Project

- Generation of Carbide & Graphite as waste , during Die manufacturing/ EDM operation

- ❑ 27% graphite material goes as waste

- Unusable carbide cutters becomes reusable cutter, by re-fluting & regrinding operation

- Left-out graphite material blocks were used as small electrode

❖ Benefits

- 520 cutters & 121 plain drills were re fluted and regrind (15-16)

Reduction in graphite consumption (340 Kg/year)





Trend #6

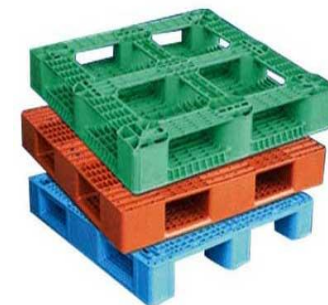
Reduction in Packaging Material Consumption

HPCL Silvassa- Lube Blending Plant

- ❖ "GreenCo Gold" rated PSU (2015)
- ❖ Conversion of HDPE to PET bottle, in a phased manner
 - Plastic consumption reduced
 - 266 MT / yr
 - 266 Lacs/annum
 - 100% recyclable
- ❖ Plastic Pallets
 - 50 Kg wood savings/ Pallet
- ❖ Bulk storage of additives
 - Reduced HDPE drum weight
 - Estimated reduction : 1.1 MT / annum



Details	HDPE	PET
500 ML	37 gm	25 gm
1 Litre	60 gm	42 gm



Returnable/Reusable Packaging

Concept of returnable / reusable packaging



Reusable & collapsible

Huge reduction in wood consumption & Cost savings

Use of Pulp and Paper Packaging (Apple Tray) for Refrigerators in Place of EPS Sheets

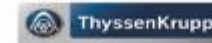
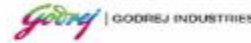


GreenCo – Driver of Excellence





Over 300 Companies working on GreenCo 131 Rated Companies*



41 GreenCo Companies - Savings - Rs. 765 Million/yr

ENVIRONMENTAL BENEFITS ACHIEVED BY GREENCO RATED COMPANIES



312 MW by 31 companies

250,000 tons of material by 20 companies



44 million kWh by 19 Companies

Working with suppliers by 60 companies



444,000 tons eq. CO₂ by 31 companies

15 companies conducted LCA studies



15 million kL RWH by 26 Companies

41 GreenCo Companies saved **Rs.771** Million/yr



Driver for "Excellence in Environmental Sustainability"

GreenCo in INDC, INDIA'S –Intended Nationally Determined Contribution – to UNFCCC



India announces GHG emission intensity reduction target of 33 – 35% of 2005 levels by 2030



- 6) **GreenCo Rating System** is first of its kind in the world which assesses companies on their environmental performance across 10 different parameters to help them develop a roadmap to improve further.





Indian Railways signing an MOU with CII on Green Industry initiatives



GreenCo in UNIDO's 50th Anniversary Publication



TOGETHER
for a sustainable future

1966 - 2016



Making it Green
DEPARTMENT OF ENVIRONMENT

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION





**India Can
Emerge as a
Global Leader in
Green...!**

Together we can make it happen





Thank You

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