Circular Economy Practices

Godrej & Boyce Mfg. Co. Ltd.

Tejashree Joshi
Head – Environmental Sustainability
Godrej & Boyce Mfg. Co. Ltd.
Godrej & Boyce has

Diverse presence in **10 industries**

Presence in over 80 countries with USD **1.5 Bn** revenue annually

Over **14,000** employees
### OUR BUSINESS UNITS

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>Icon</th>
<th>Icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Godrej Aerospace</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Process Equipment</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Precision Engineering</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Tooling</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Construction</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Electricals &amp; Electronics</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Material Handling</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Storage Solutions</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Lawkim Motors</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Vending</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Interio</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Appliances</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Security Solutions</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
<tr>
<td>Godrej Locks &amp; Architectural Fittings</td>
<td>🛠️</td>
<td>🛠️</td>
</tr>
</tbody>
</table>

**Organization**

Business to Business  
Business to Customer  
Business to Government
What drives us

PURPOSE
Pioneer Progress for Generations

MISSION
Unlock experiences that engage customers and build loyalty.

VISION
Admired for sustainability practices, innovative solutions, and superior business performance.

VALUES
Integrity, Trust, Respect, Customer Centricity, Entrepreneurship, Environment Stewardship
Overview of our ESG Initiatives

**ENVIRONMENT**
- Biodiversity & Mangroves conservation
- Energy efficiency & productivity
- Water conservation & Stewardship
- Waste reduction and diversion
- Plastic use reduction & recycling
- Increasing Circularity
- Reducing carbon emissions
- Increasing carbon offset
- Generating higher revenue share from good & green products

**SOCIAL**
- Skill development for youth
- Diversity in workforce from across India
- Employee wellbeing and safety; beyond Godrej
- Transforming education
- Health & sanitation
- Water Harvesting & availability
- Afforestation & Environment Protection
- Community development
- Enhancing farmers' incomes
- Empowering women

**GOVERNANCE**
- An ecosystem approach to Governance
- Working with business partners to drive
  - Social, environmental and other regulatory compliance
  - Good governance practices
  - Undertaking social projects
  - Fair business practices
  - Business excellence framework to engage all stakeholders
PIONEERS in Environmental Sustainability

1st company in India to introduce Ozone Depletion Substance (ODS) free Refrigerators

1st company in the world to produce Air Conditioners with ‘Zero’ Ozone Depletion Potential (ODP) and minimal Global Warming Potential (GWP)

We set up 1st ‘Platinum’ rated Green Building in India, under the USGBC LEED Certification, the ‘CII-Sohrabji Godrej Green Business Centre’ in Hyderabad, which houses the Head Quarters of Indian GBC.

We set up India’s 1st ‘Net Zero’ Building under Indian Green Building Council (IGBC) Rating system, and we also partnered the World GBC to promote ‘Net Zero’ in the Asia-Pacific region.

We set up 1st ‘Recycled Concrete Blocks’ plant, that used Construction debris as raw material that replaces
Godrej Climate Initiative Journey

2007: One of the first companies to sign the ESBG code

Mission on Sustainable Growth

CII – CODE FOR ECOLOGICALLY SUSTAINABLE BUSINESS GROWTH

Being cognizant of the need of sustainable growth and dwindling stock of natural capital, we commit ourselves to the attainment of the following Ten - Natural Capital Commandments.

1. Reduce specific consumption of energy and water by 2-5% every year over next ten years.
2. Reduce specific generation of waste and reduce the quantity of waste generated fills by 2-4% every year over next ten years.
3. Increase use of renewables, including renewable energy by 2-10% every year in place of non-renewables over next ten years.
4. Reduce Green house gases emissions and other process emissions by 2-4% every year over next ten years.
5. Increase use of recyclables and enhance recyclability of resources embedded in the product by 2-10% every year over next ten years.
6. Increase the share of harvested rain water as the overall annual use of water by 2-10% every year over next ten years.
8. Sisit to adapt go green purchase policy and incorporate latest clean technologies in design stage facilitate lead in promoting and managing Go product stewardship program, by forging partnerships with businesses and communities.
9. Reduce depletion of natural capital which is directly attributable to company’s activities, products and services by 2-10% every year over next ten years.

We also commit to demonstrate attainment of these commandments in our pursuit to certification such as ISO 9001, ISO 14001, ORSAS 18001, SA 8000, Green Buildings, Eco Labels and the like.

Date: ____________________________

Signature: ____________________________

This figure is intended for information and illustrative only. The individual incentive units are free to choose any targets, subject to a minimum of 2% per annum. This target annual reduction could be based on their present levels of operating efficiency, technology adoption and management practices.

Reply Form

Please (☑) tick
☐ I accept your invitation to be a signatory for CII - Code for Ecologically Sustainable Business Growth
☐ I accept your invitation to be a participant in the MSG activities
☐ I would like to know more about MSG

Name: MR. JAMSHID N. GODREJ
Designation: CHAIRMAN MANGAN
Company: GODREJ & BOYCE MFG. CO LTD
Address: FIRDOS HANGAR
VIKHAR,AURIGAON
Mumbai, MAHA
City: MUMBAI
Tel: 91-22-67963015/16
Mobile: 91-22-6986555
Fax: 91-22-6986555
Email: jngodrej@godrej.com
Beyond business: Building a more Inclusive and Greener India

Ensuring Employability
2 lacs
urban & rural youth trained in skilled employment

Greener India
40%
Reduction in Energy & water consumption
30%
Renewable Energy use

Community Development

6 States
8 Locations
24 Villages

Good & Green Products
Have a third of our portfolio revenues comprising of Good & Green Products & Services

Carbon Neutrality
0 Waste to Landfill
+ve Water Balance
Environmental Sustainability Focus Areas

- Water Efficiency
- Energy Efficiency
- Renewable Energy Use
- Material Use Efficiency & Waste Reduction and Recycling
- Carbon Neutrality
- Biodiversity Conservation
Focus on Low Carbon Pathway
ENERGY CONSERVATION

Approach: Holistic Energy Management

Key Initiatives
  • Use of Realtime Energy data analytics
  • Enhancing operational efficiency of Air Compressors and centralized HVAC System
  • Process efficiency improvement
  • Use of low temperature process chemicals
  • Efficient pumps, motors, hydraulic PP, Fan and Vacuum systems
  • Efficient lighting
Location: Vikhroli, Mohali, Shirwal, Chennai, Haridwar

Key Initiatives

• Switch from HSD / LDO / FO to PNG / clean fuel
• Rooftop Solar
• Solar Power Purchase Agreement (PPA)
• Agri-waste briquette-based Producer Gas plants
Location: 23 Manufacturing plants

Key Initiatives
- Water Audit of process and utilities
- Use of low flow water efficient fixtures
- 100% Effluent treatment
- Zero liquid discharge
- Maximising utilization of Recycled water
- Use of Nature based treatment solutions
- Maximise harvesting of Rainwater
RAINWATER HARVESTING

Location: Vikhroli, Khalapur, Shirwal, Mohali, Haridwar, Madkai, Goa, Chennai

Key Initiatives
- Maximum catchment capacity
- Efficient Storm water management
- Assessing Impact
- Realtime ground water level monitoring
- Monitoring extraction
- Capture for substituting use
- Ground water recharge
Approach: Zero Waste to Landfill

Key Initiatives
- Eliminating Toxic or Hazardous material use
- Minimising Hazardous waste generation
- Maximising material recovery, reuse
- Promoting waste upcycling and recycling
- Adopting Extended Producers Responsibility
- Product Stewardship
- Adopting Circularity Principles
The Impact

Waste Recycled was equivalent to 18675 standard 40ft containers.

Renewable Energy generated and used would suffice to power 2.02 Million homes over a month.

Wastewater Recycled & Rainwater Harvested would suffice the need for 261.8 Million persons over a year.
Certified Green Products

Godrej Appliances
Energy Efficient AC and Refrigerators (BEE 4 / 5 Star & % Star Rated)
Environment friendly refrigerant

Godrej Interio
Green Certified Furniture
(GREENGUARD, BIFMA LEVEL, GRIHA, GREENPRO, INDOOR ADVANTAGE)
Certified Green Products

**Godrej Construction**
- Recycled Concrete Block

**Godrej Material Handling**
- Electric Forklifts

**Godrej Lawkim Motors**
- Autoclaved Aerated Concrete Blocks
- Energy Efficient Induction Motors (IE3/IE4 Rated)
Certified Green Products

Godrej Electricals & Electronics

Industry 4.0 Ready

Users: Toyota Auto Parts, Philippines
CIRCULARITY IN PRODUCTS & PROCESSES

GODREJ CONSTRUCTION
Circular Economy - Recycling Concrete Debris

**CIRCULAR ECONOMY PRINCIPLE: DESIGN PRINCIPLES TO BE CONSIDERED TO MAKE THE BUSINESS MODEL MORE SUSTAINABLE - LIFE CYCLE ASSESSMENT (LCA)**

---

**Figure 14: Circular Economy Principles in the Construction Value Chain**

- Mining/materials manufacturing
- Building materials
- Construction
- Service
- Operations
- Collection
- Repair
- Maintain
- Refurbish/ remanufacture
- Recycle
- Reuse/redistribute
- Energy recovery
- Landfill
- Leakage to be minimized

Source: Ellen MacArthur Foundation; World Economic Forum; The Boston Consulting Group
Recycling Concrete Debris

Building Project → Demolition

Concrete Rubble → Recycled aggregate → Aggregate Manufacturing plant

Concrete Blocks & Pavers

Recycled & Strong Sustainable Concrete Products

Concrete Blocks & Pavers → Recycled aggregate

Aggregate Manufacturing plant → Recycled & Strong Sustainable Concrete Products

Manufacturing plant → Concrete Rubble

Godrej | GODREJ & BOYCE
Recycling Concrete Debris

RCM Plant received Green Pro Certificate in Feb 2018
Recycling Concrete Debris

Imagine the weight of 9000 SUVs.

Godrej Construction has already recycled 28,000 MT of concrete debris till date.
Recycling Concrete Debris

OUR FIRST RECYCLED CONCRETE BOX CULVERT SEGMENT FOR THE MUNICIPAL CORPORATION OF GREATER MUMBAI.

Precast Box Culverts for Storm Water Drainage for Mumbai Coastal Road Project – Pkg 1

Employer:

PMC:

General Consultant:
To promote adoption of Circular Economy principles in the Construction industry, we have developed for the first time a very sustainable concrete mix design comprising of ~ 30% of Recycled Concrete Aggregates (RCA), sourced from concrete waste debris, recycled at the Godrej Recycled Concrete Plant, at Vikhroli, Mumbai.
CIRCULARITY IN PRODUCTS & PROCESSES

GODREJ APPLIANCES
Sustainable Products

GREEN BALANCE

India’s 1st to offer 100% CFC, HCFC, HFC free refrigerators voluntarily in 2001

Pioneers of R290 Refrigerant ACs

- 0 Ozone Depleting Potential
- Least Global Warming Potential

- Better energy efficiency, more than 12%

<table>
<thead>
<tr>
<th>REFRIGERANT</th>
<th>TYPE</th>
<th>GWP</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-134a</td>
<td>HFC</td>
<td>1,430</td>
</tr>
<tr>
<td>R-404A</td>
<td>HFC</td>
<td>3,922</td>
</tr>
<tr>
<td>R-410A</td>
<td>HFC</td>
<td>2,088</td>
</tr>
<tr>
<td>R-32</td>
<td>HFC</td>
<td>675</td>
</tr>
<tr>
<td>R-290</td>
<td>HC</td>
<td>3</td>
</tr>
<tr>
<td>R-600a</td>
<td>HC</td>
<td>3</td>
</tr>
</tbody>
</table>
Sustainable Products

TECHNOLOGY EVOLUTION

Miniaturization of Compressor

JUMBO 10.1 kg
SMALL 8.85 kg
MINI 4.40 kg

Future Ready Thermo Electric Technology

Refrigerant & Compressor Free Cooling

56% Weight Reduction
33% Size Reduction
Green Revolution

Global Cooling Prize Finalist

Upto 5x Lower Energy

Green Air Conditioning
For Cooler Homes & A Cooler Planet

Global Cooling Prize

Top 4 finalist
and the only Indian AC brand
in 2100+ contestants across the world

Making India Proud
Sustainable Products

GREEN OPERATIONS

99% Recyclable Content for Manufactured products

Bio-Degradable HoneyComb Green packaging
1st in Indian LA industry

Supplier Cluster Program
60% Local Buy from Greenco Suppliers
32 Green Co Rated Suppliers
Good & Green Products

PRODUCT CERTIFICATION
340+
Products have external Green Products certification appropriate to the product line

LIFE CYCLE ANALYSIS
115+
Products have undergone comprehensive Life Cycle Assessment during design improving green quotient

REVENUE CONTRIBUTION
30%
Revenues (average) have been accrued from Good & Green Products
The Business Value

**GREENER INDIA**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue from Good &amp; Green products</td>
<td>20,000+ Cr</td>
</tr>
<tr>
<td>Water recycled and rainwater harvested</td>
<td>12.9+Mn Cum</td>
</tr>
<tr>
<td>Waste recycle (diverted from Landfill)</td>
<td>491,180+MT</td>
</tr>
<tr>
<td>Renewable energy used</td>
<td>730,380+ GJ</td>
</tr>
<tr>
<td>Carbon sequestered in Mangroves</td>
<td>11 Lac+ TCO2e</td>
</tr>
<tr>
<td>Biodiversity hosted on campus</td>
<td>1600+ SPECIES</td>
</tr>
</tbody>
</table>

**THE VALUE GENERATED**

52% Reduction on Specific Energy Use
59% Reduction on Specific Water Use
106% Water Positive (Since 2016-17)
51% Hazardous waste reduction
99.8% Waste diversion from landfill
16% Renewable Energy Use
50% Carbon Offset

**G&B FACILITATED GREEN BUILDINGS FOOTPRINTS**

- 600+ Green Building facilitated
- 300+ Million sq. ft impacted
- 300+ Gold & Platinum rated projects

**G&B FACILITATED GREEN BUILDINGS IMPACT**

- 553,000MWh/annum Energy savings
- 135,000KL/annum Water savings
- 470,000MT/annum CO₂ savings

**THE BUSINESS VALUE**

- 52% Reduction on Specific Energy Use
- 59% Reduction on Specific Water Use
- 106% Water Positive (Since 2016-17)
- 51% Hazardous waste reduction
- 99.8% Waste diversion from landfill
- 16% Renewable Energy Use
- 50% Carbon Offset

**GREENER INDIA**

- 600+ Green Building facilitated
- 300+ Million sq. ft impacted
- 300+ Gold & Platinum rated projects

**VALUE GENERATED**

- 52% Reduction on Specific Energy Use
- 59% Reduction on Specific Water Use
- 106% Water Positive (Since 2016-17)
- 51% Hazardous waste reduction
- 99.8% Waste diversion from landfill
- 16% Renewable Energy Use
- 50% Carbon Offset

**ENERGY SAVINGS**

- 553,000MWh/annum
- 135,000KL/annum
- 470,000MT/annum

**CO₂ SAVINGS**

- 470,000MT/annum
ESG: CREATING VALUE FOR ALL