



Sustainable C&D Waste Management

CII-GreenPro

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EverEnviro Resource Management Private Limited
- Anurag Jain (VP- C&D Division)

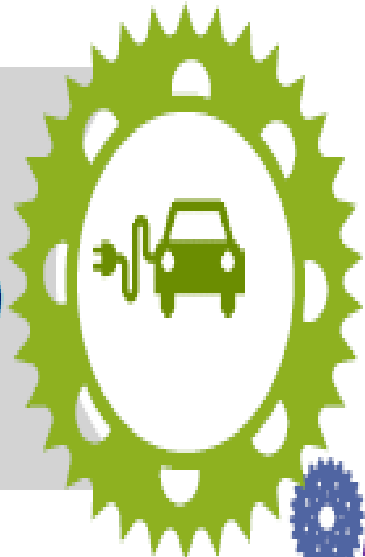
Who We Are

- EverEnviro Resource Management Private Limited (ERMPL) is a 100% subsidiary of Green Growth Equity Fund (GGEF) with anchor investment from National Investment & Infrastructure Fund (NIIF), Government of India and Foreign, Commonwealth & Development Office (FCDO), Government of United Kingdom.

Sectors under GGEF

1. E-Mobility

- Mobility-as-a-Service (MaaS)
- Battery-as-a-Service (BaaS)
- Charging infrastructure



2. Renewable Energy

- Solar power generation
- Wind power generation



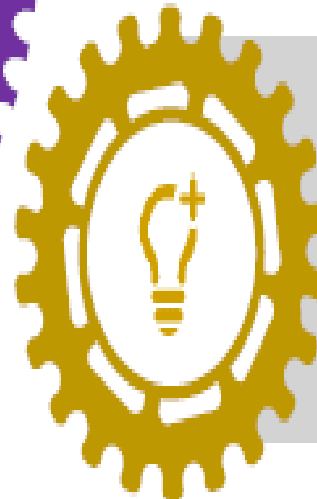
3. Resource Efficiency

- Municipal Solid Waste Management
- Waste to energy
- Recycling (plastic, e-waste)
- Water treatment



4. Energy Services

- Energy efficiency
- Energy storage



Sectors
covered
under the
scope



Platforms under GGEF



GreenCell

Invest in a variety of e-mobility services



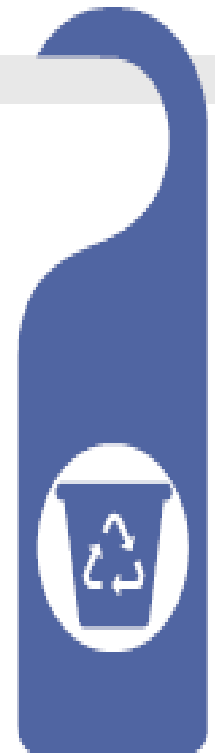
Ayana Renewables

Build utility scale solar capacity



Radiance

Develop portfolio of open access and rooftop solar projects in C&I segment



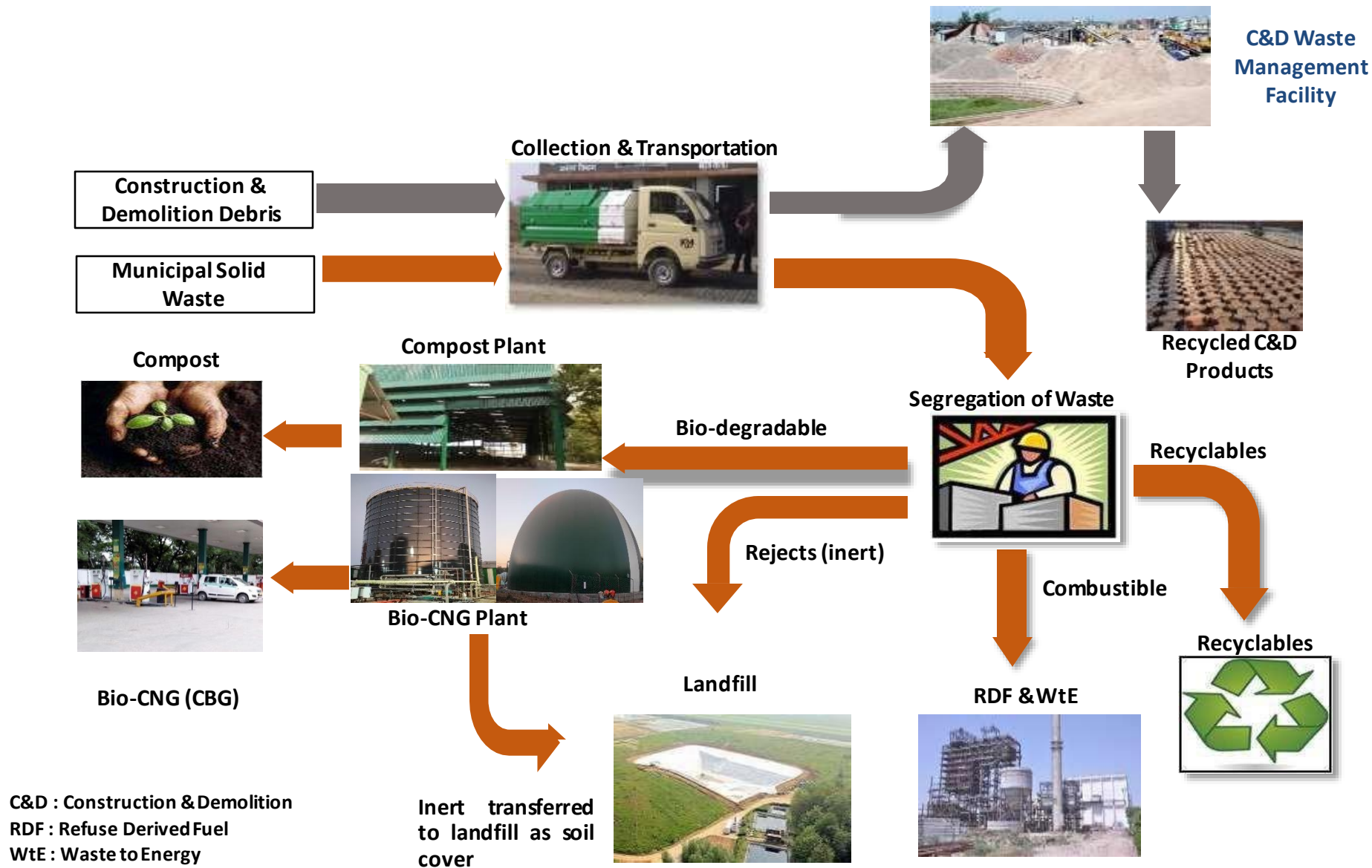
EverEnviro

Leverage opportunities in the waste management value chain

EverEnviro- Business Segments

- **Construction & Demolition Waste Management**
- **Bio-CNG (CBG) & Organic Manure**
 - Organic Fraction of Solid Waste
 - Agro Waste - Paddy Straw
 - Industrial Agro Waste - Press Mud
 - Cattle Waste
 - Napier Grass etc.
- **Solid Waste Management**
 - Waste to Energy
 - Compost & RDF
 - Collection & Transportation
- **Plastic Waste Management**

EverEnviro - Pioneer of Integrated Waste Management



EverEnviro- Foot Print in Delhi NCR

1

W2E Plant

1,300 TPD
12 MW of Power

5

C&D Plants

5150 TPD

2

C&T Projects

2,000 TPD

1

Bio-CNG Plant

300 TPD
(Under Construction)



Construction & Demolition (C&D) Waste Management

- 5,150 TPD
 - 5 Operational C&D waste processing plants in Delhi NCR
- >98%
 - C&D waste being recovered
- ~8 Mn ton
 - C&D waste processed till date
- ~300 Acres
 - Saved precious urban land in NCT of Delhi worth thousand of Crores



Overview

- **As per CPCB Guidelines on Environmental Management of C&D Waste issued in March 2017, 25-30 Million MT of C&D Waste is generated annually in India.**
- **As per Building Material & Technology Promotion Council (under MoHUA) Report on C&D waste generation “Ready Reckoner” 2018, the annual C&D waste generation in India is estimated to be 100 million tons**
- **Estimated Quantity of C&D Waste Generation as per Technology Information, Forecasting & Assessment Council (TIFAC) :**
 - **40-60 Kg per sqm of New Construction**
 - **40-50 Kg per sqm of Building Repair**
 - **300-500 Kg per sqm for Demolition of buildings**

Overview

- **As per IIT Kanpur study on Air Pollution and GHG emissions in Delhi, PM (PM10 + PM2.5) emissions on account of C&D waste is 6.5 tons/day or 2,372 tons/year**
- **Size graded aggregates, manufactured sand and cast products are the outputs having great potential to replace natural materials and address shortage of building materials**
- **Possible to optimize 98% recycling of mixed C&D waste by using mix of dry and wet processes**
- **The first Pilot Plant at Delhi (Burari) has proved that there is huge potential of recycling and value addition**

Overview

- As per NITI Aayog Report on Strategy on Resource Efficiency in Construction & Demolition Sector, Jan 2019, the estimated annual consumption of construction materials in India are as follows:
 - Sand : 750 million tonnes
 - Soil : 123 million tonnes
 - Stone (aggregate) : 2000 million tonnes
- Over 5 % of the construction material requirements can be met by C&D recycled materials.

Regulatory Framework at National Level

➤ C&D Waste Management Rules, 2016:

- Rule 4 (3) & 4 (5) under Duties of the Waste Generator – “Waste generators who generate more than 20 tons more in one day or 300 tons per project in a month shall segregate waste into four streams such as concrete, soil, steel , wood & plastic, bricks & mortar and also have to pay for the processing and disposal of construction and demolition waste generated by them, apart from the payment for storage, collection and transportation.”
- Rule 6 (7) under Duties of Local Authority - Shall examine and sanction the waste management plan of the generators within a period of one month or from the date of approval of building plan, whichever is earlier from the date of its submission
- Rule 9(4) under Duties of State Government or Union Territory Administration - “Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control.”

Regulatory Framework at National Level

IS 383: 2016: Use of Manufactured Aggregates

CPWD Corrigendum No. S37/CS –Order/2015-16/71(H) dated 22/3/2016

C & D Waste BIS IS: 383	Plain Concrete	Reinforced Concrete	Lean Concrete (< M15 grade)	Extent of Utilization
Recycled Concrete Aggregate (RCA)	25%	20% (only upto M25 grade)	100%	As Coarse Aggregate
Recycled Aggregate (RA)	Nil	Nil	100%	As Coarse Aggregate
Recycled Concrete Aggregate (RCA)	25%	20% (only upto M25 grade)	100%	As Fine Aggregate

Regulatory Framework at National Level

(CSIR-CRRI Report, February 2019)

- **Recommended usage of recycled aggregates (RA) for road construction works as Sub-Base of two specified grades (Gr.III&V, MoRT&H, 2013) and one class of Filter Media (Class III, MoRT&H, 2013).**

Regulatory Framework at National Level

- CPWD vide OM No. 133/SE(TAS)/CS-DSR-2016/147-E dated 02.11.2018 included C&D Recycled Products namely Precast Solid Cement Concrete Blocks & Paver Blocks in DSR-2016 of SH:26(New Technologies & Materials) and issued correction slip No. 17 Delhi Schedule of Rates 2016.
- CPWD vide Office Memorandum No. 155/SE(TAS)/C&D/2018-19/433-H dated 12.10.2018 has mandated usage of C&D waste blocks in masonry works for nonstructural members in place of clay bricks for the works in Delhi-NCR
- CPWD vide OM No. DG/DAR/18 dated 01.04.2019 (Correction Slip No. 1 Delhi Analysis of Rates 2018) has included, Recycled Aggregates & Recycled Concrete Aggregates in Delhi Schedule of Rates -2018 of SH:4 (Concrete Work) of DSR-2018.

Regulatory Framework by Various Government Departments

- **NBCC Circular No. CE/2018:939a dated 01.08.2018**
- **DDA O.M vide F.No: 73(192)2015/Circular/CE/QAC/DDA/177 dated 12/6/18**
- **Department of Urban Development, Govt. of Delhi Order No. 7(84)/AD/LB/2016/5782-5805 dated 06.07.2016**
- **PWD, GNCTD O.M No. CE/Work/2018/3883/CDWM dated 14.06.2018**
- **EDMC Office Order No. CA/F&G/2018/104 dated 08.06.2018**

GreenPro Ecolabel Certificate for C&D Recycled Products issued by Confederation of Indian Industry (CII)

- Confederation of Indian Industry has certified C&D Recycled Precast Products manufactured at IEISL C&D Waste Processing Plants in Delhi as **“GreenPro Ecolabel Products”** on 16.06.2022.



GreenPro Ecolabel
C&D Recycled Pro

2000 TPD C&D Waste Processing Facility at Burari

- Burari Processing Facility has processed over 65 lakh MT of C&D Waste since Inception



Washing Facility



1000 TPD C&D Waste Processing Facility at Shastri Park



➤ Shastri Park Processing Facility has processed over 12 lakh MT of C&D Waste since Inception



150 TPD C&D Waste Processing Facility at Mundka



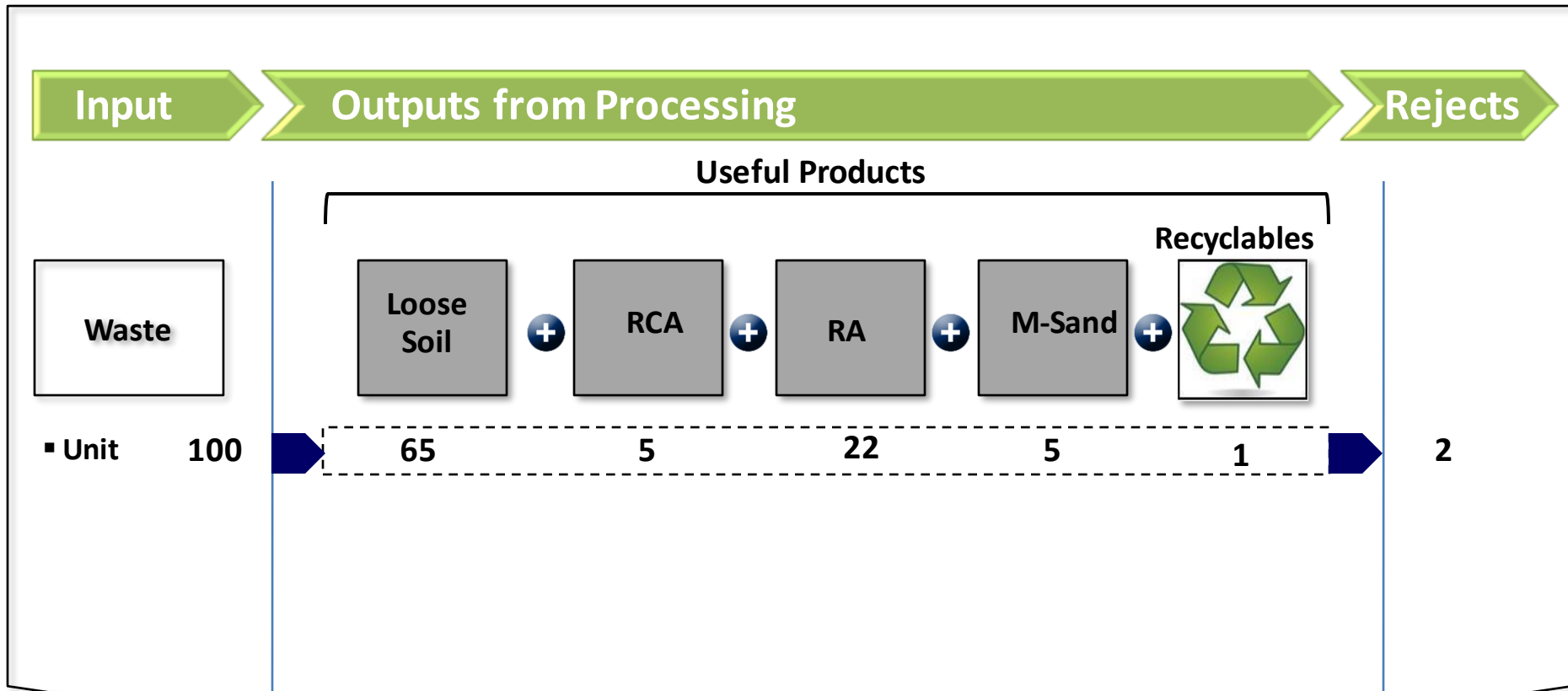
➤ Mundka Processing Facility has processed over 1.5 lakh MT of C&D Waste since Inception

C&D Waste Processing Facility at Ranikhera (1000 TPD)



Ranikhera Processing Facility has processed over .15 Lakh MT of C&D Waste since Inception

Value Addition by Processing



Processing can reduce waste to landfill by 98 % reducing pressure on scarce land . . . a niche of EverEnviro

Material Recovered

Mixed Waste

Aggregate 10 to 20 mm

Recycled Aggregate(RA)

Aggregate 3 to 10 mm

Concrete Waste

Aggregate 3 to 10 mm

Recycled Concrete Aggregate(RCA)

Aggregate 10 to 20 mm

Value Added Products

Recycled Aggregates(RA) & Recycled Concrete Aggregate (RCA) used for making value added products like CC Blocks, CC Bricks Pavers, Tiles and Kerb Stones etc.



Kerb Stones



Concrete Blocks



Paver Blocks



Paver Blocks and Tiles



Success Stories

- **Construction of New Supreme Court Building & MP Flats:**
 - 30 Lakh (approx.) M10 grade cement concrete (CC) blocks of size 400x200x100 used by CPWD.
- **4 km Express Bakkarwala Road by DDA :**
 - Used 2.6 lakh tons of recycled material of required grade passing through IS sieve 150 mm and retaining on 26.5/4.75 mm sieve
- **Delhi State Industrial Infrastructure Development Corporation (DSIIDC) & Irrigation & Flood Control (I&FC):**
 - DSIIDC and I&FC has used over 8 Lakh MT of screened soil for development of unauthorized colonies in Delhi

New Supreme Court Complex & M.P Flats in Delhi

**Construction of New Supreme Court Building & MP Flats:
30 Lakh (approx.) M10 grade cement concrete (CC) blocks of size 400x200x100 used
by Central Public Works Department (CPWD)**



New Supreme Court Complex

Application of C&D Recycled Materials

S.No	Description of Item	Specification	Size	Application
1	Good Earth	Produced in the process of filtration & pressing of slurry. Slurry is generated during the washing of C&D waste.	< 75 micron	Filling in low lying areas
2	Screened Soil	Produced during the screening of C&D waste. It consists of Soil & Aggregate	< 26.5 mm	Back filling, Road construction & Filling of ramp portion of the flyovers
3	Recycled Aggregate (RA)/ Brick Sub-base (BSB) / Granular Sub-base (GSB)	Produced by Crushing & Washing of Brick Aggregate, Stone Aggregate, Tiles etc.	4.75 mm to 26.5/53mm & 11mm-53mm	Lean Concrete (M10, M7.5 grade). & PCC Work. Road construction(Sub-base & Filter media application)
4	Manufactured Sand	Produced by crushing & washing of C&D waste. It is a fine mixture of Stone & Brick Aggregates. All the properties are same as river sand except little more water absorption capacity.	75 micron- 3 mm	Brick work & PCC Work
5	Recycled Concrete Aggregate (RCA)/ Stone Dust	Produced by crushing concrete based C&D waste only. Consists of Stone Aggregate & Cement Mortar Aggregate.	RCA- 5mm to 20 mm Stone Dust- < 5 mm	Upto 25% in Plain Concrete Upto 20% In RCC & 100% in Lean Concrete. (As per IS:383)

In Support
to achieve
agenda
2030



Thank you