



# Net Zero Waste Design & Operation

## IGBC APPROACH

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## ***IGBC Definition of 'Net Zero Waste'***

***A Net Zero Waste for Buildings & Built Environment is one which eliminates the diversion of waste being sent to landfills, by a multi-pronged approach***

- nature centric design***
- reducing debris during construction***
- responsibly handling waste during operation***
- reusing the waste as much as possible and***
- recycling the remaining waste***



# Design Optimisation

3D Printing



Cuts Construction Cost by 30%

Source: IIT-M Startup

Modular

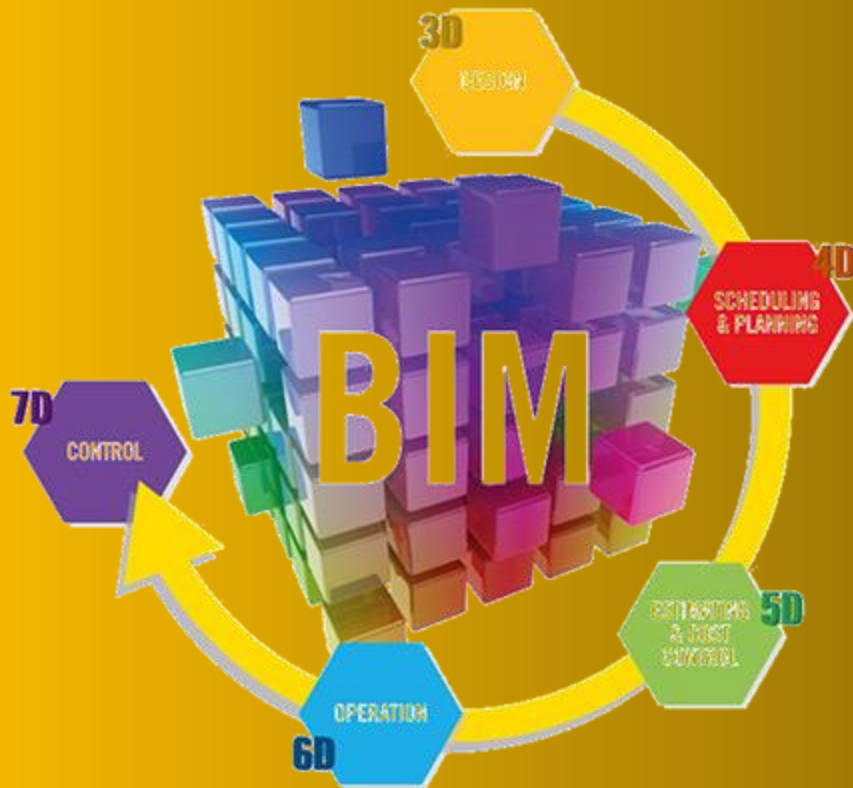
Prefabricated





# Design Optimisation

## Reduce Quantity by Design



S No.	Material	Range
1	Cement	5-8%
2	Reinforcement Steel	10-15%
3	Concrete	3-5%
4	Sand	10-15%
5	Coarse Aggregate	5-8%
6	Bricks	5-10%
7	Wood	1-3%
8	Tiles	10-12%
9	Paint	3-4%
10	Glass	3-5%
11	Aluminum	3-5%

# Sustainable Demolition

Demolish old existing structure sustainably and maximise resource recovery, thereby reducing the quantity of waste sent to landfill.

- ❖ **If site has any existing buildings**
- ❖ **Approach**
  - **Demolition in a way to recover maximum materials**
  - **Utilization of Demolition waste in New Buildings**
  - **Handing over the demolition waste to the recyclers**



**Opportunity to develop Recyclers in multiple cities**

# Green Procurement

## DESIGN

Ecolabelled  
Products

C & D  
Products

Rapidly  
Renewable

Salvaged  
Materials

Alternative  
Materials

Bio  
Based  
Materials

## OPERATION

Ecolabelled  
Products

Facility  
Maintenance

Eco  
Friendly  
Packaging

Energy  
Efficient  
Products

Water  
Efficient  
Products

Consumer  
Products





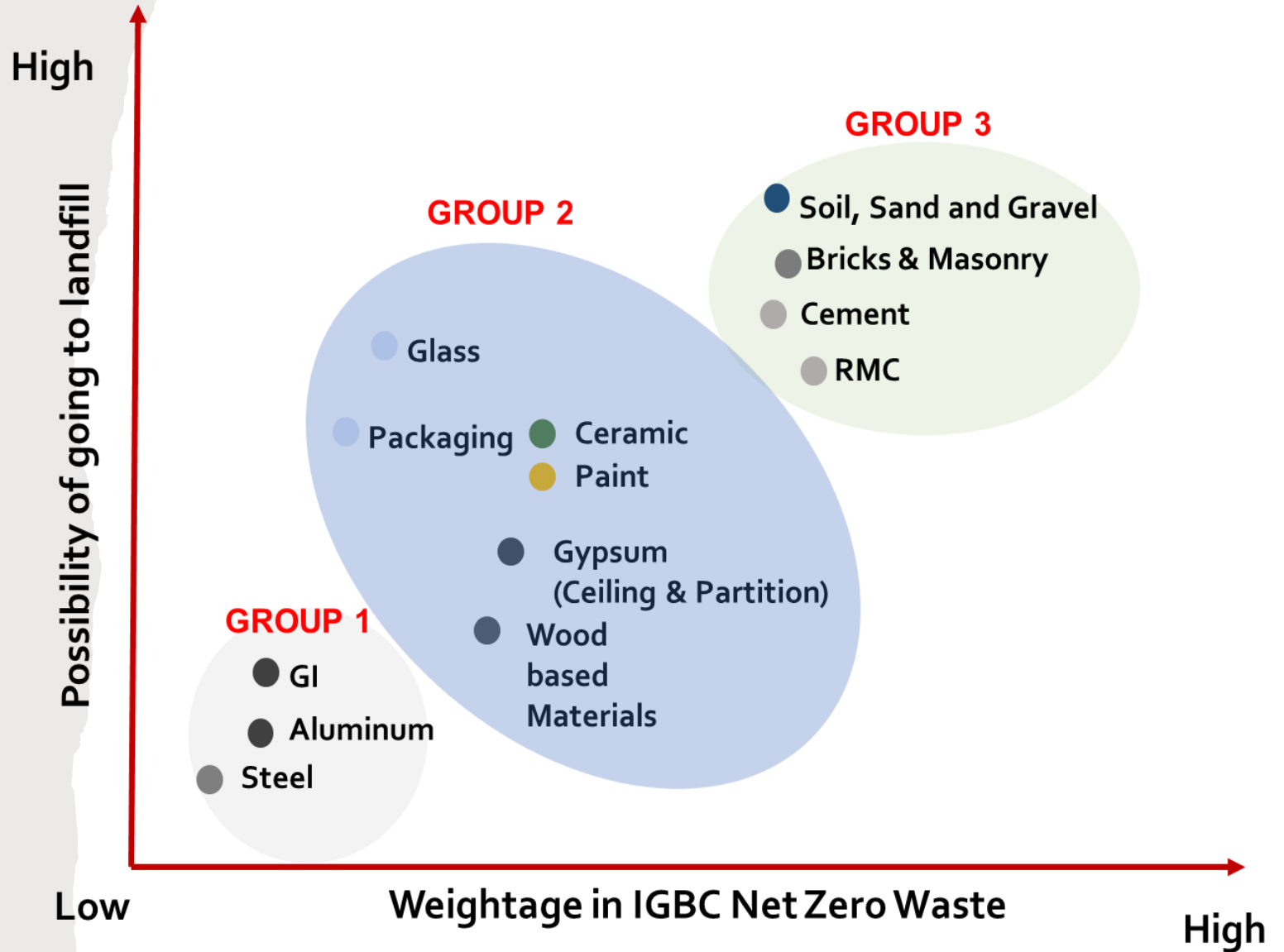


# Responsible Segregation

- ❖ Segregation appears simple, but most complicated activity
- ❖ Appoint or have a dedicated team to over see segregation & handling



# Recycling – Criteria as per IGBC Net Zero Waste



Facilitate recycling of construction & demolition waste through responsible handling so as to reduce waste going to landfill and related environmental impacts are avoided





# Responsible Segregation

Color Bin	Name of the bin	Examples of Waste
Blue	Paper Recycling	Office paper, clean cardboard, newspaper, milk & juice cartons, disposable coffee cup-lids only
Green	Organic Recycling	Food, pruning's, fruit & vegetables, plate scrapings including meat, fish & leftovers, coffee grounds, flowers
Red	Hazardous waste	Sanitary napkins, diapers, used syringes blades, bandages, expired medicine
Yellow	Mixed recycling	Glass bottles, aluminum cans
Grey	Soft plastic recycling	Bread bags, pasta & rice bags, cling wrap, plastic bags, biscuit packets, frozen food bags, bubble wrap





**SORTING FACILITY**



**WET Waste Segregation & Treatment**

**DRY WASTE STREAMS**







# E-Waste Best Practices



IGBC





# WASTE REDUCTION

Building Type	Baseline for Typical Solid Waste Generation
<b>Residential Apartments</b>	<b>0.25 kg per person</b> <i>(As per IGBC Green Homes Ver 3 or local byelaw whichever is stringent)</i>
<b>Office Buildings</b>	<b>0.1 kg per occupant</b> <i>(As per IGBC Green New Building Rating or local byelaw whichever is stringent)</i>
<b>Cafeterias</b>	<b>0.45 kg per meal served</b> <i>(Source: National Solid Waste Management Association, whichever is stringent)</i>
<b>Hospitals</b>	<b>7.25 kg per occupied bed</b> <i>(Source: National Solid Waste Management Association, whichever is stringent)</i>
<b>Hotels – First Class</b>	<b>1.45 kg per room</b> <i>(Source: National Solid Waste Management Association, whichever is stringent)</i>
<b>Hotels - Economy</b>	<b>0.75 kg per room</b> <i>(Source: National Solid Waste Management Association, whichever is stringent)</i>

**DATE** 22-06-2022

**-DAY** Wednesday.

**DAILY WASTE DATA**

**DAILY DRY WASTE DATA**  
172.1 kg

**DAILY WET WASTE DATA**  
375.4 kg

**DAILY REJECT WASTE DATA**  
0 kg

**DAILY TOTAL WASTE DATA**  
547.5 kg

**Note**  
Best time: 0.1 kg./person

**Manpower Detail**  
Sup. Chaitra - 636413635  
Field Staff -> 1. Soman Munda  
2. Hafiza Begum  
3. Vimala.

**Total Occupancy - 6946**

**Waste/Occupancy - 0.078 kg**

**Briefing points.**

1. Importance of PPE.
2. Segregation Method



# Approach to Net Zero Waste – Study project

Material	Waste Generated	Waste Diverted		
		REUSE	RECYCLE	To Landfill
	Quantity (tons)	Quantity (tons)	Quantity (tons)	Quantity (tons)
Steel	144.44	15.00	129.44	-
Wood waste	0.44		0.44	-
Glass	1.23			1.23
False ceiling waste	2.22			2.22
Blocks waste	48.27	35.00		13.27
Tiles	26.89	22.00		4.89
Paint cans	2.52	2.52		-
Cement bags	4.44		4.44	-
Aluminium	0.69		0.69	-
Packaging waste	2.22		2.22	-
RMC	20.00	18.00		2.00
Marble	50.00	35.00		15.00
Granite	100.00	90.00		10.00
<b>Total Quantity (Tonnes)</b>	<b>403.36</b>	<b>217.52</b>	<b>137.23</b>	<b>48.61</b>
<b>%</b>		<b>54%</b>	<b>34%</b>	<b>12%</b>
<b>% to landfill</b>				<b>12%</b>

**Residential Project**

**Site Area : 22 acres**

**B U A: 3.75 Million sq.ft**

**No. of Towers; 10**

# Compliance to Net Zero Waste to Landfill

- ❖ Project to appoint authorized third party to demonstrate waste diverted from landfill



Ideal Scenario: Quantity of waste sent to landfill should be ZERO

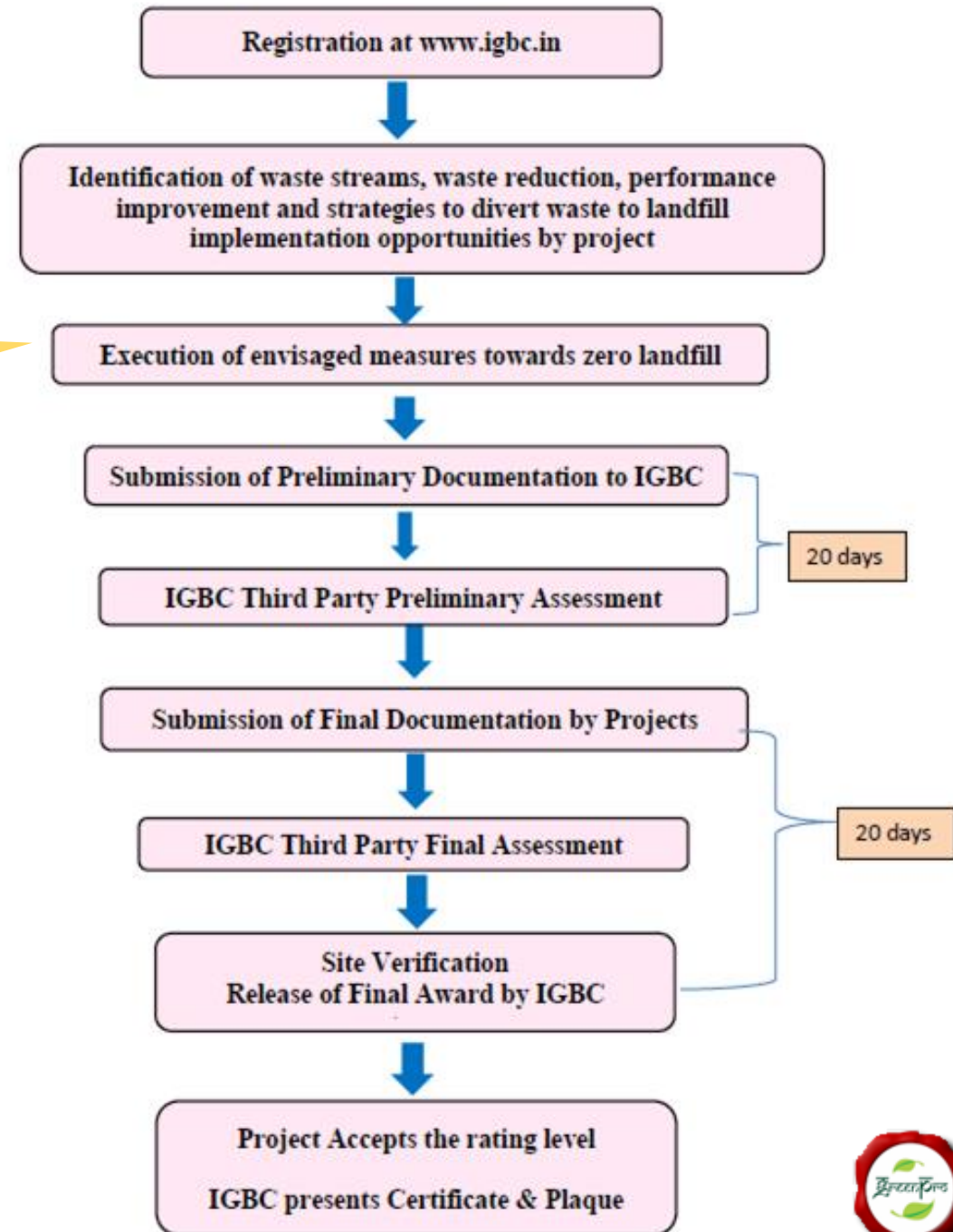


## IGBC Net Zero Waste Rating System for Buildings & Built-Environment

Pilot Version  
November 2021



## Certification Process



Certification Level	Avoided % of Waste to Landfill	Points Range	Recognition
Near Net Zero Waste	75 - 84	30 - 34	Outstanding Performance
Net Zero Waste	85 - 94	35 - 39	National Excellence
Net Zero Waste Platinum	95 and above	40 - 50	Global Leadership



# THANK YOU

[www.IGBC.in](http://www.IGBC.in)

[www.CIIGREENPRO.com](http://www.CIIGREENPRO.com)



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