# Green Interiors, Walk the Talk

# Building Green & Saving Money

**Arpan Johari** Principal Architect AW design. India


We have a small workspace

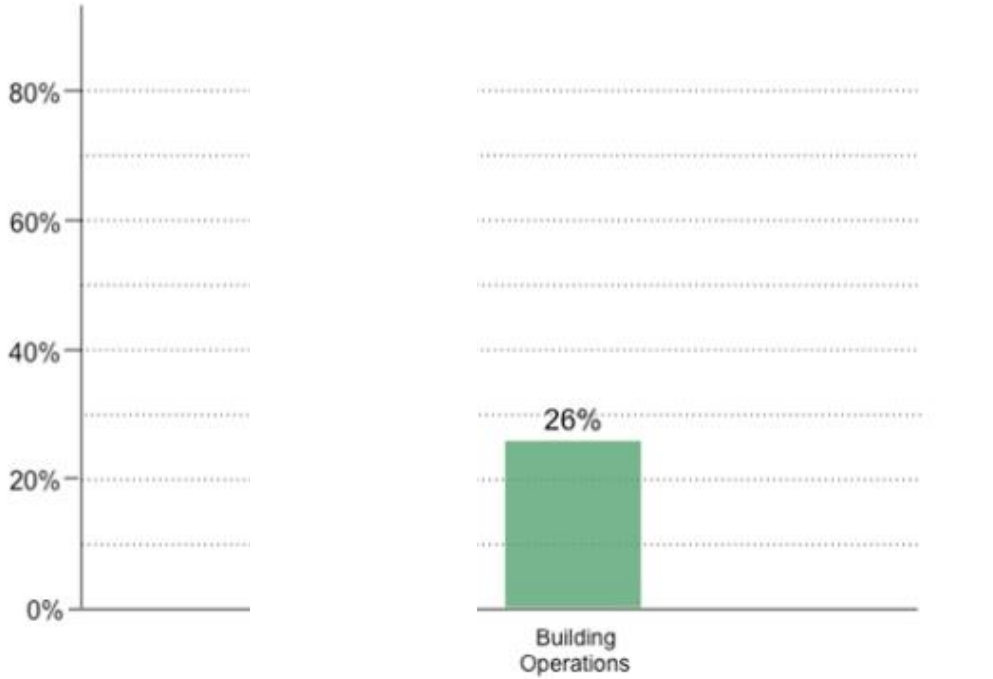
We have a small home

How can we go green?

Can going green help us save money

**Arpan Johari** Principal architect AW Design. India

## What component of buildings consumes maximum energy

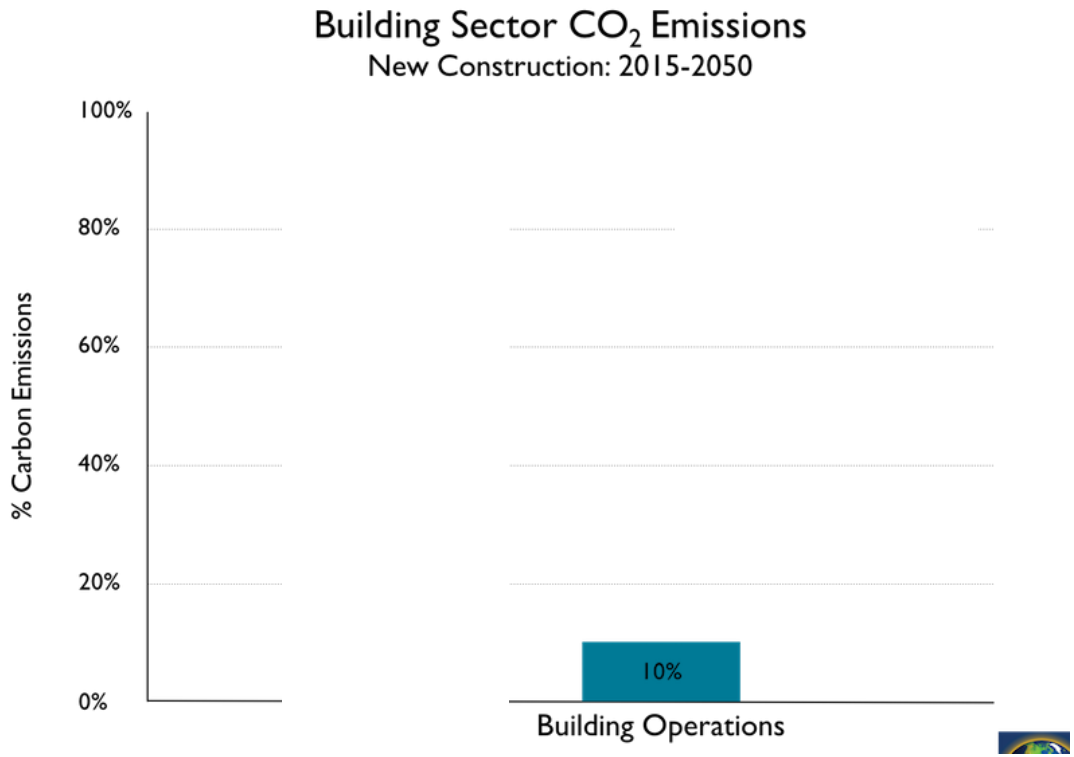



**2030 Energy Consumption Footprint of All Buildings Constructed Between 2015 - 2030** (900 Billion Sq. Ft).


Data Source: EIA (2011), Richard Stein, CBECS (2003), McKinsey Global Institute

**Building Materials are the biggest contributors**

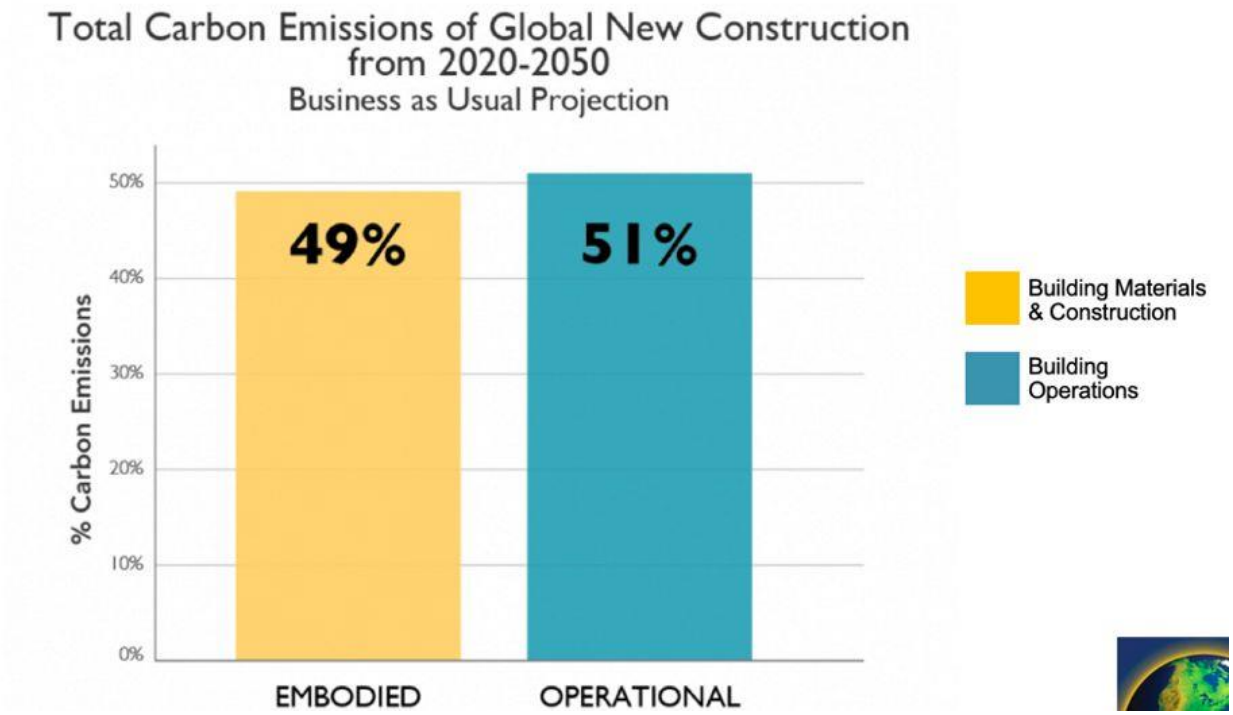
## What component of buildings are biggest CO2 contributors




**Building Materials are the biggest contributors**

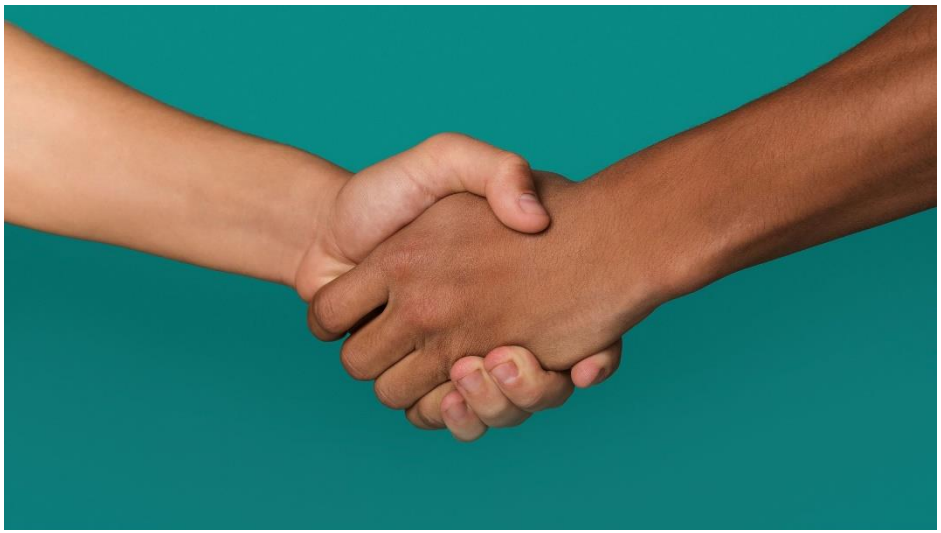

Data Source: EIA (2011), Richard Stein, CBECS (2003), McKinsey Global Institute

## What are the components with highest embodied energy




**Building Materials contribute 49%, rest is over 50 year operations**

# Most of the architects want to build green



What is stopping the handshake then?

# Most clients want green

# Barriers

Lack of awareness in vendor ecosystem & deluge of overwhelming information over internet

Little research on Indian products

Erratic availability of green materials

Costing

# Partitions, furniture

# Floors

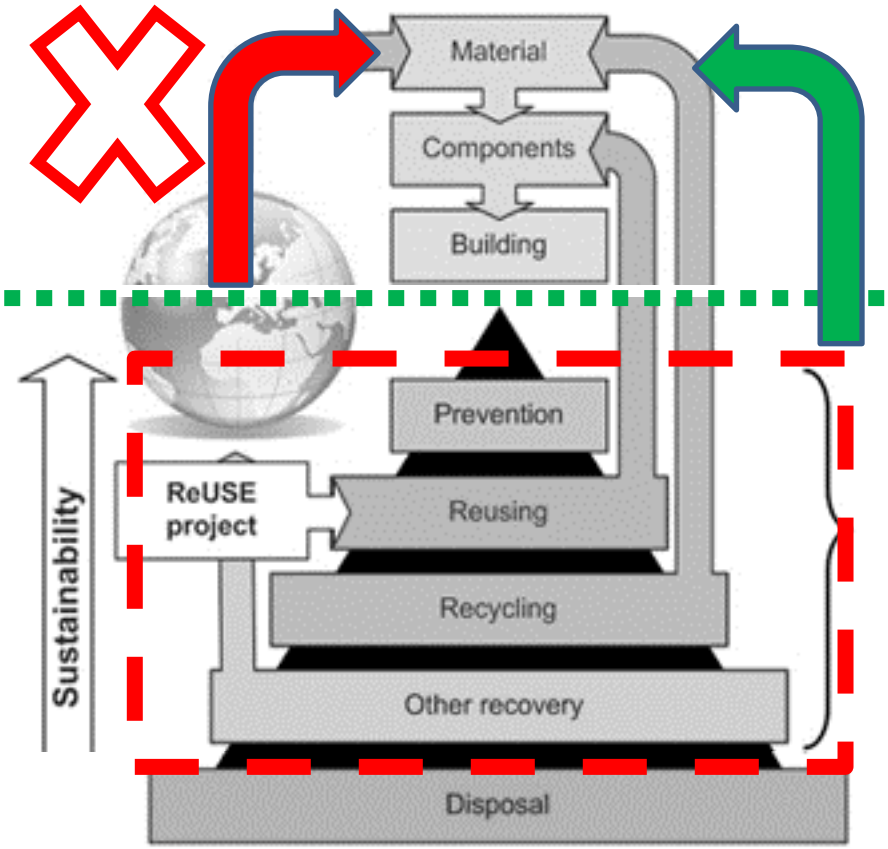
# Ceiling

# Paints and finishes

# Lighting & equipment

# Climate Control

## How are these components manufactured




**Conventional approach**

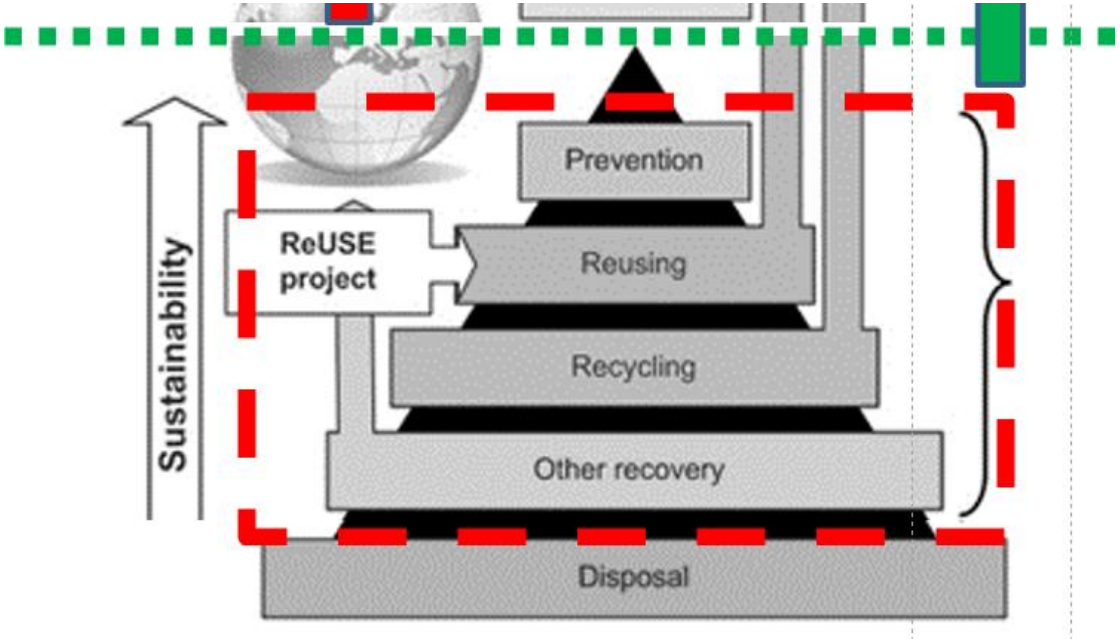
**Sustainable approach**

https://www.vtt.fi/sites/reuse/en/reuse-repetitive-utilization-of-structural-elements

**Focus on reusing construction waste and salvaged material**

**Advantage – Non use of virgin material, small carbon footprint**

## How are these components manufactured




**This is what we are usually interested in**

**Unfortunately little information on this exists in public domain**

## IGBC Green Interiors rating system – in practice

AW Design Office, Ahmedabad.
Building out of waste and saving money

IGBC® GREEN INTERIORS
INDIAN GREEN BUILDING COUNCIL
Transit Electronics Limited
Surat
PLATINUM
2018

# Develop an Eco Vision

**Smaller carbon footprint**

**Reuse and repurpose construction materials**

**Keep it simple**

**Keep it Cap-ex and Op-ex low**

**Green materials are available, no need to reinvent the wheel**

**Learn while doing it and Have fun doing it**

## Our approach

We could see our material palette forming and us qualifying for IGBC rating

| Item | Recycle content |
|---|---|
| Plywood | 22% |
| Veneer | 22% |
| MDF | 35% |
| Aluminum section | 35% |
| Glass | 40% |
| Vitrified tiles | 45% |
| Soft boards | 45% |
| MS | 29% |

**But we wanted to be even more green than just Buying eco friendly wood based products**

**We did not want to use any virgin raw material For our fitouts**

**WE WILL DO ADAPTIVE REUSE OF OLD MATERIALS**

**27.5%** recycled material content

## Interior Materials

## Use of salvage materials


lightweightuniversity.com/news/diy-trade-show-displays

**Phenol bonded plywood sourced from trade shows**

**Advantage – Non use of virgin material, reduction in capital cost to build**

**100%** **plywood sourced locally & from waste**

## Interior Materials

## Use of salvage materials

Waste ply sandwiched between 6 mm ply

**Advantage – Non use of virgin material, reduction in capital cost to build**

**100%** plywood sourced from waste

# Interior Materials

## Use of salvage materials

**Veneer used for making particle board otherwise**

lightweightuniversity.com/news/diy-trade-show-displays

**Veneer sourced from showroom display lots**

**Advantage – Non use of virgin material, reduction in capital cost to build**

**100% veneer sourced from waste**

## Interior Materials

## Use of salvage materials

**100%** veneer sourced from waste

Veneer sourced from showroom display lots

**Advantage – Non use of virgin material, reduction in capital cost to build**

# Interior Materials

## Use of salvage materials

lightweightuniversity.com/news/diy-trade-show-displays

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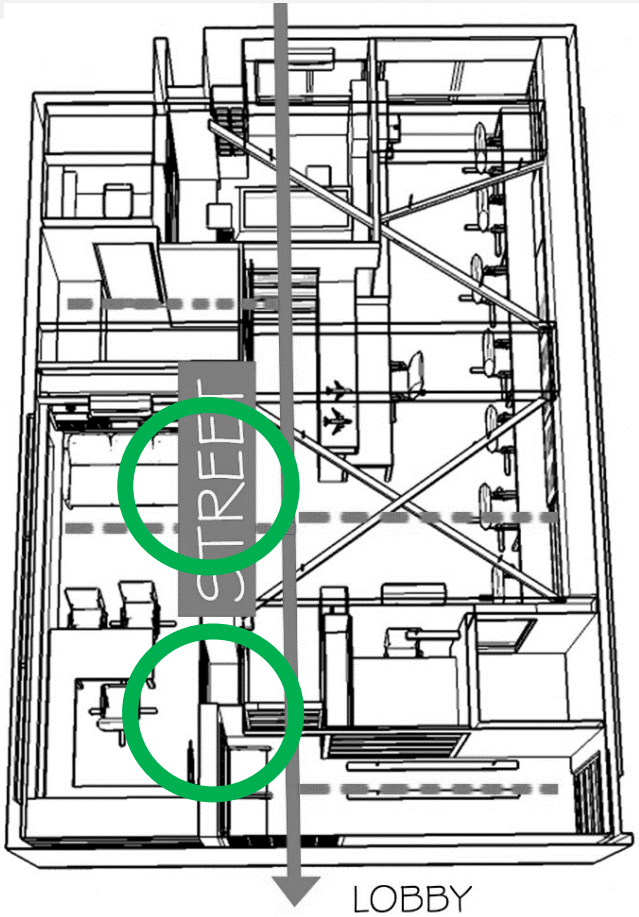
## Interior Materials

## Use of salvage materials




Haveli doors are important part of Ahmedabad heritage landscape and

We wanted to communicate that to our visitors, team and clients

Doors – Approx 100 years old

Advantage – Non use of virgin material, reflection of local heritage, reduction in capital cost to build

# Interior Materials

## Use of salvage materials

**Doors – Approx 100 years old**

**Advantage – Non use of virgin material, reflection of local heritage, reduction in capital cost to build**

Doors – Approx 100 years old

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# Interior Materials

## Use of salvage materials

**100%** MS sourced from waste

Workstation MS Frame, sourced from removal of illegal construction

**Advantage – Non use of virgin material, reduction in capital cost to build**

## Interior Materials

## Use of salvage materials

**100%** MS sourced from waste

Workstation MS Frame

**Advantage – Non use of virgin material, reduction in capital cost to build**

## Interior Materials

## Use of salvage materials

**100%** MS sourced from waste

Meeting room seating system

**Advantage – Non use of virgin material, reduction in capital cost to build**

# Interior Materials

## Use of salvage materials

**90%** glass sourced from waste

Glass procurement from salvage dealer

**Advantage – Non use of virgin material, reduction in capital cost to build**

# Interior Materials

## Use of salvage materials

**90%** glass sourced from waste

Glass resized, cut and installed at site

**Advantage – Non use of virgin material, reduction in capital cost to build**

## Interior Materials

## Use of salvage materials

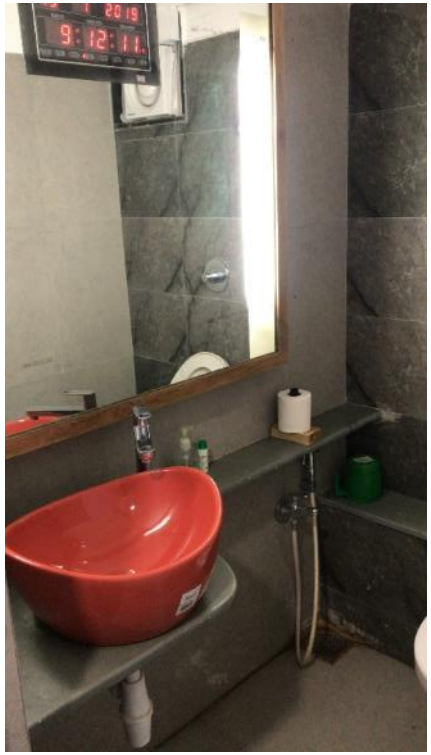

**100%** backpainted glass sourced from waste

Back painted glass

**Advantage – Non use of virgin material, reduction in capital cost to build**

## Interior Materials

## Use of salvage materials

**100%** mirror sourced from waste

Mirror installed at site

**Advantage – Non use of virgin material, reduction in capital cost to build**

## Interior Materials

## Use of salvage materials


**100%** tiles sourced from waste

Tile use in powder toilet and pantry

**Advantage – Non use of virgin material, reduction in capital cost to build**

## Energy Efficiency

## Efficient lighting

**Concerns:**

**1 - A lot of non branded fixtures have incorrect Wattage value mentioned.**

**2 - We did not want to go for Branded fixtures (High cost and non customizable)**

**3 – We opted for branded fittings and built our own fixtures, out of waste of course.**

**Our solution**



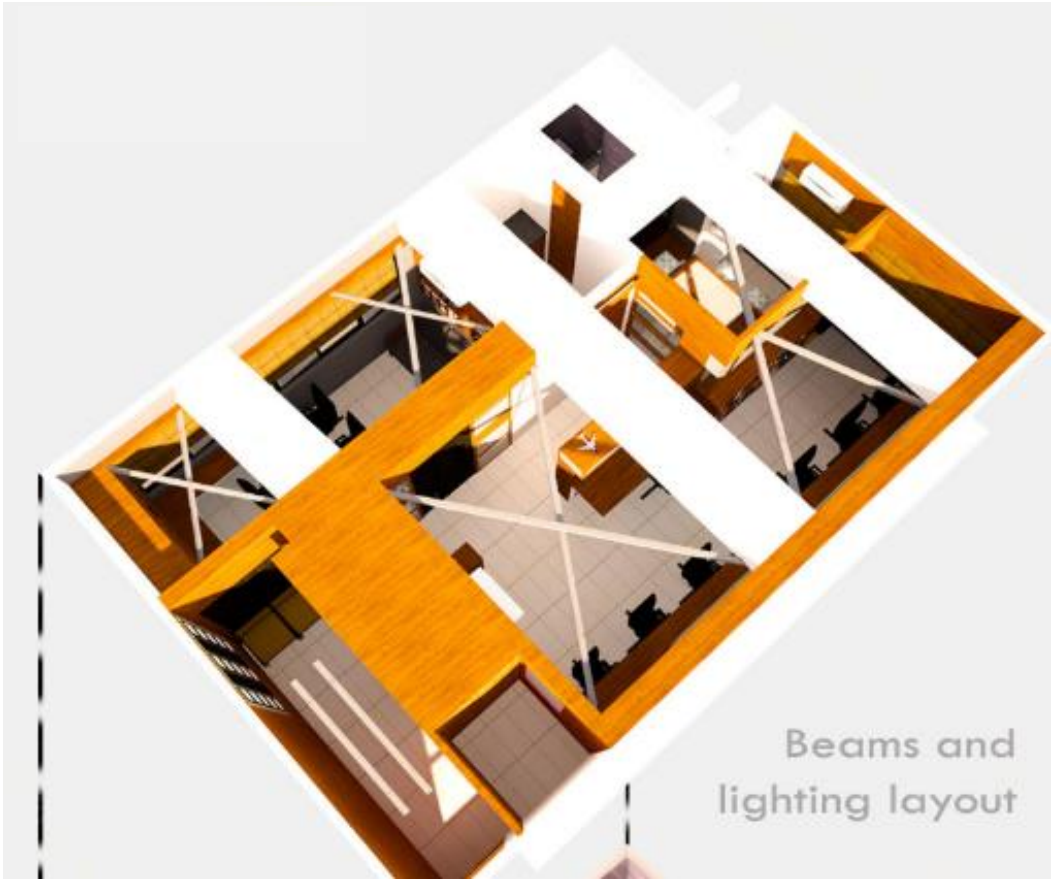
**8W 2' and 18W 4' fixtures with intermediate filament**

**Advantage – reduces energy consumption, longer life, reduced Op-ex**

8W 2’ and 18W 4’ fixtures with intermediate filament

**Advantage – reduces energy consumption, longer life, reduced Op-ex**

# Ceiling and beam arrangement



# Interior Materials



**Reduction in energy consuming steps**

**Extension of usability cycle**

https://www.lifecycleassessments.com

**Our intervention at stage 4**

**Advantage – Prevent waste from going to landfills**

## AW Design Office


| | |
|---|---|
| Use of salvage material | >90% |
| Use of eco friendly wood based | 68% |
| Average recycled content | 28% |
| Use of local material | 95% |
| Eco certified furniture | 43% |
| Waste diverted from landfill | 100% |

Attempted and achieved 90 points

**Building green does make financial sense**

| | |
|---|---|
| Overall project cost savings | >55% |

# Photos

## Photos


Suspended lights


IGBC GREEN INTERIORS
INDIAN GREEN BUILDING COUNCIL
Architecture, Interiors & Sustainability
PLATINUM
2018

# Photos

# Photos

Looking towards street

Artwork - walled city map in waiting area

# Photos


# QUESTIONS?

**Arpan Johari**
B.Arch, MBA-Eco, IGBC – Fellow
COA, IIA, IIID, F-IMI

**Energy efficiency division of**

**AW DESIGN**

209 Dream Rise, Science city road
Ahmedabad. India
Contact: +919428826788