

Pseudo Stifling: Mumbai & Mumbaikars



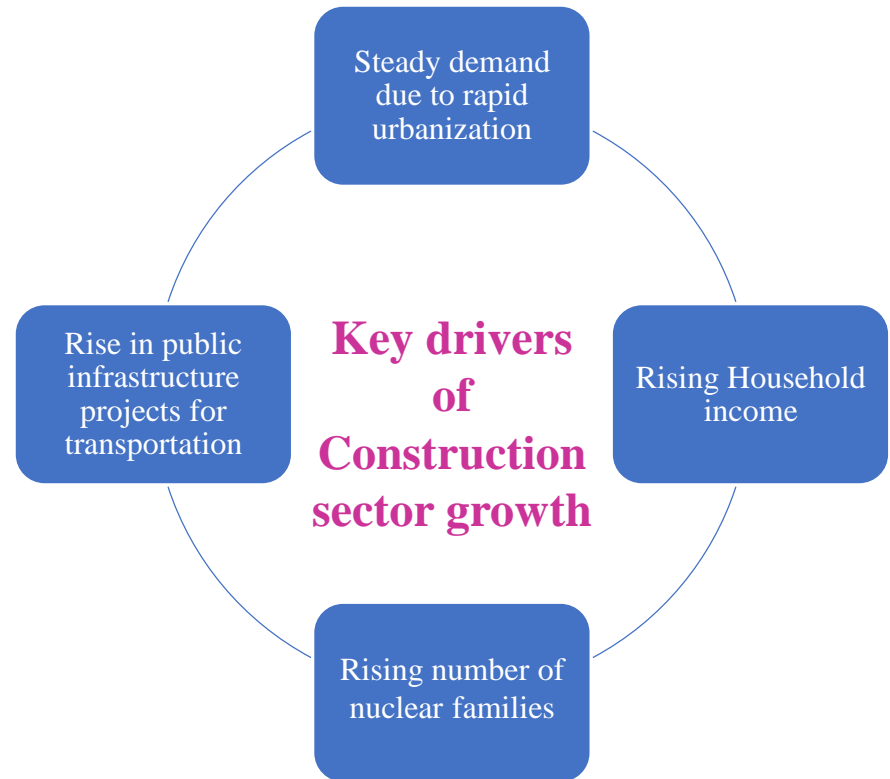
# CHAMPIONING SMART & LIVABLE INFRA SOLUTIONS



Panel I-  
Construction & Demolition-Policy Profiling : matching gaps  
with alternatives

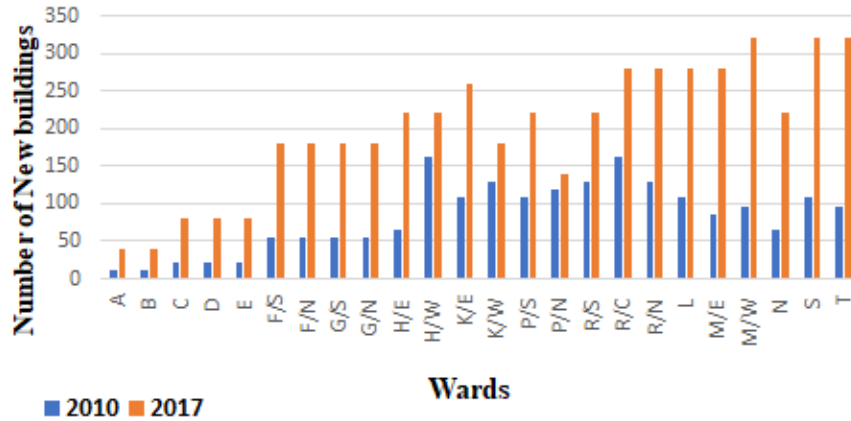
# Construction sector in India

- India to be third largest construction market globally by 2030.
- Largest contributors to economic activity and second largest employer
- For 2017-18, Gross Value Added by the construction sector : USD 140 billion .
- **Share of infrastructure** spending in the construction sector as a part of India's GDP rose to 9% in 2017.
- **Investment in retail projects** in Tier 1 & 2 cities reached USD 6.19 billion from 2006-17.



# Mumbai: Increase in construction activities

**New building construction  
Year 2010 Vs Year 2017**



Comparison of number of New building construction in Year 2010 and 2017

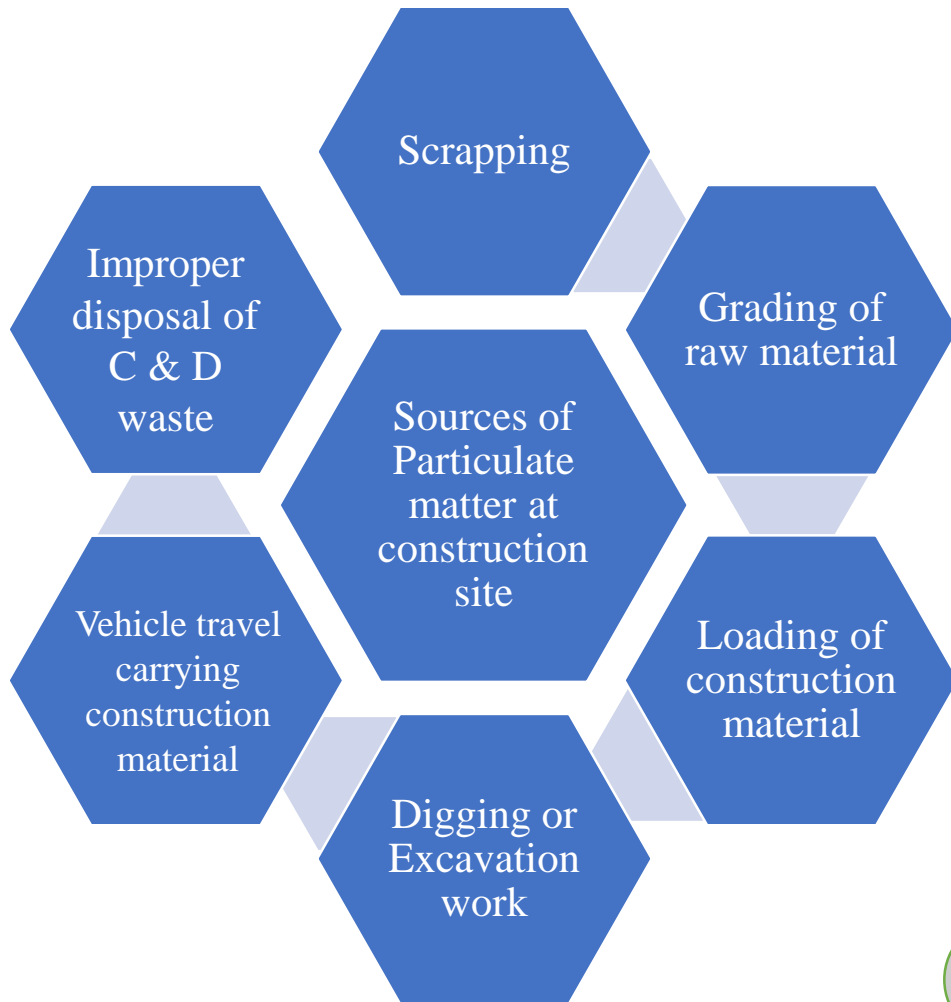
Comparison of number of alterations in Year 2010 and 2017

**Alteration/Addition activities in existing buildings  
Year 2010 Vs Year 2017**



Source: Report on Air Quality Assessment, Emissions Inventory and Source Apportionment Studies : Mumbai by NEERI 2010  
Report on "Air Quality Monitoring & Emission Source Apportionment Studies for 10 cities in the State of Maharashtra"

# Emissions and waste generation from Construction sites



## C & D Waste generation in India

**Estimated quantity: upto 23.75 million tons annually\***

### **Considerations for C & D waste quantification\***

40-60 kg per sq.m of new construction,  
40-50 kg per sq.m of building repair  
300-500 kg per sq.m for demolition of buildings.

\* Guidelines On Environmental Management Of Construction & Demolition (C & D) Wastes. 2017 CPCB

# Existing rules & regulations: Construction sector

## Construction & Demolition management waste rules, 2016

|   | Responsibilities  |
|---|---|
| Waste generator                                 | <ul style="list-style-type: none"> <li>• Proper collection and storage of waste within their premises</li> <li>• Deposition of waste in designated locations as notified by local authority.</li> <li>• Submit waste management plan and get approval before starting construction/demolition work.</li> </ul>  |
| Utility service providers and their contractors | <ul style="list-style-type: none"> <li>• Prepare comprehensive waste management plan.</li> <li>• Collect and store waste securely by avoiding local disruption or pollution.</li> </ul>   |
| Local authority                                 | <ul style="list-style-type: none"> <li>• Pass by-laws mandating C&amp;D waste management</li> <li>• Designate intermediate collection points and site for processing facility.</li> <li>• Examine and approve waste management plan of generators</li> <li>• Make arrangements for collection, transportation and processing, in contract with private party</li> <li>• Establish C&amp;D waste generation database</li> <li>• Create incentives for use of recycled products including through preferential purchase agreements in municipal contracts.</li> </ul> |
| State Pollution Control Board                   | <ul style="list-style-type: none"> <li>• Monitor implementation of the Rules by local authority</li> <li>• Authorize C&amp;D waste processing facility as per criteria and monitor environmental compliance.</li> <li>• Prepare annual reports for CPCB.</li> </ul>   |
| State government                                | <ul style="list-style-type: none"> <li>• Prepare policy document for C&amp;D waste management.</li> <li>• Help cities identify land for waste management where necessary.</li> <li>• Facilitate preferential procurement of recycled materials by all state agencies</li> </ul>   |
| CPCB  | <ul style="list-style-type: none"> <li>• Prepare guidelines for C&amp;D waste management.</li> <li>• Analyze data collected by SPCBs and prepare annual compliance report for central government</li> </ul>   |

# Existing rules & regulations: Construction sector

## Guidelines On Environmental Management Of Construction & Demolition (C & D) Wastes. 2017 CPCB

### Dust abatement due to loading:

- Areas to be earmarked for delivery / deposition of C & D wastes
- A sheet cover over the debris
- Water sprinklers at all unloading points.

### Dust abatement from vehicles:

- Covered vehicles to prevent fugitive dust emission.
- Regular checking and maintenance of vehicles (valid PUC)
- Smooth movement of incoming & out going vehicles / trucks
- Roads within premise tarred

### Other dust abatement measures

- Use of water for dust suppression
- Use of 'treated waste water' in sprinklers for dust suppression
- Diesel use in equipment / gensets / vehicle movement generate emissions  
: Necessary pollution control measures to be adopted to reduce emissions
- Plantation / greenery (use of local species / low water uptake ) Grow trees at the periphery- to arrest dust

# National Clean Air Programme (NCAP)

Goal of NCAP is to meet the prescribed annual average ambient air quality standards at all locations in the country in a stipulated timeframe (long-term).

**One of the component of NCAP is Dust management from Road Dust and C & D**

Control of dust from construction activities using

- Enclosures
- Fogging machines
- Barriers

# Existing rules & regulations: Construction sector

## Dust Mitigation notification by MOEFCC, January 2018 in EPA 1986

### For Construction and Demolition Activities for projects requiring Environmental Clearance:

- Mandatory preparation of Environmental Management Plan inclusive of dust mitigation measures for projects requiring Environmental clearance.
- Roads leading to or at construction sites must be paved and blacktopped (i.e. metallic roads).
- No excavation of soil without adequate dust mitigation measures
- No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust shall be left uncovered.
- Wind-breaker of appropriate height i.e. 1/3rd of the building height and maximum up to 10 meters
- Water sprinkling system
- Dust mitigation measures shall be displayed prominently at the construction site for easy public viewing.

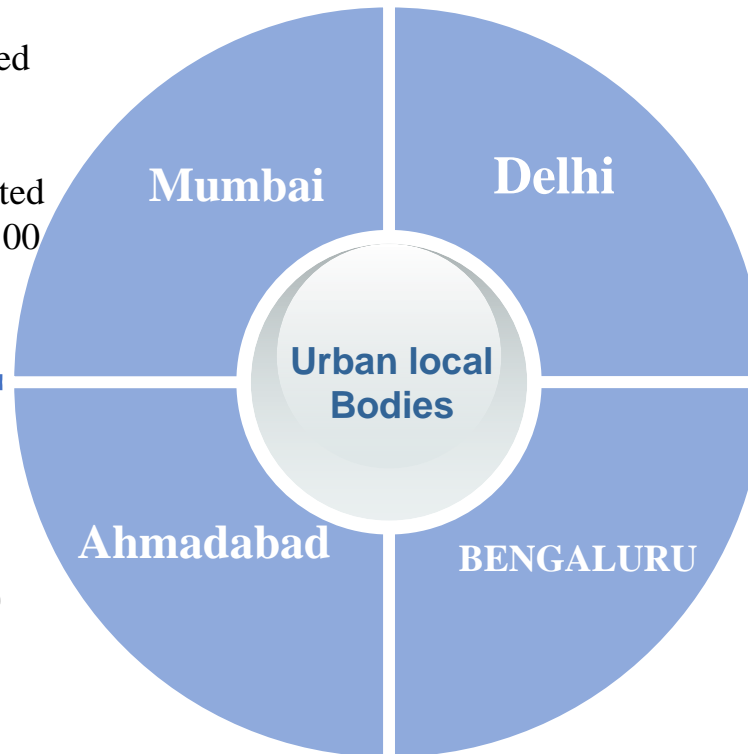
### For all Construction and Demolition Activities

- No Grinding and cutting of building materials in open area
- Storing Construction material and waste only within earmarked area and no road side storage of construction material and waste
- No uncovered vehicles carrying construction material and waste
- Prior identification of Construction and Demolition Waste processing and disposal site with dust mitigation measures be notified at the site.



# Initiatives for recycling of C & D waste

- **Waste: 2500 tonnes/day (0.75 million tonnes/annum)**
- **Debris on call:** For estimated waste quantity less than or equals to 300 MT
- **Dispose by self:** For estimated waste quantity **more than** 300 MT
- **Consume In-Situ**



- **Waste : 4600 tonnes/day (1.38 million tonnes/annum)**
- Burari: 500 MTPD
- Kidwai nagar, New Delhi: 150 MTPD
- Shastri Park: 500MTPD

- **Waste : 700 tonnes/day (0.21 million tonnes/annum)**
- Capacity: 300MTPD (2014)
- Public Private Partnership between Ahmedabad Municipal Corporation and Amdavad Enviro Projects Private Limited (AEP)

- **Waste : 875 tonnes/day (0.26 million tonnes/annum)**
- Proposed 3 C & D waste plants
- Kannur to the north-east of the city
- Mallasandra off Jalahalli West to the north of the city
- Anjanapura to the west of the city

# Initiatives for recycling of C & D waste



Crushing units at Burari C&D waste recycling plant

Picture credits: IL&FS Pvt Ltd



C & D waste recycling plant in Ahmadabad



C & D waste recycling plant in Delhi

# International scenario: Practices for emissions/waste reduction from construction sites

## Buiksloterham- Netherlands

- It will be **zero waste emission-free** and entirely self sufficient in energy, all products and materials will be recovered for reuse, repair and recycling.
- This development is providing **self-built plots** (this is based on reversed development model )

## WIKI HOUSE- London

- In built environment, open source design platforms allow designers to share designs with the users so that they can customize or even construct buildings themselves
- The exchange of information is in a standardized format therefore this encourages the use of the modular construction **design for disassembly** and use of sustainable circular materials
- It is an open source construction system, that can be freely downloaded, customized and manufactured with minimum construction skills
- The project was constructed in **12 days with minimum materials**