

Man-made Disaster and the Role of Municipal Authorities

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Coverage

- Disaster and Related Institutions in India
- Typology of MMD in Urban Areas
- Causes of Manmade Urban Disaster
- Current Status
- Emerging Initiatives
- Urban Agenda for Management of MMD

Disaster Management

- Natural Disaster
- Manmade Disaster
- Institutional Arrangements
- Mo Home ,NDMA,SDMA-Largely dealing with Natural Disaster
- Manmade Largely left on Local Governments
- Yet ,Local Planning and follow up for MMD is lacking

List of top 10 natural disasters

1. Cyclone
2. Earthquake
3. Tornado
4. Volcanic Eruption
5. Tsunami
6. Flood
7. Wildfire
8. Drought
9. Avalanche
10. Landslide



Man made Disaster in Urban Areas

1. A disastrous event caused directly and principally by one or more identifiable deliberate or negligent human actions
2. Hazardous materials, emergencies include chemical spills and groundwater contamination.
3. Solid and Liquid Waste (Externalities) –Regular and Disastrous
4. Workplace /human Settlement, House infrastructure / fires
5. Significant property damage and loss of life

Causes of Manmade Disaster

- Low Compliance on existing Norms
- Inadequate Laws/Legislation
- Poor/Late Planning
- Gap between Planning and Implementation
- Lack of community awareness and participation
- Low priority for political economy

Typology of MMD in Urban India

- Dilapidated and congested Housing
- Construction Sector
- Urban Flooding
- Waste management
- Roads and Related Services

Dilapidated and congested Housing

- Mumbai building collapse: At least 12 dead, 19 rescued from collapse site in Ghatkopar (Indian Express-25 July)
- After disastrous Mumbai disaster, several buildings in Delhi flagged 2297 'unsafe' Aug 03, 2017 -Times Now, Agencies
- Illegal Land sub division-Unauthorised colonies-Delhi
- Inadequate circulation network
- Unsafe for fire hazard
- Air and water pollution-PM 2.5 and 2.10

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Mumbai house collapse/Indrapuri Delhi 2017



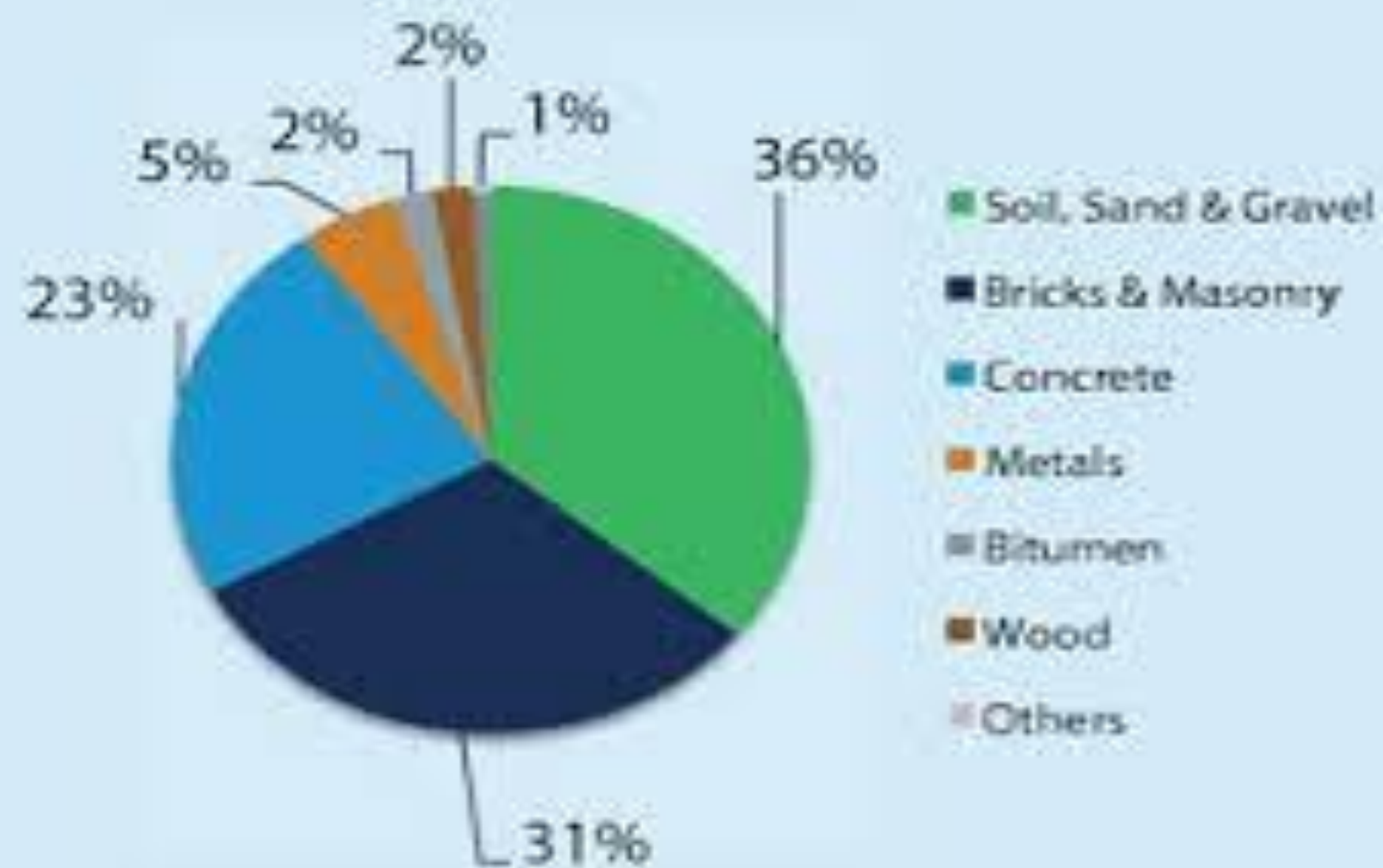


Construction Sector

- Majority of air pollution in big Indian Cities
- Delhi-40% reduction Diesel trucks yet Particulate Matter 2.5 same –severe than tobacco(Hindustan 10 August,2017)
- 3000-5000 MT daily pilot project for 500 tons per day-burari-(DPCB) Another coming in Kondli
- Excess use of ground water real estate developers and individuals
- Lack of earthquake resistance in construction



Typical Composition of C&D Waste in India



Urban Flooding

- Common feature-Chennai and Gurugram in 2016
- Diversion /blocking of natural drainage system
- Deforestation and dams
- Lack of storm water drains
- Leached (harmful material)from Solid waste Dump

Gurgaon 2016



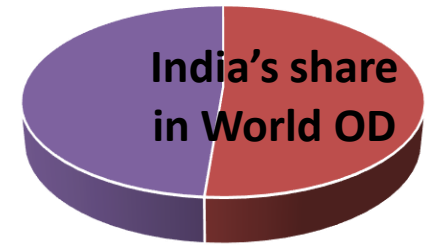
Chennai 2016



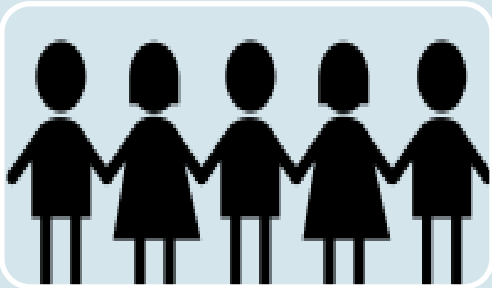
Waste Management

- Mixed Garbage-plastic ,hazardous waste
- Uncontrolled tipping , defective landfilling,
Green waste mishandling/ burning
- ODF status -gaps and implications
- Poor treatment of waste water
- Demand side mismanagement

Externalities

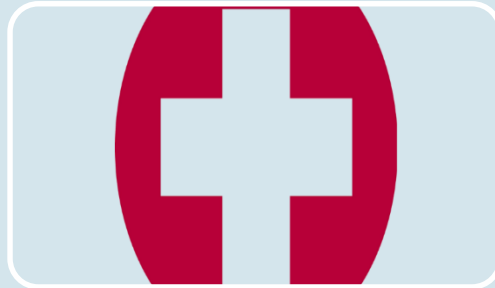


Globally, 1.1 billion people defecate in the open



Sanitation saves lives

- Diarrhea kills over 100,000 children every year in India
- Equivalent to 2 jumbo jet crashes daily



Health and nutrition

- Lack of sanitation leads to physical and cognitive stunting in children
- 40% of India's children are stunted, leading to a potentially less productive future workforce



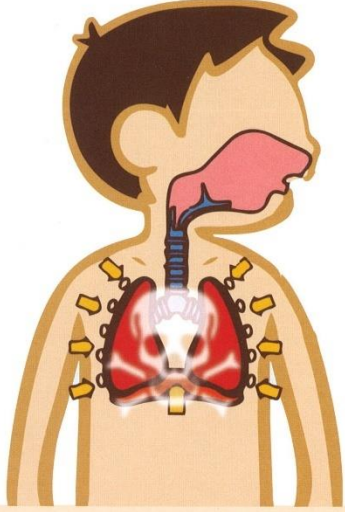
Women's security and dignity

- Open Defecation a serious threat to safety and dignity of women
- Holding it in till it is dark is a health issue

It is estimated that lack of sanitation costs India 6.4% of our GDP

HAZARDS OF BURNING GARBAGE

ಕಸ ಸುಡುವದರಿಂದ ಆಗುವ ದುಷ್ಪರಿಣಾಮ



**ASTHMA, COUGH,
HEART ATTACK**

ಉಬ್ಬಸ, ಕೆಮ್ಮು,
ಹೃದಯಾಘಾತ

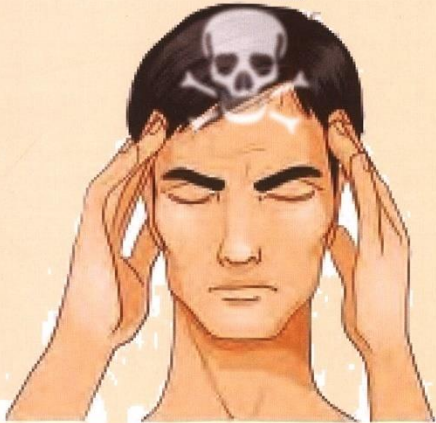
**TOXIC FOR PREGNANT WOMEN & CHILDREN -
CAUSES CANCER**

ಗರ್ಭಿಣಿ ಸ್ತ್ರೀಯರಿಗೆ ಮತ್ತು ಮಕ್ಕಳಿಗೆ ವಿಷಕಾರಿ
- ಕರ್ಕ ರೋಗಕ್ಕೆ ಕಾರಣ



HEADACHE & VOMITTING

ತಲೆಶಾಲೆ ಮತ್ತು ವಾಂತಿ



DO NOT BURN GARBAGE

ಕಸವನ್ನು ಸುಡಬೇಡಿ

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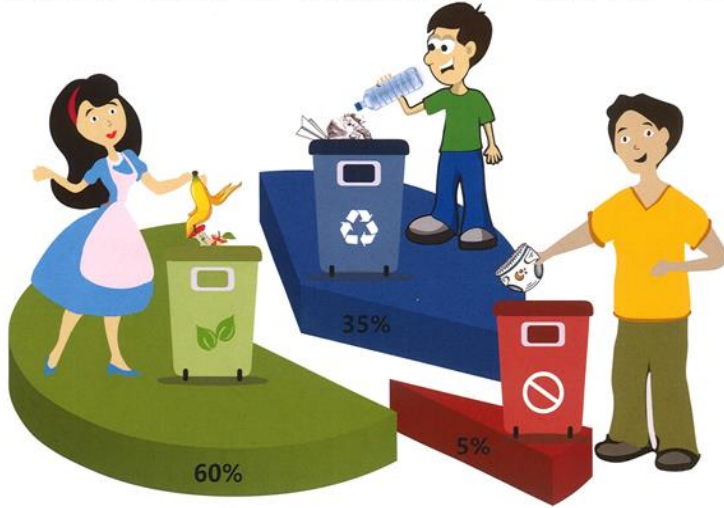


CONTAMINATES WATER & FOOD

ನೀರು ಮತ್ತು ಆಹಾರವನ್ನು
ಮಲಿನಗೊಳಿಸುತ್ತದೆ



HOUSEHOLD WASTE ಮನೆ ಕಸ



■ Compostable waste ವಿಘಟನೀಯ ತ್ಯಾಜ್ಯ
■ Recyclable waste ಮರುಬಳಕೆ ತ್ಯಾಜ್ಯ
■ Reject waste ತಿರಸ್ಕರಿಸಿದ ತ್ಯಾಜ್ಯ

RESPONSIBLE SEGREGATION AND DISPOSAL, WILL SAVE ABOUT 95% OF YOUR GARBAGE FROM GOING INTO A LANDFILL

Reject waste is the only waste that CANNOT be Re-cycled or Re-used, so **REDUCE**

ಜವಾಬ್ದಾರಿ ಪ್ರತ್ಯೇಕತೆ ಮತ್ತು ವಿಲೇವಾರಿ ಭೂಮಿಯೊಳಗೆ ಹೋಗುವ ನಿಮ್ಮ ಕಸದ 90% ಉಳಿಸುತ್ತದೆ

ತಿರಸ್ಕರಿಸಿದ ತ್ಯಾಜ್ಯ ಮಾತ್ರ ಮರು ಆವರ್ತವಾದ ಅಥವಾ ಮರುಬಳಕೆ ಸಾಧ್ಯವಿಲ್ಲದ ತ್ಯಾಜ್ಯ **ಕಡಿಮೆಗೊಳಿಸಿ**



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BENGALURU ECO TEAM
ಕರ್ನಾಟಕದ ಹಸಿರು ತಂಡ



Segregation at Source is Mandatory. Else will attract FINE.

ಕಸವನ್ನು ಮೂಲದಲ್ಲಿಯೇ ವಿಂಗಡಿಸುವುದು ಅನಿವಾರ್ಯ. ತಪ್ಪಿದರೆ ದಂಡ ತೆರಬೇಕಾಗುತ್ತದೆ.



Organic Waste
ಹಸಿ ಕಸ



Recyclable Waste
ಬಣ ಕಸ



Reject/Sanitary Waste
ತಿರಸ್ಕರಿಸಿದ ಕಸ



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Garbage in Plastic Bags will not be accepted

ಪ್ಲಾಸ್ಟಿಕ್ ಬೇಲಿಗಳಲ್ಲಿ ಕೂಡಿಸಿಟ್ಟ ಕಸವನ್ನು ಸ್ವೀಕರಿಸಲಾಗುವುದಿಲ್ಲ



ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
KARNATAKA STATE POLLUTION CONTROL BOARD



ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
Bruhat Bengaluru Mahanagara Palike

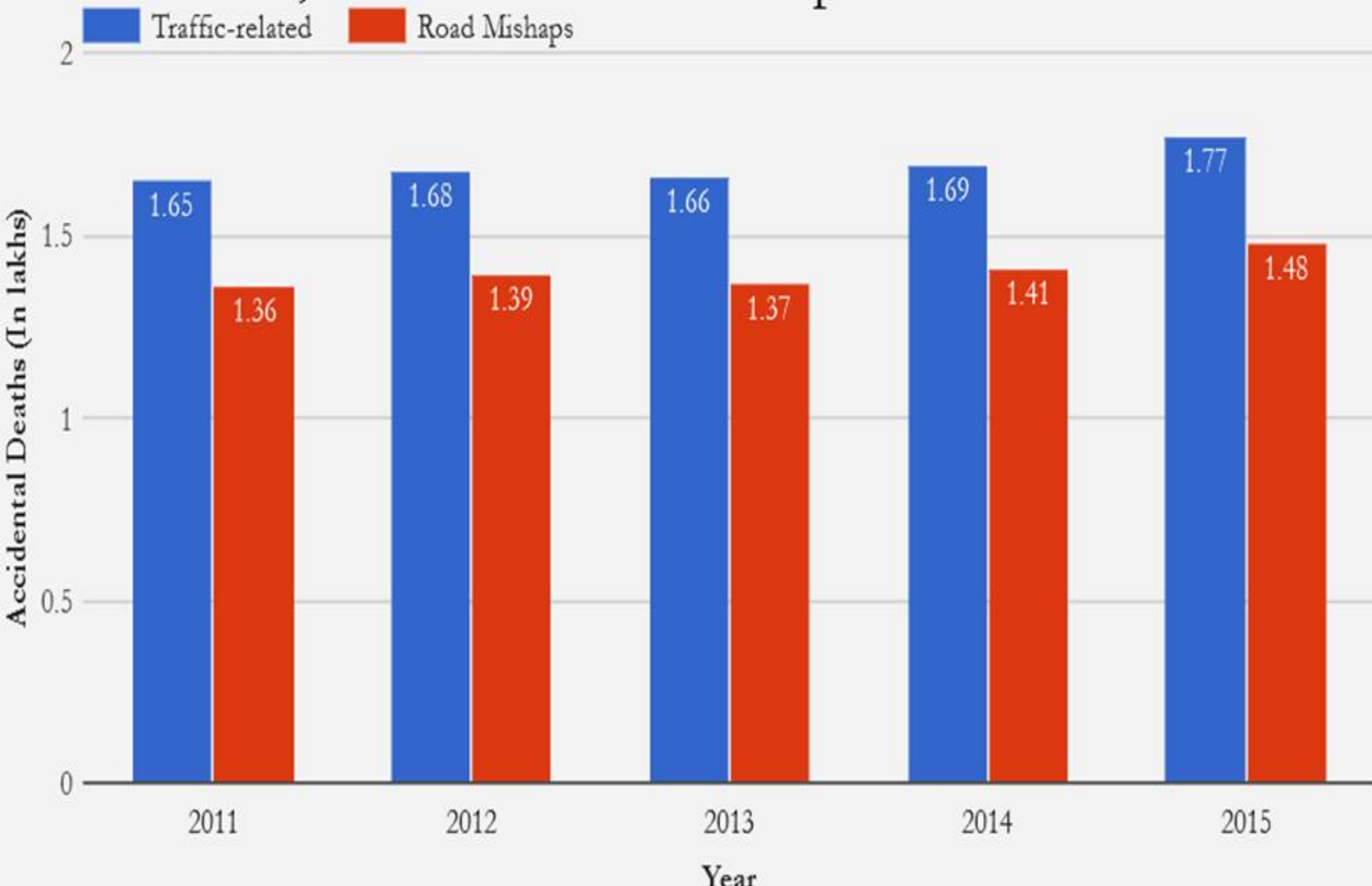
Road and related services

- Poor Maintenance
- Encroachment-basic space/footpath
- Lack of social forestry
- Sewage outlet issues
- Traffic congestion
- Pollution
- Inadequate infrastructure
- Safety-Signals, Follow up ,lighting

Roads and Related Services

- Multiplicity of Agencies
- Accountability
- Community level Awareness-low
- Absence of Community Structure
- Planning gap
- Fiscal Stress at Municipal level

Over 4 Years, 7% Rise In Deaths From Traffic-related Accidents, 9% From Road Mishaps



How a building becomes vulnerable to collapse

A TYPICAL EAST DELHI APARTMENT



a Column spacing not uniform, beams' sizes are compromised at each floor

b Extension of upper floor with improper shuttering

c Floating walls

d Oversized windows without support

e Cantilevers without adequate reinforcement

f Poor construction quality and use of substandard material

g Basement with opening and short columns

h Basement with irregular placement of beams on columns

i Oversized openings on the ground floor

Emerging Innovations- Dilapidated Structures

- Urban Development Plan Formulation and Implementation (UDPFI) Guidelines
- CDPs in Mission towns
- ECBC
- Retrofitting, Pan city and Redevelopment Projects
- One window -approval

Emerging innovations –Construction Sector

- RERA (Real Estate Regulatory Authority)
- Precast prefab technology
- C&D waste –processing
- Municipal Monitoring for Completion Certificates

Final Products from C & D Waste-Ahmedabad

- 1) Precast RCC
 - Benches, Drains, Concrete Manholes, Slabs
 - Sleeper, Louvers Fins, Pavers Rubber Mould, Walls, Drain Covers
 - Pipes & Cement Articles
- 2) Precast Concrete Box Culverts and Manhole.
- 3) RCC Fencing Pole, Door Frame, Grill
- 4) Kerb Stone & Ferro Cover, Road Edge Stone, Paving Stone.
- 5) Paving Blocks Mortar less for Concrete and Interlock Pathways.



Emerging Innovations –Urban Flooding

- MoEF Guidelines
- Drainage Master Plan
- Mapping of drainage network
- Timely repair and replacement of sewage and drainage network
- Regional plan and local plan convergence

Urban Innovations-Waste Management

- Reduce, Reuse and Recycle-resource
- Kitchen waste, Green waste ,Dry waste , Hazardous Waste
- Local Treatment-HHs, Community
- Revival of water bodies
- Bengaluru, Pune, Hyderabad and Chennai

Roads and related services

- MRTS-Metro
- Flyovers/Under bridges/Relief roads/Sky walk
- Barrier free planning
- Traffic Management
- Integrated transport facility
- Mobility Funds-Green Urban Mobility Scheme –
Rs 70000Crores for 103 cities (10%ULB,30%
Centre,30%state and 40%international
cooperation)

Lessons

- Municipal Focus is Gradually Emerging
- Need to be Planned by ULBs and Das
- NDMA,SDMA, DDMA should be linked with municipal system
- Regional Issues Need attention-Institutional and funding arrangements
- Bottom up approach in Cities

e thekwini Municipality Durban SA

- Disasters prevented -put our hands together as the community and councillors”
- Fully functional Disaster Management Centres
- Training of volunteers from the communities to enable them to effectively handle various kinds of disasters. improve safety of our informal settlements
- Train communities on fire safety precautions and disaster management
- Assistance Plan for victims of disastrous conditions.
- 155 volunteers trained for disaster management were awarded with certificates of achievement

Implications

1. Effect is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources.
2. death, injury or disease;
3. damage to property, infrastructure or the environment;
4. disruption of a community;

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DISASTER TRAUMA

PHYSICAL	PSYCHOLOGICAL	SOCIO-ECONOMIC
<ul style="list-style-type: none">● Fractures● Burns● Injuries● Infections● Poisoning	<ol style="list-style-type: none">1. Depression2. Grief3. Anger4. Guilt5. Apathy6. Fears7. The “ burn-out” syndrome8. Bizarre behavior9. Suicide10. Bereavement11. Anxiety12. Alcohol abuse13. Stress reactions	<ul style="list-style-type: none">● Environmental destruction● Unemployment● Disorganization● Homelessness

Municipal Strategy

1. Preventing or reducing the risk of disaster
2. Activate NMSH(National Mission on Sustainable Habitat)-one of 8 missions
3. Mitigating the severity or consequences of disasters
4. Emergency preparedness
5. A rapid and effective response to disasters, and post-disaster recovery and rehabilitation
6. Decentralisation to fourth Tier-Local Councils/Area Sabha

Municipal Strategy

- Distributional and jurisdictional issues
- Regional Context
- Capacity building
- Institutional set up
- Awareness, community organization , engagement and handholding
- Participatory funding-CSR,Soft loan and local Elasticity

APPROACHES

- Rescue
- Relief
- Rehabilitation
- Follow-up

Sum up

- Municipal Role is Critical and Preventive
- Curative is equally needed
- Planning to give due cognizance
- Implementation needs to be linked
- Institutional system to evolve
- Partners need to be engaged