Global Forum on Human Settlements
(17th Annual Session)
Sustainable waste management for circular economy and zero-waste cities

Plastics waste management in slum areas – a critical need in achieving zero waste cities
(16th December 2022)

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1. About Us
2. Geographical context
3. Journey of plastics
4. Evolving context
5. Diagnosis
6. Findings
7. Recommendations
IRGSSA Overview

Established in 2001, IRGSSA is an India based international professional services firm having executed more than 150 projects in 12 countries. Some of the projects executed have set national & international benchmarks.

IRGSSA provides technical assistance in environment, energy, natural resources, disaster relief & reconstruction, IT & Geomatics in the region.

The firm has executed several projects for a diverse set of clients such as The World Bank, ADB, UNDP / UNEP / GEF, JBIC / JICA / JETRO, DFID, USAID, GIZ, Government of India, Private Sector, NGOs and Industry Associations.

Some of the projects have set the benchmarks not only in India but Asia.
Geographical Context (Environmental)

Terrestrial Ecosystem
(Air, soil, land, Ground/Surface Water, Aquatic, Flora, Fauna)

Marine Ecosystem

Journey of Plastics
Sources / Hotspots

Visualization

Sources to Sink
Journey of Plastics: Plastics draining in River
Circularity & EPR Based Evolving Context

Response:
EPR Based Plastic Waste Management Rules /Industrial, Solid Waste Management Rules , Recycling Targets, SUP ban
Energy Efficiency, Resource Efficiency & Pollution Control Policies
Sustainability - SDGs

Formal & Informal Plastic Waste Management System (Collection, Segregation, Transportation, Treatment & Disposal System)
Evolving Context Contd… Systemic & Ecosystem based Approach

Material Engineering
Production & Business Model
Consumer Use, Reuse & Behavior
Collection
Recycling & Repurposing
Conversion & Disposal

Diagnosis

Littering
1. Where (Geography)
2. What (Type)
3. How (Mechanism)
Diagnosis

1. GIS based Fuzzy Logic Modelling
   - Likelihood of leakage/ emissions

2. Ground truthing
   - Geographical Surveys

3. Validation
   - Quantification
Conceptual Methodology
Plastic Leakage Risk Map (Fuzzy Logic Approach)

Variable (Indicator Factor, Layer)

- Slum Locations
- Population Density
- Roads, Railways, and River
- Land Use
- Drainage
- Contour

Risk Map on Plastic Leakage Source (Low – High)
Vulnerable Areas

Legend

Drains
- Tapped Drain
- Untapped Drain
- East Taj Drain
- Major Drains
- Minor Drains
- MC Boundary
- Ward Boundary
- River

Fuzzy Overlay
Classifications
- Plastic Accumulation Hotspot
- Plastic Application Hotspot
- Plastic Leakage Source Hotspot
- Plastic Value Chain Hotspot

Distance to Drains

Kilometers

0 0.5 1 2 3 4
Ground truthing
Ground truthing (Slums)
Key Findings/ Messages

1. Slums are the major sources of plastic littering/leakage into drains/ water bodies in an urban setting particularly low value plastics
2. Slums are low serviced areas
3. Slums have poor waste collection & transportation system (Littering >25%)
4. Limited Recycling - high value plastics e.g. PET, HDPE, LDPE, PP (low value plastics - ABSENT)
Recommendations for GFC

1. Strengthening of waste management infrastructure in slums
2. Support for enhancing plastic segregation by strengthening waste management infrastructure and development of ecosystem (EPR, Instruments, Incentives Up & Down, Pricing)
3. Creation of drivers of recycled plastics sector
4. Strengthening of reporting, monitoring & evaluation, and regulatory capacity;
5. Shared Responsibility
6. Awareness Raising & Behavior Change
THANK YOU

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