Alternative Models for Sustainable Solid Waste Management in Cities

Prathibha Ganesan

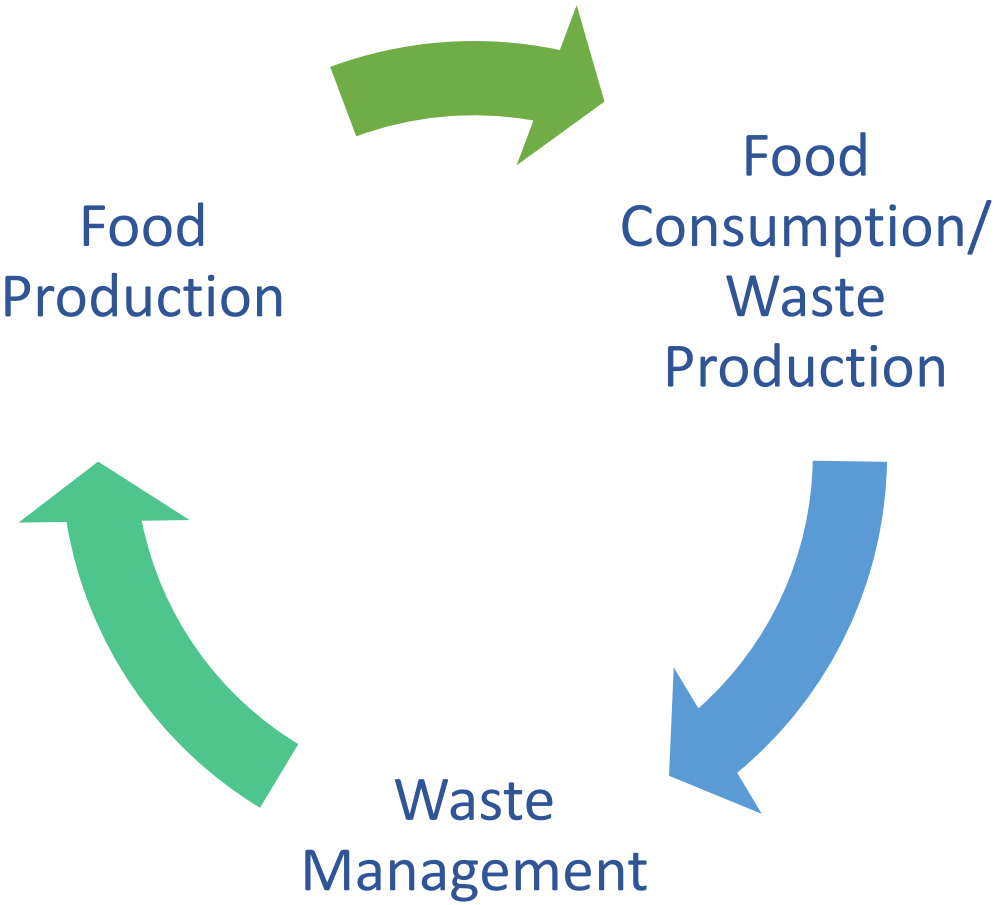
Tata Institute of Social Sciences, Mumbai

Waste Management Models

- **Current Model**
  - Mainstream Linear Model
  - Waste management as end of life disposal
  - People pay to never see the waste again
  - Landfill as most common end of life waste disposal
  - Incineration-(WTE) gaining momentum
- **Alternative Models**
- Circular Economy & Zero Waste Models
  - Circular Economy - Materials flow in “closed loop”
  - Zero Waste- Diversion of waste in the linear model

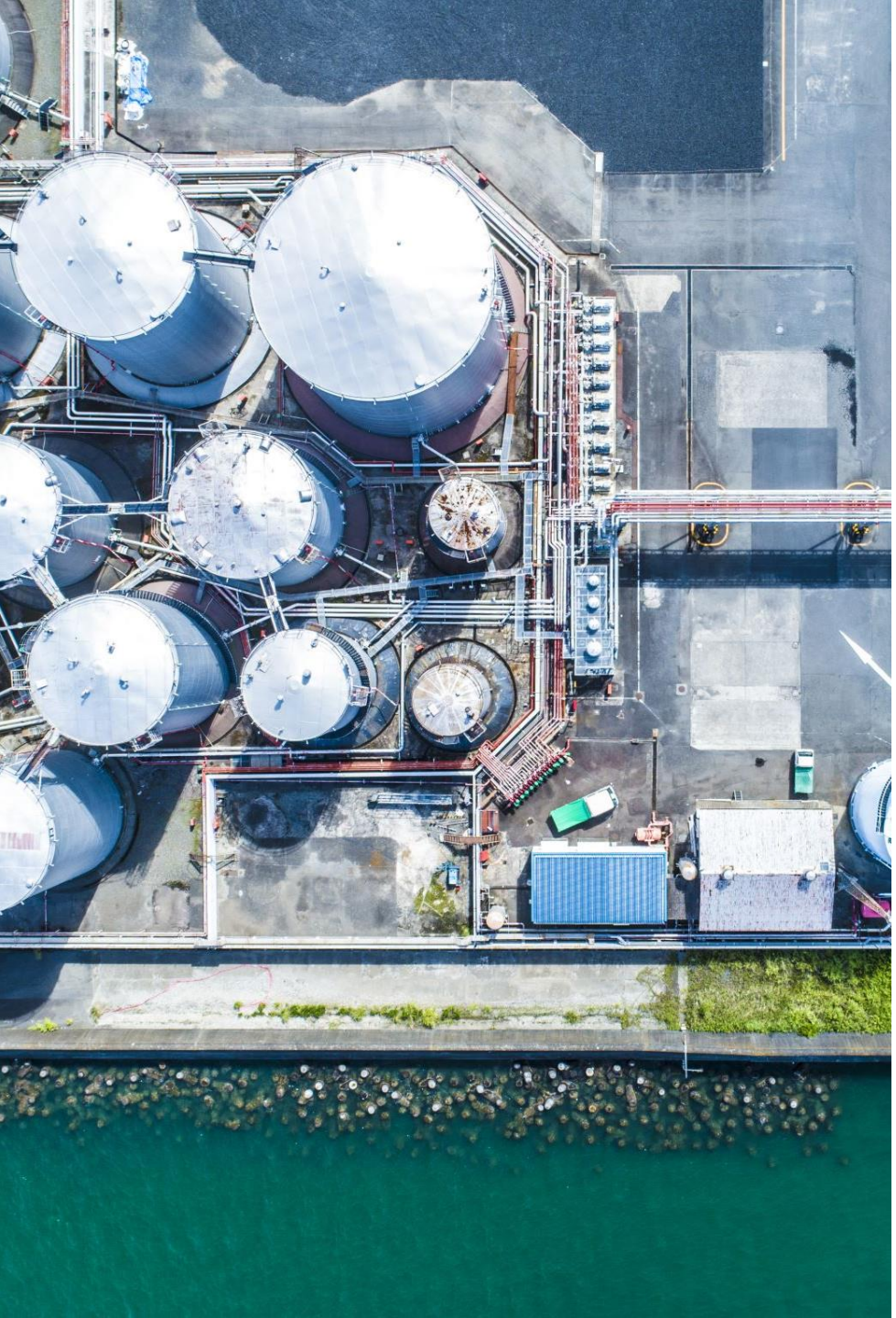
Circular Economy

- Waste Prevention is the central pillar of the circular economy.
  - WP- produce minimal amounts of waste that cannot be recycled back to production.
- It improves efficiency, saves resources, reduces pollution burdens.
- E.g. Food waste
- Determinants- Careful planning and organization, Technologies for Waste management, tie up with farmers(urban and rural agriculture), Minimization of the scrap contamination, social acceptance and participation



Mumbai

- **72% Organic waste which can fall under circular economy.**
  - **Do we have a vision? (Not a national one or to report to the, Swachh Survekshan Survey or PM office by October 2nd . But a vision for the city! Organic waste is local problem. Not a national one.**
  - **What is the existing capacity and how should we improve?**
  - **What technologies have we identified? (should we go for centralized or decentralized? Why? anaerobic?)**
  - **How do we make it socially acceptable and economically viable? What are the determinants ? How to tap farmers and market?**
  - **How effective are the existing PPP models? What needs to be changed? How can market be tapped effectively?**



Zero Waste

- **Waste Diversion** is the central pillar of Zero Waste initiative
  - WD means wastes are diverted from final disposal in landfill, open dump or waterways towards productive uses: recycling, energy, composting), pitting itself against waste prevention advocates who want to shrink waste streams in the first place.
- E.g. Plastic Scrap
- **Determinants** – Global waste production and governance, local capabilities, formal and informal linkage(crucial for developing countries).
- Reduce plastic(Corporates, ULBs- ban of single use plastics Vs Petrochemical industries increased production), Reuse and recycle(only 9% of waste generated is recycled, 75% goes to landfills, Incinerate (environmental Pollution and Health issues)

Current scenario-Plastic scrap

- Juhu Clean up, Ban the single use plastic, Plastic Shredding machines, Citizen initiative, landfilling. All scattered and isolated activities.
- “the popular image of what constitutes recycling-separating one’s garbage into categories, leaving it neatly sorted and seeing it carted off by sanitation workers- does not constitute recycling at all. It’s just collection and sorting. Recycling is complete only when someone buys sorted materials, manufactures them into something else, sells that something back in the market”. (Rathje and Murphy, 2001)
- Most municipal recycling programmes-collecting and sorting. Expansion of the market never in the scene.
- Formal –Informal market linkage? Not clear.

Required

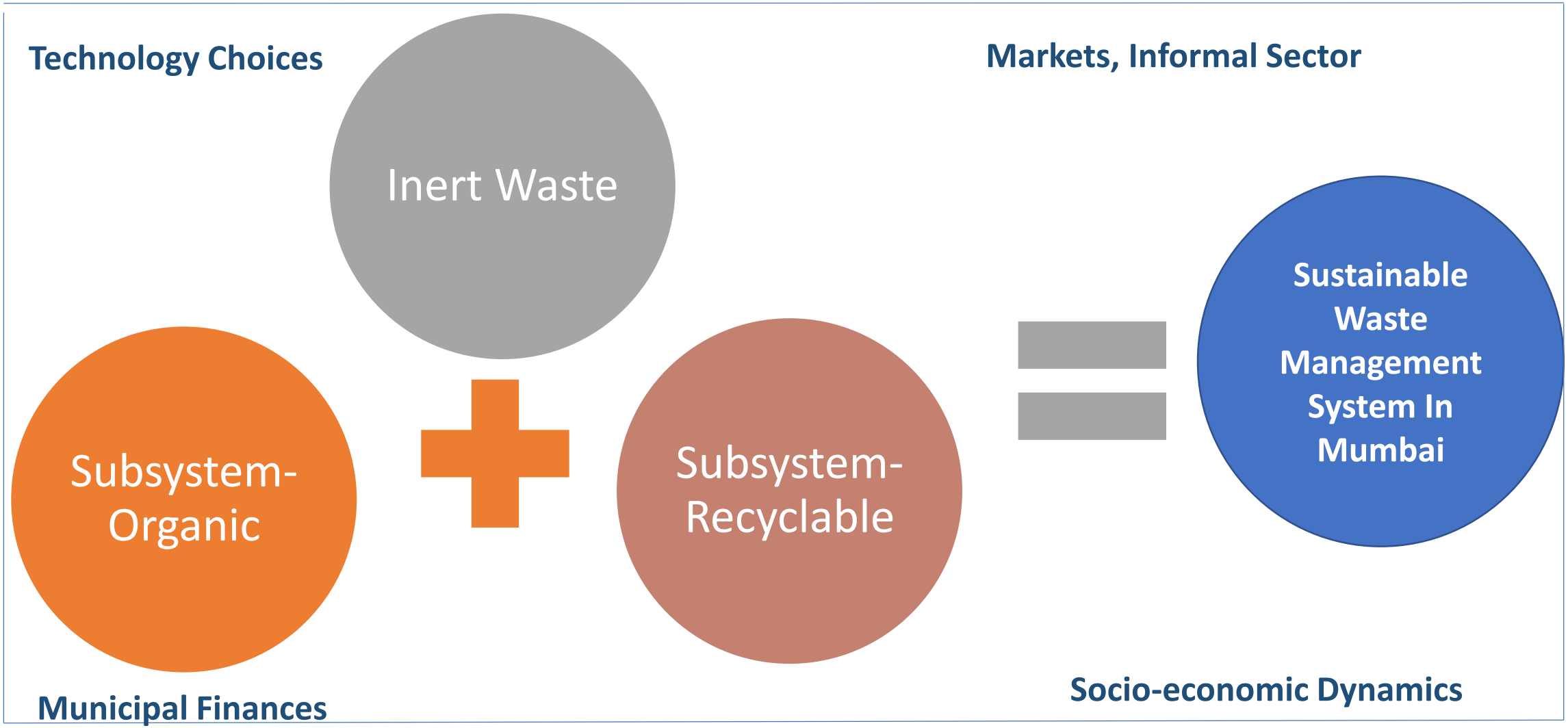
- Respond to the Global Waste Governance- plastic ban, reduction in overall waste, citizen awareness and involvement, enforcement of the rules,
- Response at the local level-
  - what is the vision for waste reduction?
  - What technologies are cost effective?
  - Identification of the actors for recycling, linkages between the actors & economies
  - How can bureaucratic flexibility maintained to operate this linkage?
  - How to materialize institutional convergence?
  - How to Monitor the initiatives for its effectiveness and improvement?
  - Consistency- Leadership plays a huge role. But should it be given for chance?

SWM Rules India

Parameters	2000	2016
Model	Linear	Linear with some waste diversion
Institutions involved	ULBs, MoEF, UD, DM, CPCB, SPCB,	ULBs, MoEF& CH, MoUD, MoChemcials and Fertilisers, Ministry of Agriculture, Ministry of Power, Ministry of New and Renewable Energy, CPCB, SPCB, Secretary in Charge of Municipalities and Village Panchayats.
Waste generator's role	Avoid littering and ensure delivery as stipulated by ULB	Segregate and store waste separately, securely wrap sanitary napkins, no burning, burying or throwing away of waste, no event more than 100 person without permission, RWA-segregated collection, Gated Communities treat waste
Waste Management	House to House collection, storage, transport, processing and disposal	Segregated collection, gated communities treat, user fee, formal-informal linkage, community participation, Linear model with emphasis on WTE plants.


Waste Management Hierarchy
st Preferred
Source Reduction & Reuse
Recycling / Composting
Energy Recovery
Treatment
& Disposal
Least Preferr

Sustainable Waste Management System



Thank you