



# Community, Public & Private Sector Synergy: How Effective to Improve SWM Services ?

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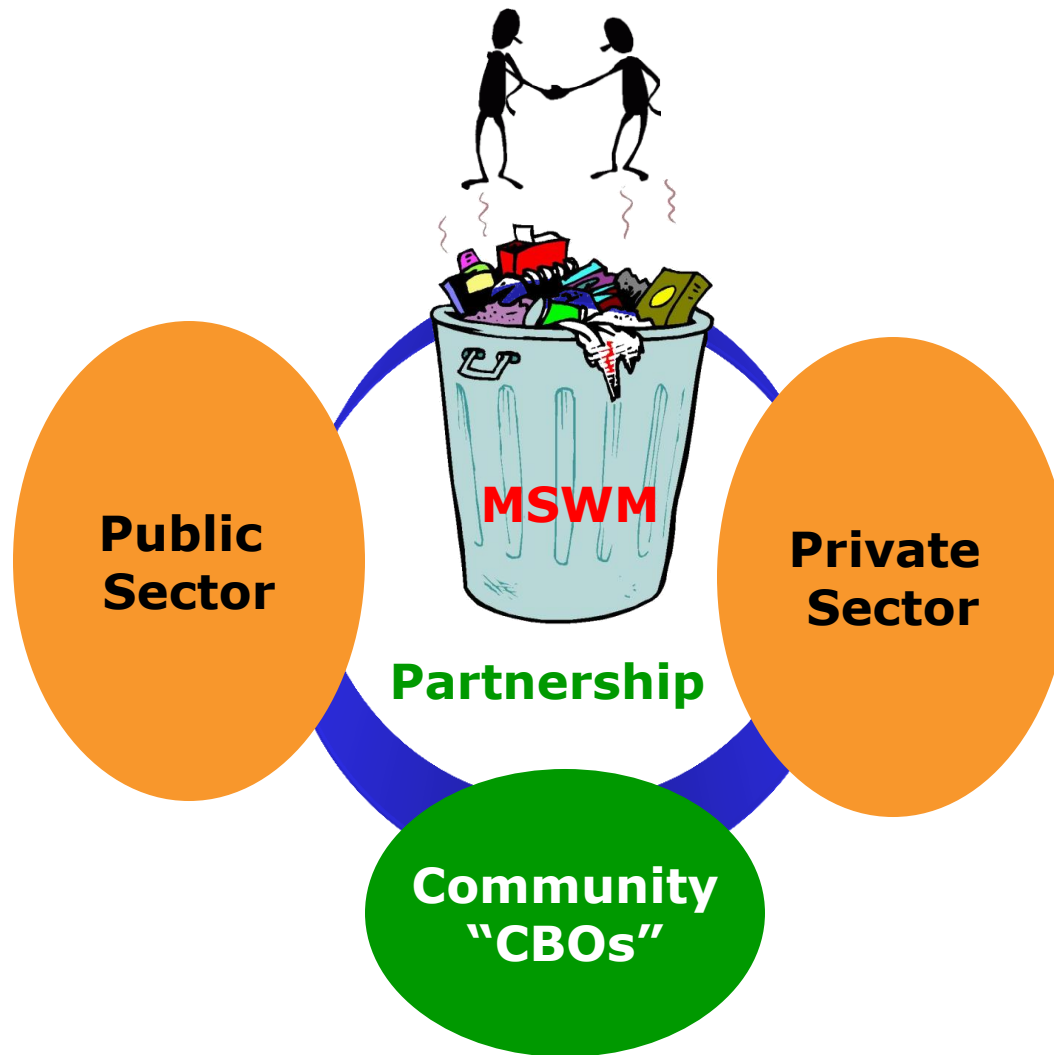
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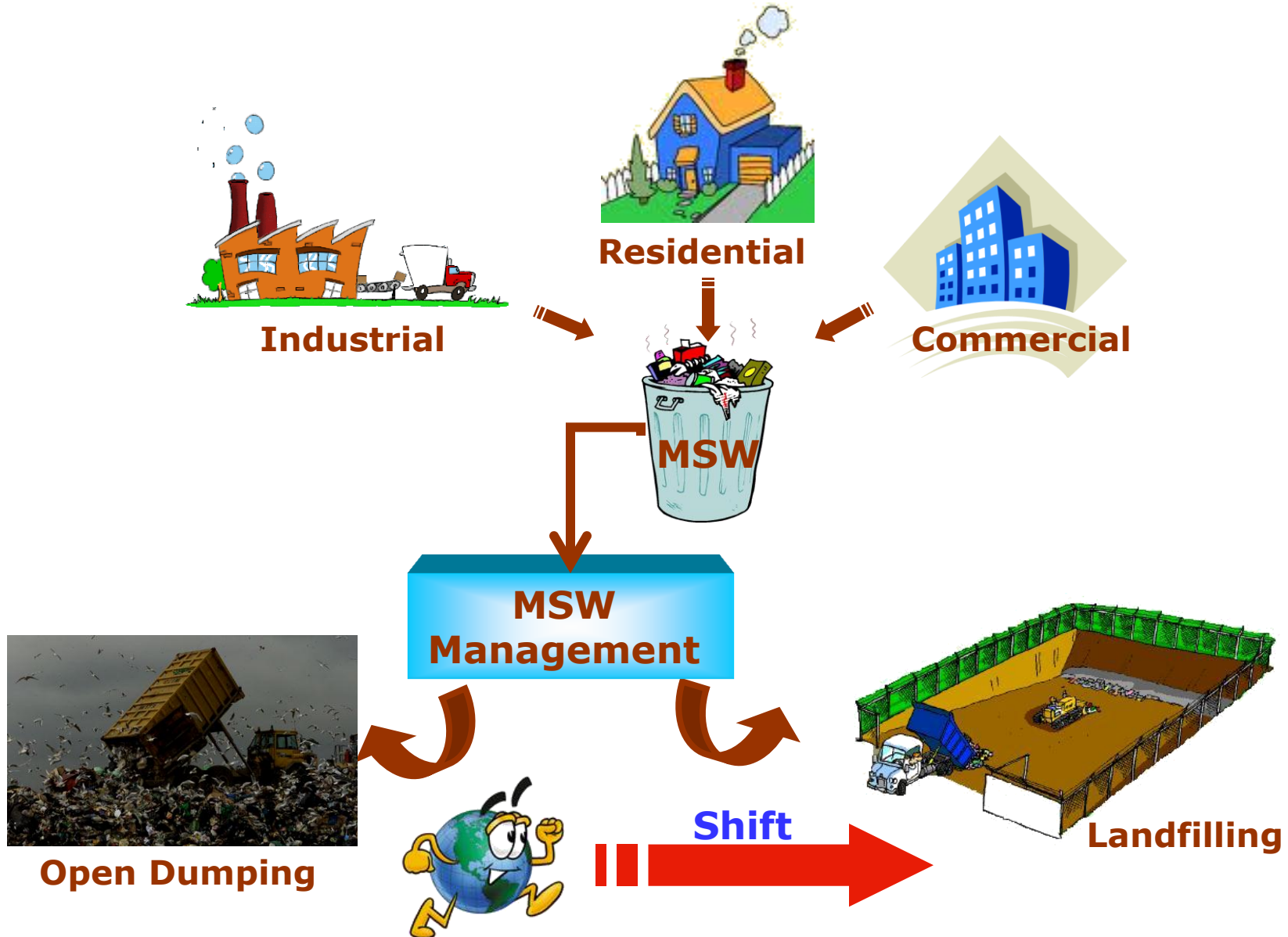
# Contents

- **Solid Waste Management**
- **Public Sector Waste Management**
- **Private Sector Waste Management**
- **Public-Private Partnership**
- **Choosing Best of CBO / PPP**
- **Take-home Message**

# Partnerships Towards Sustainable MSWM

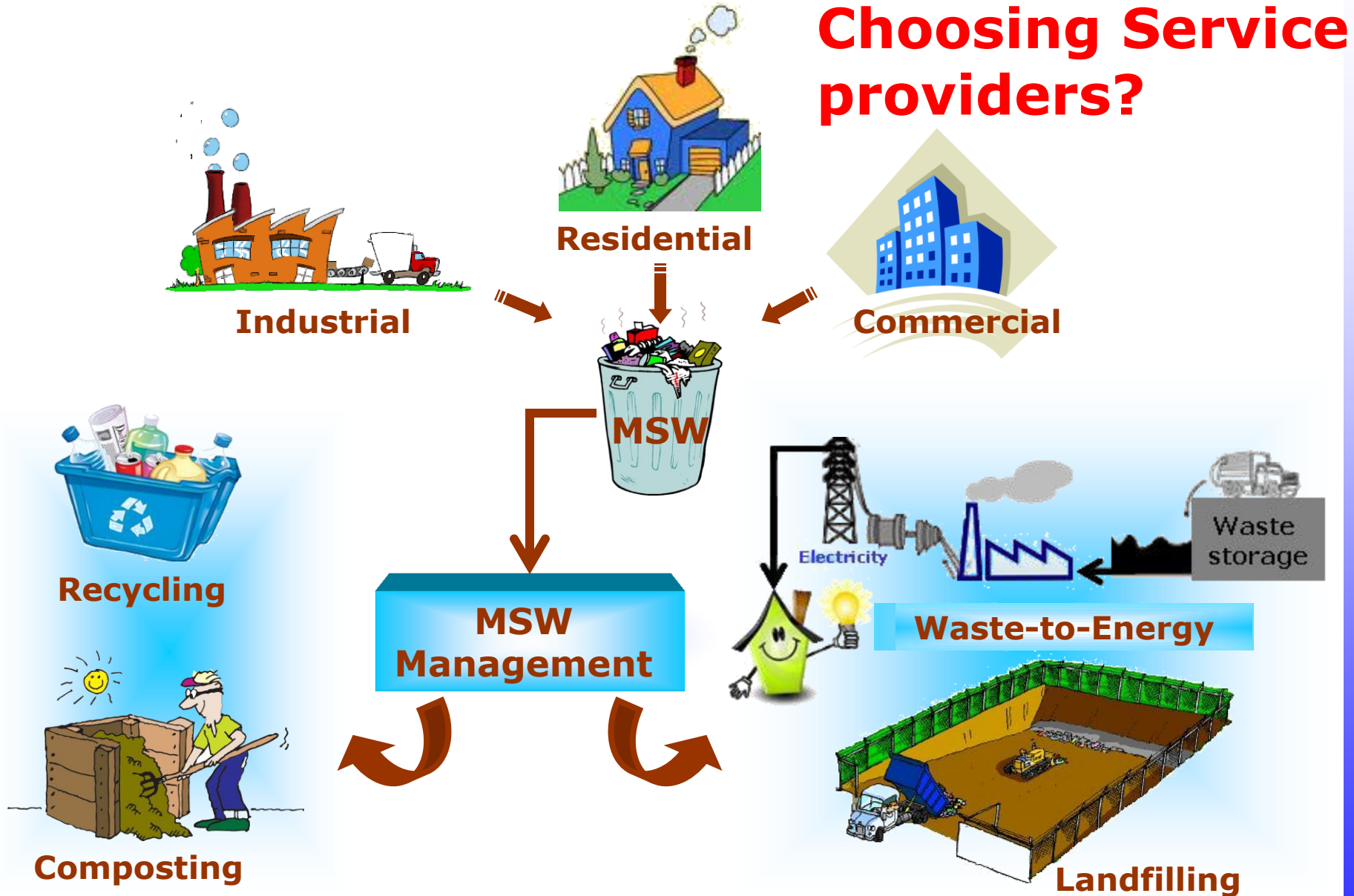


# SWM Scenario



# IMSWM System

**Choosing Service providers?**



# SWM System Structure

High Quality Service  
Cost effective  
High Tech



Waste Processing



Waste Minimization

Sustainable  
SWM  
Future

Public Sector

Public Private  
Partnership

Private  
Sector

Community



Need to Analyze  
Stakeholders Role



Waste Disposal

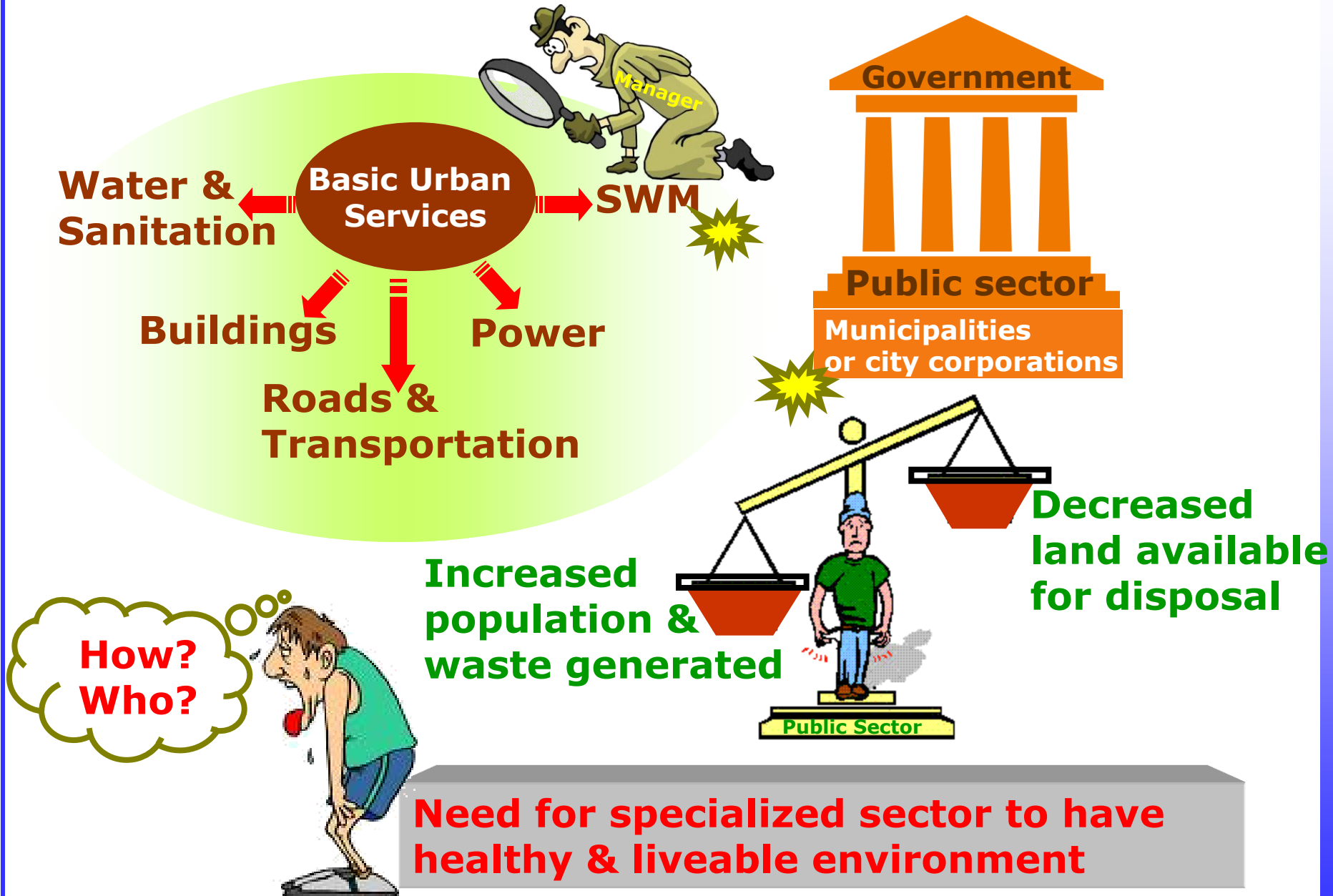


Waste Recycling

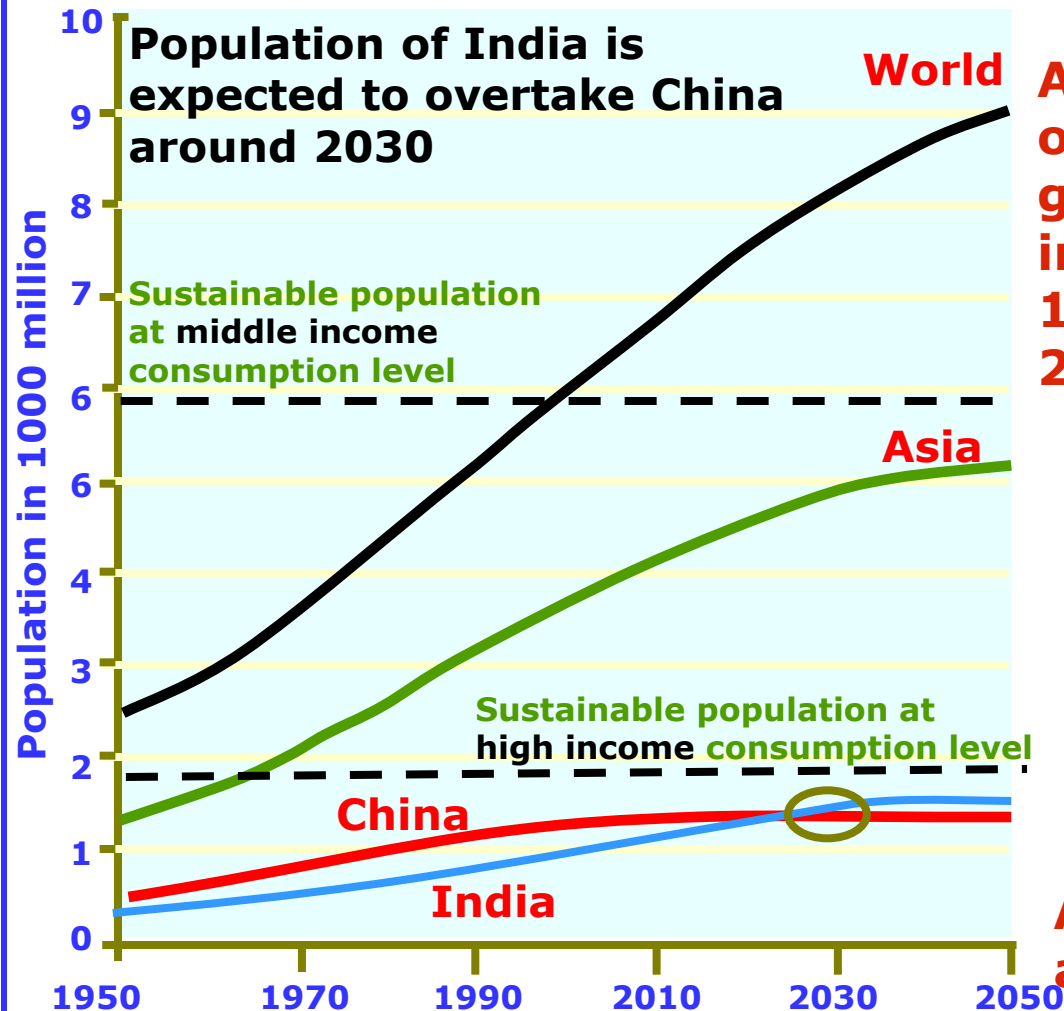
Low quality Service  
Expensive  
Low Tech

Present

# Basic Urban Services



# Population Growth Vs Solid Waste



About 1.3 billion metric tons of municipal solid waste was generated globally in 1990 & increased to approximately 1.6 billion metric tons in 2007



Asian countries alone spent about US\$25 billion on solid waste management per year in the early 1990s & is projected to rise to around US\$50 billion by 2025.

Sources:  
Population division of Department of Economics & Social Affairs of United Nations Secretariat, World Population Prospects. The 2004 Revision; Global Footprint Network, 2005  
Hoornweg & Thomas, 1999



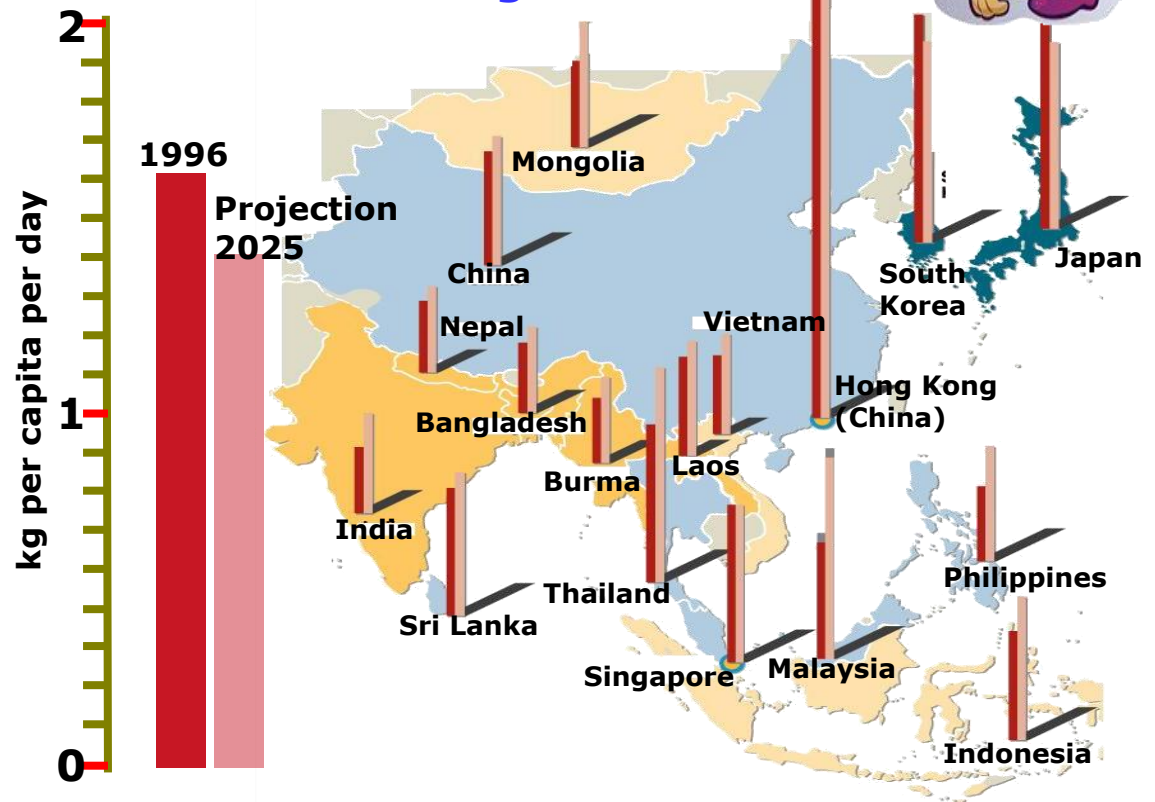
# Urbanization Vs SWM

World Urban Population is expected to double to more than five billion people in next 35 years, with 90% of growth taking place in developing countries

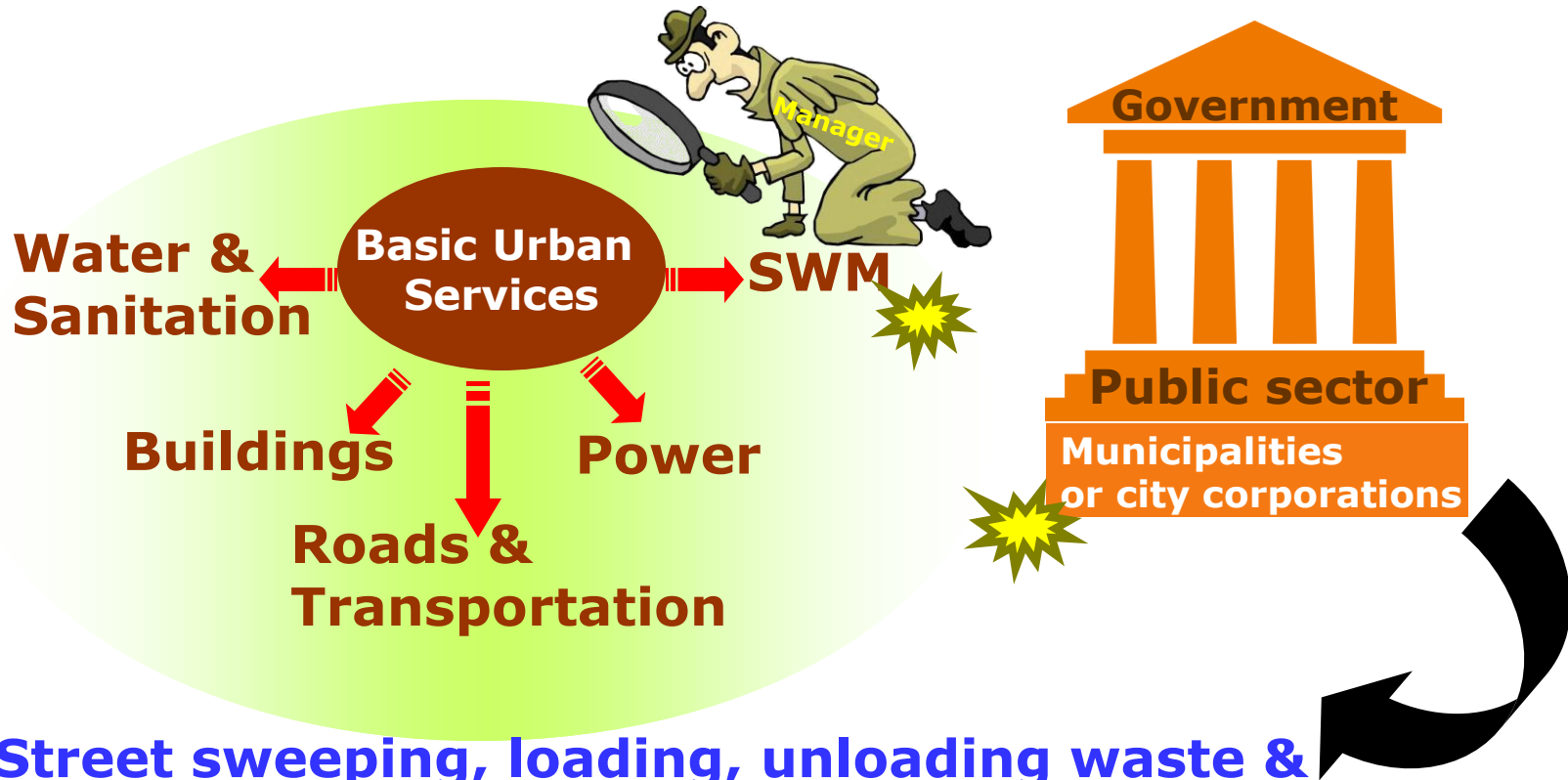
World Bank Report estimates

Solid wastes in urban areas of East Asia alone will increase from 760,000 tonnes/day to 1.8 million tonnes/day within 25 years

**MSWM**  
Major responsibility  
of local governments



# Public Sector Services



- Street sweeping, loading, unloading waste & drain cleaning
- Operates under certain inherent limitations
- Works under rigid laws which makes it difficult to bring change to operational matters
- Employs large number of people

# SWM Budget Vs Service

- **Municipal authorities in developing countries spend about 20 to 50% of total municipal expenditure for solid waste service.**

**However at this level of expenditure the level of service is low.**



- **Only 50 to 70 % of solid waste is collected serving less than 50 % of the population, & once collected, it is mostly disposed of inadequately in uncontrolled open dumps.**

**Facts...**

**Consequence?**

# Effects of Indiscriminate SWM

**What is wrong with Public Sector?**



- **Rapid Urbanization**
- **Inadequate financial means**



- **Indiscriminate waste management**
- **More pollution**



**Poverty**

**Increase of external debts**



**Less Economic growth**



**Diseases**



**Ecosystem Destruction**

# MSWM Issues in Developing Countries

- **Inadequate service coverage - Low collection coverage & irregular collection services, handling & control of informal waste picking or scavenging activities**
- **Operational inefficiencies of services- crude open dumping, uncontrolled burning & breeding of flies & vermin**
- **Limited utilization of recycling activities**
- **Inadequate management of non-industrial hazardous waste**
- **Inadequate landfill disposal**



# Why Public Sector MSWM Fail?



- Inefficient institutional structures
- Inefficient organizational procedures
- Deficient capacity of institutions involved
- Use of inappropriate technologies

- Plays an important role in SWM especially in resource recovery
- Activities disrupt operation of landfills & transfer stations
- An eyesore & therefore opposed by authorities.

# Poor Service Delivery by Public Sector

## Reasons

- Lack of Management system
- Lack of appropriate Equipment
- Lack of incentives for Sanitary Workers
- Lack of control on waste Transportation
- Lack of Capacity of municipalities



## Weakness

- Weak influence of labour unions over whole organization
- Low productivity of staff
- Inadequate supervision
- Unsatisfactory equipment
- Politicians influence on management



# SWM Constraints

**Constrains in development of effective SWM systems in developing countries**



**Increasing problems with  
public health, environment  
& management**



# Future SWM Challenges



- Challenge is particularly significant for developing countries, where resources are limited but urbanization is occurring rapidly
- SWM sector, needs careful attention for striking a balance between quality of service & cost effectiveness

- SWM is expected to expand in scope & complexity



- SWM is expected to consume a considerable proportion of city budgets



**How to deal with this?**



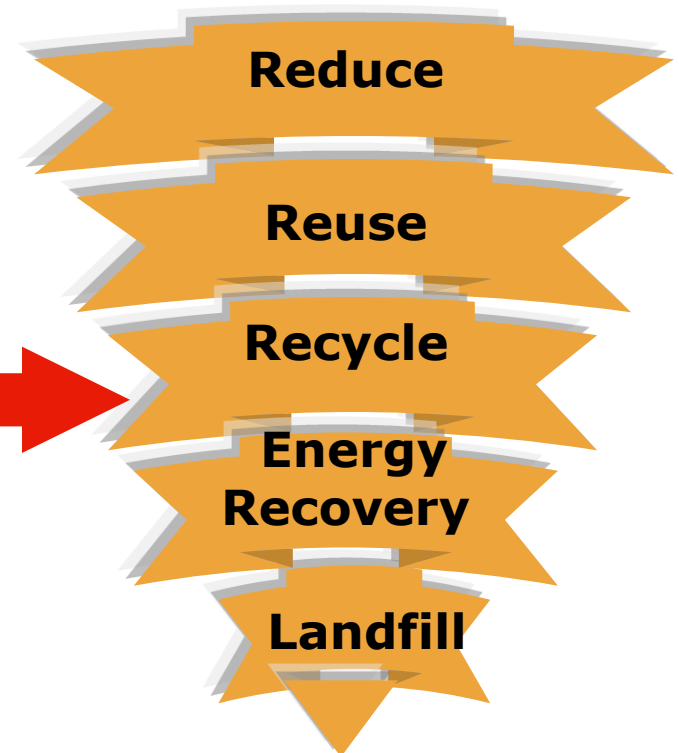
# Solid Waste Management Hierarchy

## SWM Hierarchy



Shift

## Sustainable SWM



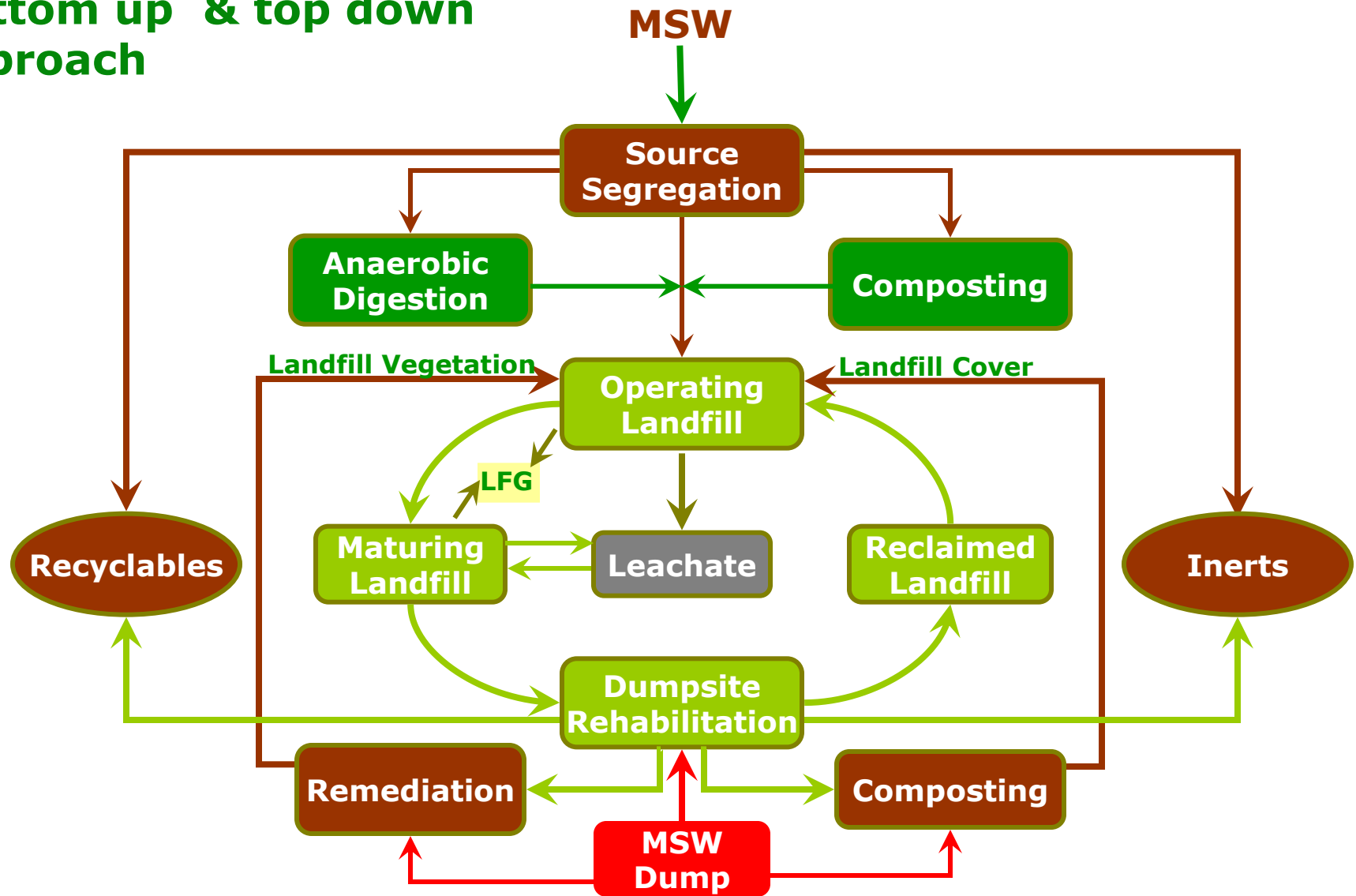
Bottom up approach  
Top Down approach

**Top Down Approach – Government takes initiatives & call for Partnership. Such initiatives are almost rare unless it is mediated & pressurized by the Civil Societies.**

**Bottom Up Approach – Requires influence on Policy, Plans & Programs of Government**

# Sustainable Waste Management

Bottom up & top down approach



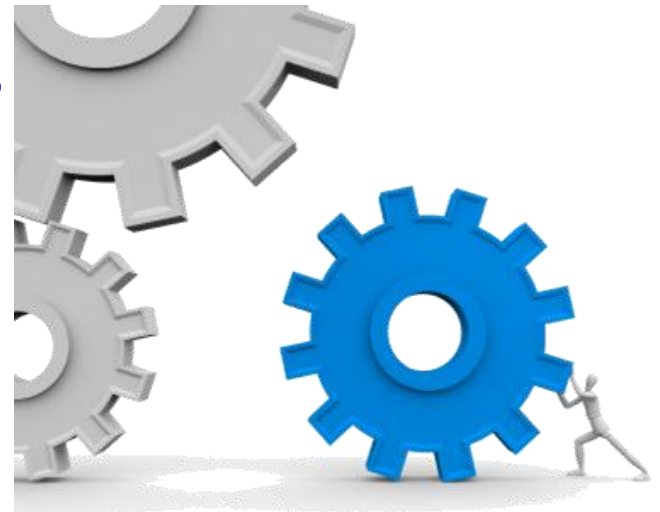
Source: Sardinia 2007, Eleventh International Waste Management and Landfill Symposium

# When Public Sector fails...

## What is Private Sector upto bring in ?

Through Public private partnership (PPP)

- **Technical & Management Expertise in SWM**
- **Improve Operating Efficiencies in the system**
- **Large Scale Financial Capital Injection**
- **Reduce the need for subsidies by the Government**
- **Increase response to citizen's needs & preferences**



# Outsourcing Services to Private Sector, Why ?

## Public Sector

- Lack of Dynamism in traditional service delivery
- Lack of in-house Capability of municipal authorities
- Lack of resources
- Lack of Funds to establish & operate IMSWM facilities
- Lack of Technical Expertise- to set up & operate MSW management facilities
- Lack of Commercial competence



## Private Sector



**Outsourcing**



**Governed by Public Sector**

# Public Private Partnership (PPP)

- Collaboration between public bodies, such as local authorities or central government, & private companies
- Contractual agreement between public sector (government & municipality) & private sector for provision of basic services

## Partnership based on

- commercial viability
- sustainability
- environmental awareness
- social responsibility
- public accountability with effective involvement of civil societies as beneficiary target groups



# PPP Recognized For?

- **Improved performance of public sector:** by employing innovative operation & maintenance methods
- **Reduced & stabilized costs of services:** by ensuring that work activities are performed by the most productive & cost effective means
- **Improved environmental protection:** by dedicating highly skilled personnel to ensure efficient operation & compliance with environmental requirements
- **Access to private capital for infrastructure investment:** by broadening & deepening supply of domestic & international capital

# PPP Failures

- **Waste Management is considered as business of Central Government & Municipalities only**
- **No specific regard is not given to the role of citizens, businesses & industries**
- **Role of formal, informal private sector, communities, waste generators & waste pickers are not recognized**
- **Lack of incentives & rewards for the supplemental contribution made for reducing burden of municipalities & central government**
- **Municipalities become prime beneficiaries from the efforts of private sector in terms of reducing burden & saved resources.**





# Partnering

- **Involves collaboration & leveraging strengths of both the private & public sector**
- **Private sector - more competitive & efficient in economic terms**
- **Public sector- more responsible & accountable to society**



**Role of CBO's - more accountable  
providing voluntary service to the  
society**

**Not realized, Why?  
How could they help in partnering?**



# Community-Based Organization

A non-profit organization that provides social services at local level whose activities are based primarily on volunteer efforts.



# Partnership

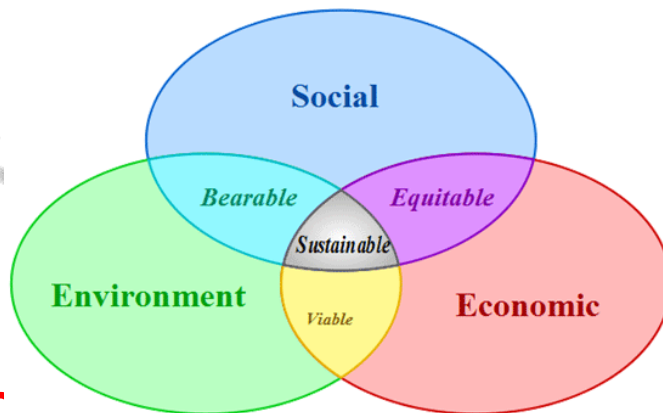
**Public Private Partnership is not privatization**

- Government entity involved retains control & ownership of the project
- Roles change, taking on different responsibilities with regard to ownership, operation, control & regulation



**However it should be? To enhance**

- Service efficiency
- Coverage
- Environment & public health



**Public Sectc..**

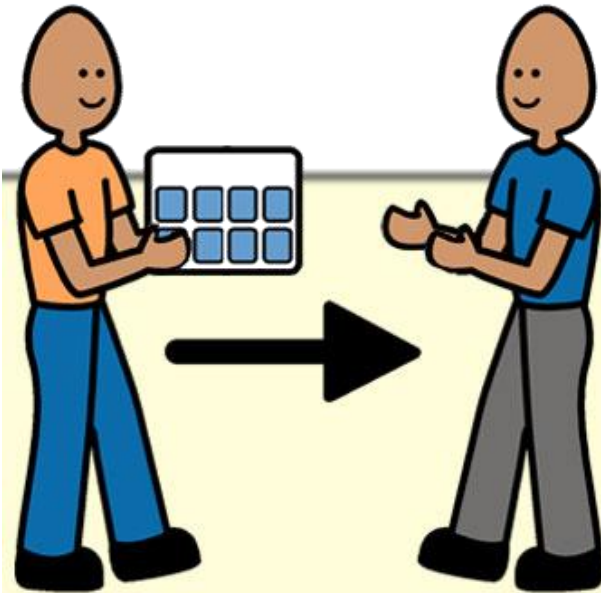
**Private Sector**

**CBOs**

**Partnership**

# Share of Public & Private Sector

## Shares potential risks & rewards



- Financial
- Responsibilities
- Quality Assurance



**Government keeps control over the quality of public infrastructure in a number of ways**



# Case Studies

- **Public & Private sector in MSWM service in Chennai, India**
- **CBOs role in MSWM, India**
- **Public Private Partnership model in Bangladesh**
- **PPPs in Dumpsite closure in Mumbai, India**

# MSW Scenario

## Chennai Scenario

- **Municipal Solid Waste (MSW) generation increased from 600 to 3500 tons per day within 20 years**
- **Per capita generation rate 0.6 kg/day**



## Question Raised on Public Sector Services

- **Efficiency**
- **Quality of services**
- **Resources required for waste collection**



- **4<sup>th</sup> largest metropolitan city in India**
- **Divided into 10 zones of 155 wards**

**Municipal Solid Waste (Management & Handling) Rules, 2000 : mandates to reduce the amount of waste reaching the dumping grounds**

# MSWM in Chennai

## Organizations Involved in MSWM

Operating under framework of MSW rules, 2000

**Public Sector**  
**Corporation of Chennai (CoC)**  
7 Zones

**Private Sector**  
**ONYX**  
3 Zones- 6, 8 & 10  
30% total area of the City

**Community**  
**CBOs such as Civic Exnora**

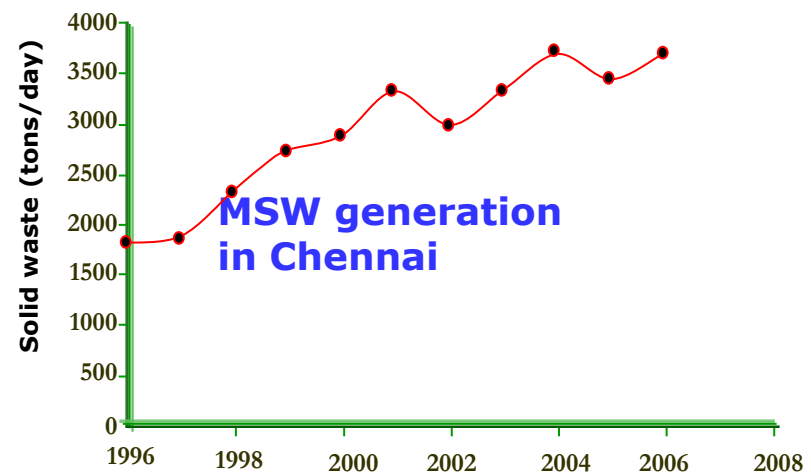


**2000 tons/day**  
**Solid Waste**

**1100 tons/day**  
**Solid Waste**

**Collected & treated**

**Open dumpsites at**  
**Perungudi & Kodungaiyur**



Source: [www.chennaicorporation.com](http://www.chennaicorporation.com)



# MSWM in Chennai

To enhance

- Efficiency
- Quality of services
- Resources required for waste collection

## Organizations Involved in MSWM

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**Community**  
**CBOs such as Civic Exnora**

In 1996, Government of Tamil Nadu directed

Introduced in Adyar, Chennai in 1988 by residents

- to collectively solve the problem of SW accumulation,
- street beautifier was employed to collect waste from door-to-door
- funded by small subscriptions from community members





# Public Sector Services- Chennai



**Awareness Campaign**



**Bin for Source Segregation**

**MSWM by  
CoC**

**10,000 employees** ✨

**7 Zones**



**Door-to-door waste  
collection**



**Waste Transportation**

**Total cost for** ✨  
**street sweeping,**  
**collection &**  
**transportation**  
**33 USD**

# Private Sector Services



**Manual Sweeping**

Chennai is the first city in India to contract out MSWM services to a foreign private agency "ONYX" a Singapore based company



**Mechanical Sweeper**



**Mechanized waste Collection vehicle**

- ✓ Since March 2000, it is responsible for zones 6, 8 & 10
- ✓ 2,000 employees💣
- ✓ Total cost for street sweeping, collection & transportation 25 USD💣



**Transfer Station**

# Community Based Organizations

**Civic Exnora**

- Manages 18% of MSW generated in Chennai
- Creates 1500 jobs 
- Rag pickers rehabilitation

**Mahalakshmi Road Welfare Association**

- Residents contributes funds to association 
- Door to door waste collection
- Separate composting plant

**Shanthi Nagar CBO**

- Fills up gaps in conservancy services
- Income from recycling 

**Kumari Nagar CBO**

- Run by housewives of the area 
- Collects annual fee from its members



**CBOs**

- Job opportunity
- Generates income
- Voluntary contribution
- Service contribution
- Fills gap of public sector services

# Civic Exnora- CBO

About 5,000  
Civic Exnoras  
Chennai city & in various  
Districts of Tamil Nadu,  
Andhra Pradesh,  
Karnataka & Kerala &  
few other states  
of the country

3000 Streets &  
Settlements

Each comprises of  
70 – 75 families

## Activities

- Community motivation for source segregation
- Income generation at household level through recycling & reusing.
- Spreading message & helping communities to Zero waste management



# Common Features of CBO


- **Small-scale operation**
- **High degree of public participation**
- **Initiated by residents as a response to a crisis in local hygiene & poor waste management, in areas of lack or unavailable service**
- **Door-to-door waste collection service**
- **Financial viability of the whole activity depends on the financial contribution of residents**



**Needs & priorities of the residents**

# Experience of Chennai Public Sector

## Identified

- Waste management service provided by the  private sector - Cost effective
- Upgradation of open dumpsites to sanitary landfills- helped to solve environmental & health problems

## Public Sector presented the need for

- Financial support 
- Tackling political issues
- Public support 
- CBOs participation 

**Public Private sector  
& CBOs partnership**

**Will it solve the problem?**

# Commonly Identified Solutions

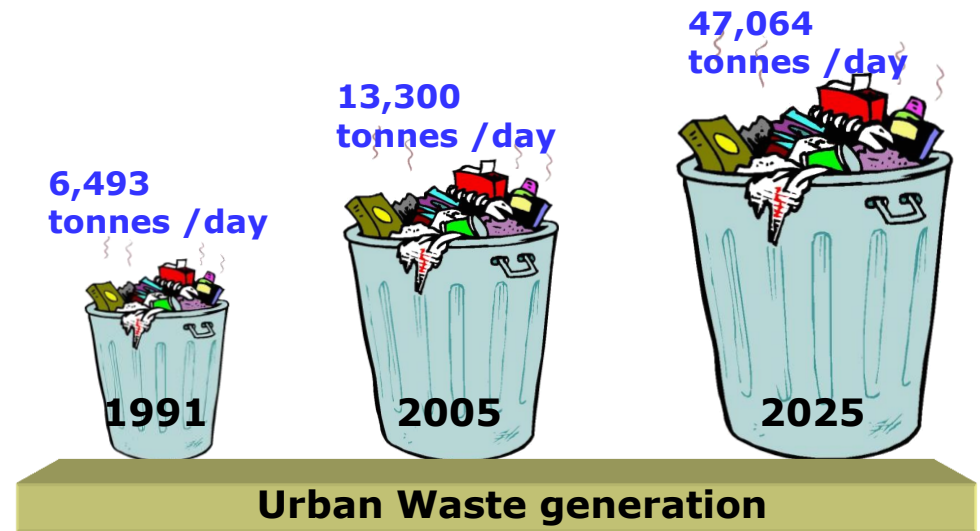
- Increase efficiency of governmental institutions
- Better use of comparative advantage of private sector to provide solid waste collection services
- Potential role of the private sector in SWM is widely recognized & is often recommended as the solution to the "high expenditure & low level of service" situation in municipalities.
- Overall responsibility has to stay with the government
- With promotional tools and documents dedicated to the operational aspects of private sector involvement, private/public sector partnerships should be promoted



**What about CBOs?  
Their contribution?**



# Waste Challenges in Bangladesh



✓ **Waste Generation 0.56 kg/day**

✓ **70% - 80% of solid waste is organic**

**Environmental & health problems  
due to unmanaged waste in  
Urban areas**

**Dealing Two major problems**

**Depletion of Organic matter  
in soil of Rural areas**

- **Waste management: end-of-pipe solution**
- **Low Collection service: only 50%-70% of residents received service**
- **Lack of source segregation**
- **Scarce & expensive land for disposal**



# Private Sector in Solving Issues- Bangladesh



**Environmental & health problems due to unmanaged waste in Urban areas**



**Depletion of Organic matter in soil of Rural areas**

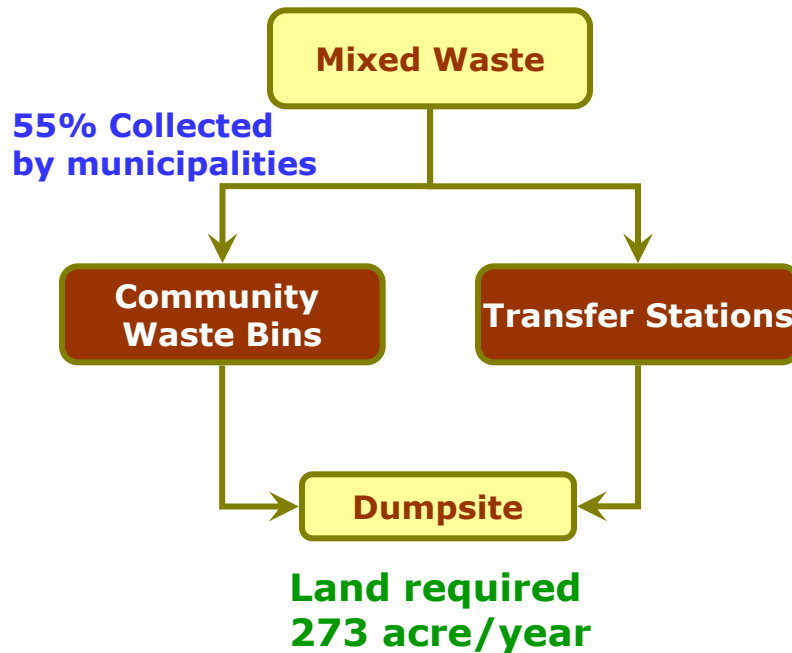
## **Solution**

- **Convert organic waste into compost using decentralized network of compost plants**
- **Use of compost/ enrich compost in agriculture**

**Waste Concern is a Social Business Enterprise (SBE) comprising both "For Profit" & "Not-for Profit" enterprises.**

# Private Sector Solution- Bangladesh

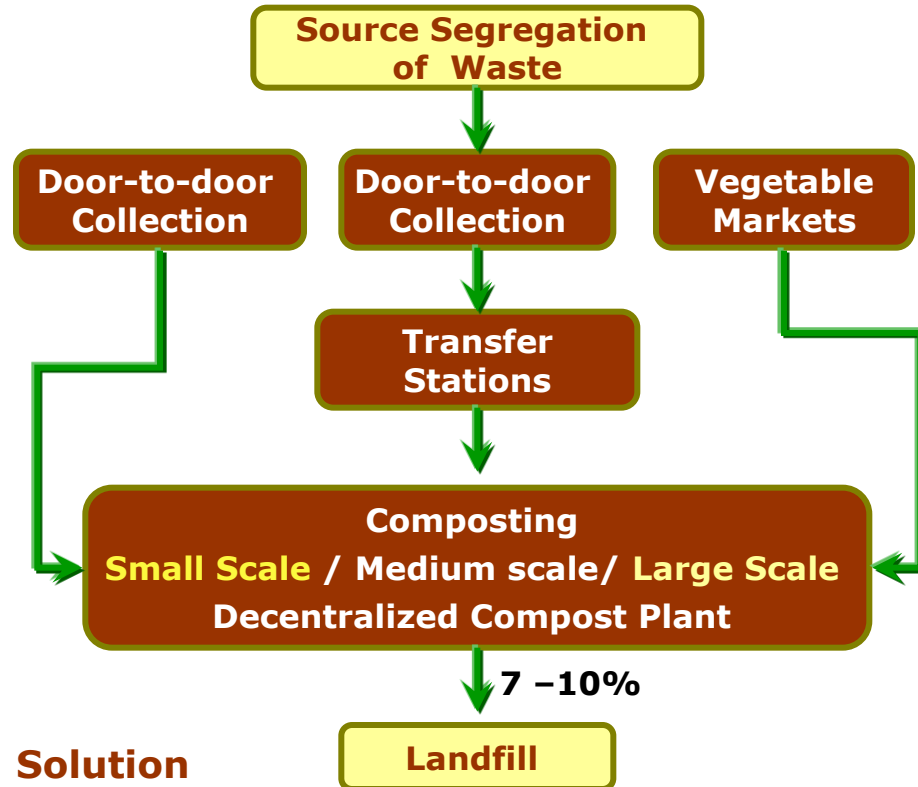
## Issues with Public Sector SWM services



## Issues

- Water pollution
- Spread of disease vectors
- GHG emission
- Odor problem
- Land requirement

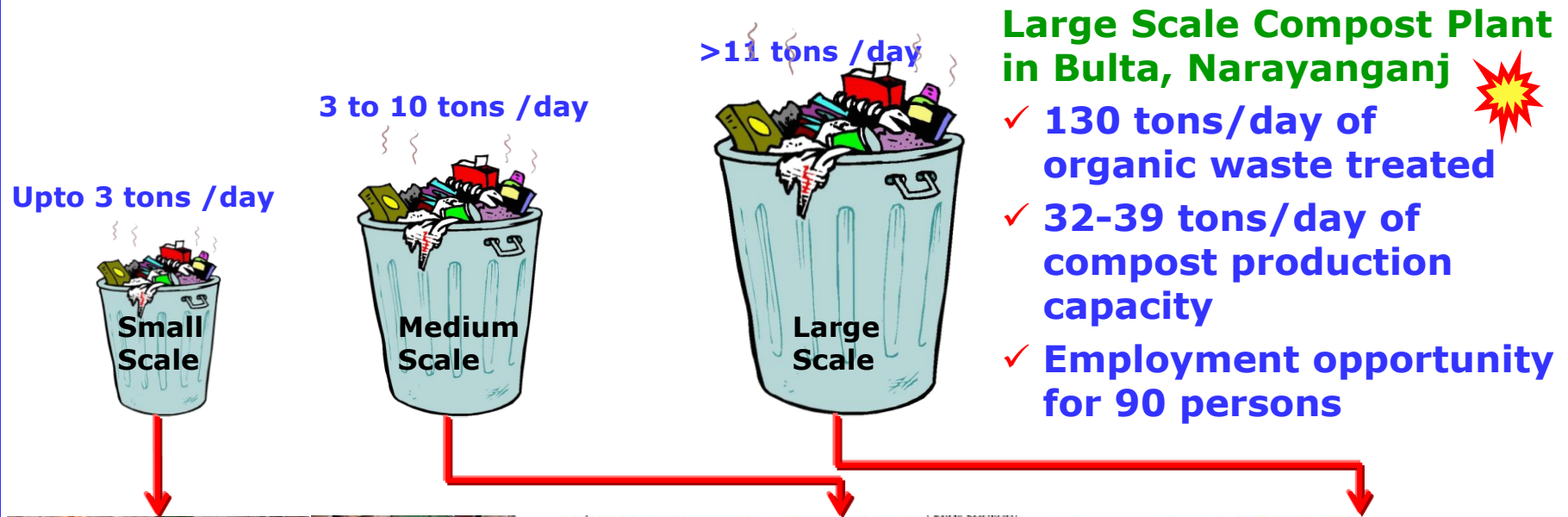
## Private Sector Solution: Waste Concern



## Solution

- Compost production
- SWM cost reduction
- GHG emission reduction
- Job opportunity
- Improve health & environment
- Land requirement
- Improve soil condition

# Waste Concern's Composting Model



- ✓ 52195 m<sup>3</sup> /yr land filling avoided
- ✓ 15600 tons CO<sub>2</sub> e /yr. of GHG emission reduction

# PPP Model in Bangladesh



**Rural Farmers**

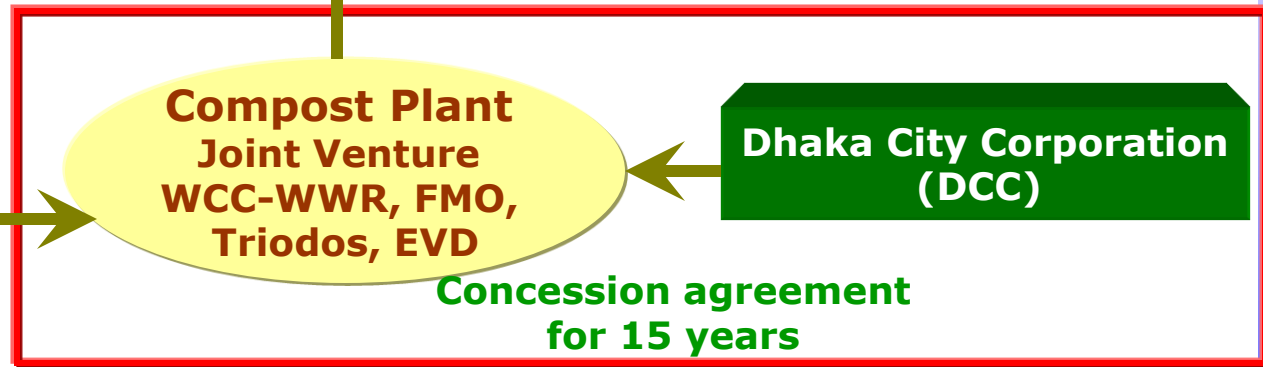


- ✓ Household waste collection
- ✓ Waste collection from vegetable markets
- ✓ Promotes source segregation & community participation



**Organic Waste**

**Urban Population**



## Public Private Partnership



WCC- Waste Concern Consultants  
WWR – World Wide Recycling  
International Business and Cooperation (EVD)

FMO- Netherlands Finance Development Company  
Triodos Bank

# PPP Solution- Bangladesh

## Public Sector SWM services

- Lack of appropriate technology
- Lack of funds for waste recycling
- Lack of land for recycling facility
- Lack of public, private & community partnership
- High cost SWM by DCC
- Unsafe working environment for waste pickers



## PPP SWM services

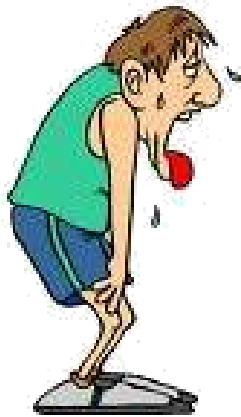
- Developed low cost decentralized composting technology
- Extra revenue from harnessed carbon financing
- Own land arranged for recycling facility
- Established partnerships with government, private sectors & community
- Reduced SWM cost of DCC by Waste concern
- Better working condition & training for waste pickers



# Gorai Dumpsite Challenges- India

upto 1200TPD MSW  
from western suburbs  
of Mumbai wards

**Public Sector**  
Municipal Corporation of  
Greater Mumbai (MCGM)



**Gorai dumpsite in western  
suburbs of Mumbai**

- In operational since 1972
- Spreads over an area of 19.6 ha

## Issues with dumpsite

- Odor nuisance
- Discharge of untreated lechate into adjoining coastal waters
- Risk of fire & explosion
- Uncontrolled disposal of MSW into creeks & mangrove areas



# Gorai Dumpsite Closure- India



**Before Closure**

**Public-Private  
Partnership (PPP)**



**After Closure**

- Created 19 ha of green space in Mumbai
- Improved public health & hygiene
- Eliminated foul odour, fire & vermin nuisance
- Reduced creek water pollution

**Public Sector**  
**Municipal Corporation of  
Greater Mumbai (MCGM)**



**Private Sector**

**Consultancy**  
**Infrastructure & Leasing Financial  
Services Limited (IL&FS)**

Share & transfer of  
technical expertise  
& equipment

**Dumpsite  
Closure**



**United Phosphorus Limited (UPL)**  
**Contract**  
**Van der Weil, Strotgas bv, Netherlands**

# Analyzing the Issues





# MSWM Actors

- Quality Service
- Cost effective
- Simple Technology
- Efficient

High Quality Service  
Cost effective  
High Tech

**PPP & CBO**

Improve accountability &  
service quality of both public  
& private sector

**Public Sector**

**Public Private  
Partnership**

Public-  
Private-  
People

**Private  
Sector**

**Community**

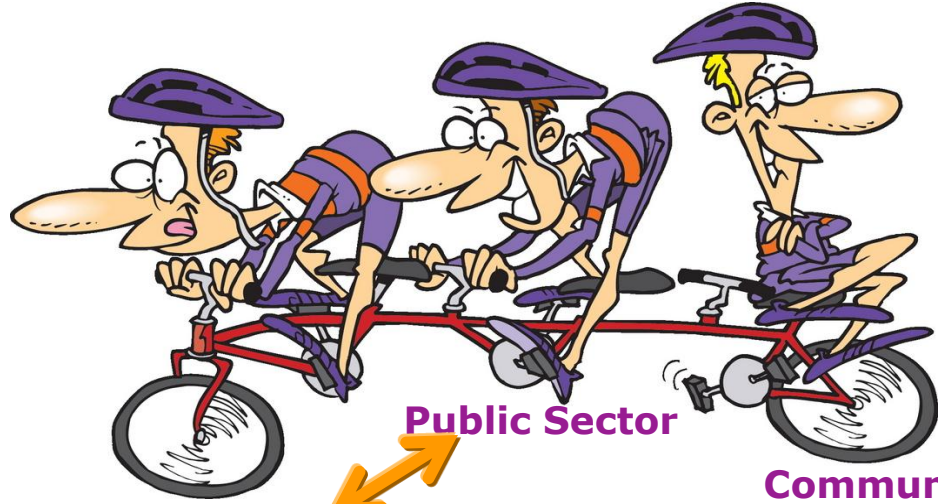


Shift in people's role, from  
passive service receivers  
to active service partners  
in the form of CBOs

Low quality Service  
Expensive  
Low Tech

# Message

Service Providers → Passive Service receiver



Low cost  
Sustainable  
MSWM solutions

Private Sector

Transition  
required

Active service  
receiver & partners

Community in  
the form of  
CBOs

Public Private  
Partnership

# Partnership Should Help in.....

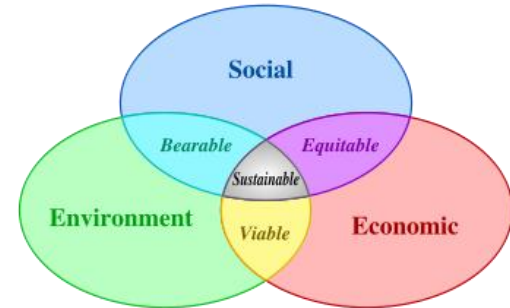
- Filling up gaps of public sector SWM service delivery
- Decrease the load on public sector



**PPP & CBOs  
Combination**



- Financially viable for all the sectors including community receiving the service
- Increase job opportunities
- Economical Benefits from service



**Easily replicable low cost  
sustainable SWM solutions**



# Tackling SWM Issues

**Need for  
Integrative thinking**



**Towards  
Sustainable SWM**



**To solve SWM  
problems...**



# Take-home Message

**Any change in the present order may inevitably affect lives of millions of most vulnerable & marginalized population in the cities of developing countries**

- Careful analysis of CBOs/public/private partnership applied to SWM is much needed**
- Total Ban of actors/ stakeholders at any level should be avoided**
- Details of the project & role of stakeholders to be analyzed**
- Understanding of applicability & suitability of partnership is required before selecting the solution**



