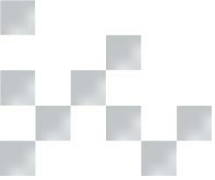


Presentation from the
**Workshop on
Innovations for Scaling up to
Citywide Sanitation**

October 16-17, 2012, Ahmedabad



Organised by PAS Project, CEPT University



City Sanitation Plan for Mumbai

- **Introduction**
- **About Mumbai and MCGM**
- **Summary of Findings**
 - Water Supply
 - Sewerage
 - Sanitation – Community Toilets
 - Sanitation – Public Conveniences
 - Solid Waste Management
 - Storm Water Drains

Sanitation rank given by Ministry of Urban Development

Overall Ranking	46	Lowest amongst the metro cities
Overall Score	45.076 (Black category)	Needs considerable improvement
Output	14.25 (out of 50)	Achieved results or outputs in different dimensions of sanitation
Process	23.593 (out of 30)	Systems and procedures practiced
Outcome	7.233 (out of 20)	Overall impacts on environment & health

- **Systems & procedures practiced by the city agencies to ensure sustained sanitation are in place**
- **Issues exist in converting these systems to achieve desired results & improvement of service delivery**
- **Mumbai being the oldest urban local body has a different state of development scenario and different scale of issues than any other smaller city**

Basic Profile of the city

- Total area of the city: 437.71 sq. km
- Total population as per Census, 2011: 12.47 million with density of 20,694 persons per sq km
- Total population as per Census, 2001: 11.9 million
- The island city registered a negative growth, while the western and eastern suburbs registered a growth of 7-8%
- Sex Ratio: 852
- Slum population about 57% (*provisional*) of the total population covering 10% of the total area
- Slum population has increased by 11% while non-slum population has declined by 2%

Proportion of slum population

Year	Slum Settlements (Number)	Slum Population (in Millions)	Total Population (in Millions)	Proportion of Slum Population
1976	1,680	2.8	5.9	47%
1983	1,930	5.0	10.0	50%
2001	1,959	6.5	11.9	54%
2011		7.2 (Provisional)	12.47	57%

Source – Census of India

Slum population distribution

Area	% of Total Population to Greater Mumbai Population	% of Slum Population to Total Respective Population
Island City	27.87	32.73
Western Suburbs	42.85	54.02
Eastern Suburbs	29.28	74.41
Total	100	54.06

Source – Census of India, 2001

Administrative Divisions

- The city is divided into 24 wards for allocation of functional responsibilities
- These are grouped into seven zones for administrative purposes
- For administrative purposes, the city is divided into three sub-divisions viz.
 - Island city
 - Western suburbs
 - Eastern suburbs

Administrative zones of Mumbai

Zones	Wards	Area
Zone 1	Wards A, B, C, D, E	Island City
Zone 2	Wards F-S, F-N, G-S, G-N	
Zone 3	Wards H-E, H-W, K-E	
Zone 4	Wards K-W, P-N, P-S	Western Suburbs
Zone 7	Wards R-C, R-N, R-S	
Zone 5	Wards L, M-E, M-W	Eastern Suburbs
Zone 6	Wards N, S, T	



Sanitation: Institutional Responsibilities

Value Chain/ Sector	Collection	Transfer	Treatment/Disposal
	Collection		
Sanitation	<ul style="list-style-type: none"> Mumbai Sewerage Disposal Project Department (Shared conveniences) Solid Waste Management Department (Public conveniences) 		
		Transmission	Treatment/ Disposal
Sewerage		<ul style="list-style-type: none"> Sewerage Project Department (Capital works) Sewerage Operations Department (O & M) 	<ul style="list-style-type: none"> Mumbai Sewerage Disposal Project Department
Storm Water Drainage	<ul style="list-style-type: none"> Storm Water Drainage Department 		
Solid Waste Management	<ul style="list-style-type: none"> Solid Waste Management Department 		
	Treatment	Transmission	Distribution
Water Supply	<ul style="list-style-type: none"> Water Supply Project Department 	<ul style="list-style-type: none"> Water Supply Project Department 	<ul style="list-style-type: none"> Hydraulic Engineering Department

3. Summary Findings

- **Water supply (ex-treatment) is adequate at 268 lpcd but issues exist in**
 - Distribution level losses
 - Inequitable distribution across wards
 - Intermittent water supply

- **With 57% of the population living in slums, provision of water supply in slum areas continues to be a challenge in terms of service levels and revenue recoveries**

- **Water and Sewerage budget is ring-fenced with full cost recovery**

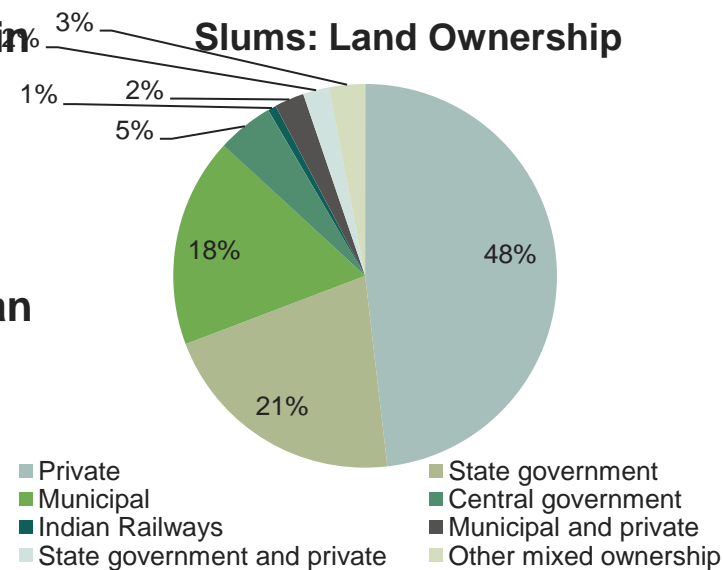
- **High level cross-subsidisation from revenues earned from industrial consumers does not incentivise water conservation by domestic consumers**

- **Demand side management measures like rain-water harvesting and well-defined telescopic tariffs can reduce supply levels by MCGM**

- **The total sewage generated is approximately 2860 MLD**
- **Total sewage placed into conveyance/ carriage: 1700 MLD (63%)**
- **Provision of sewerage network in slum areas which constitute 57% of the population is a challenge**
- **Sewage disposal in an environmentally friendly manner is progressively being planned under the Mumbai Sewage Disposal Project**

Sanitation – Community Toilets

- MCGM generally provides slum sanitation services in only MCGM-owned lands (17% of slum population)
- MHADA is the competent authority to provide sanitation service on all other slum lands (other than Central Government-owned lands)
- MHADA has constructed almost 50% of the toilets; but service levels on MHADA-built toilets are inadequate
- Toilets built by MCGM under the Slum Sanitation Programme (SSP) have been generally effective
- There is a need to extend SSP experience to other slums on non-MCGM-owned lands



Constructed by	Total No. facilities
MCGM through normal course of work	2734
MHADA	4318
Constructed by MCGM through the MSDP project	225
Constructed by NGOs, CBOs and State Department of Public Works	422
Others	2264
Total	9963

- **Repeated efforts to harmonise MHADA-built toilet programmes on the lines of SSP are yet to bear fruit**

- **MCGM better equipped to deal with Slum Sanitation issues based on success of SSP**
 - Slum Sanitation Cell of MCGM which was dissolved in the 1990s calls for a revival

- **Slum Sanitation Wing of MCGM needs to be revived and adequately staffed**
 - Currently department dealing with slum sanitation is thinly-staffed

- **MHADA and MCGM Act need to be suitably amended to empower MCGM to be sole authority to deal with slum sanitation issues**

- **These measures to address 95% of slum lands; Central Government –owned lands will need to be separately dealt**

- **Public Conveniences** (For use by public at large including the floating population of about 3 million)

- **Service Provider:**

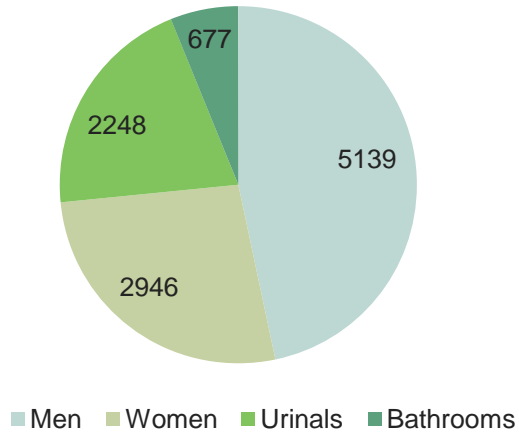
MCGM- Solid Waste Management Department

MHADA, MMRDA, PWD- GoM

- **Two modes of service provision:**

- Construction, O&M, Collect User charges by MCGM
 - Construction, O&M, Collect User charges by NGOs/ CBOs etc
- **MCGM being the local government & legitimate authority, has very little control or knowledge of other agencies & the agencies work in isolation**
 - **Planning**
 - **No clarity of the mandate of the provision of the semi-captive toilet facilities for employees/ visitors in the commercial complexes**
 - **Residents are reluctant to provisioning of such facilities in their precincts.**
 - **Absence of area-based approach**
 - **The service provision is ‘perception-responsive’ & not based on the scientific evaluation**

Details of pay & use toilets



- Number of seats provided are skewed in favor of men, almost 64% & 71% considering the usage of urinals
- This may imply to under-utilization of WCs and possibly over projection of water demand

▪ Operation & maintenance

- Revised fare structures :Rs. 2 for toilet and Rs. 3 for bath
It is not clear whether the lower socio-economic strata find the change significant.
- Public conveniences constructed by third parties:
 - Revenues are achieved from advertising panels (contracted out) for recovery of construction / O&M costs
 - User charges
- Due to the wavering revenue from advertising it is used for the management costs and then for functional obligations
- Absence of standard operating & reporting processes/ provision for independent monitoring to ensure cleanliness

- **Collection and Transportation from non-notified slums and railway lands is a challenge**
 - Slum adoption scheme working well in notified slums

- **Segregation of waste at source or collection point required to make processing more effective**

- **Delays in commissioning of processing and treatment plants poses a problem at dumping sites**

- **Proposed processing plant projects at Mulund, Kanjur and Deonar provide for 6500 MT per day of processing capacity and 750 MT per day of residue landfilling capacity (11.5% of processed waste)**
 - Increase in per capita waste generation especially silt and debris due to increasing construction activities may cause a concern of inadequate capacity of the land-filling.

- **Municipal Act does not provide for levy of conservancy tax for meeting O&M costs for SWM**

Storm Water Drains

■ **Service Provider:**
MCGM- Storm water Drainage Department

Length of drains/ nallahs

Description	City	Eastern Suburb	Western Suburb	Total
Major Nallah Width >1.5M	18.09	90.200	101.509	200.254
Minor Nallah Width < 1.5M	34.532	66.400	42.104	129.266
Arch/ Box Drains	97.699	40.00	51.93	151.13
Road side Open Drains	20.00	669.48	1297.50	1986.98
Closed Pipe or Dhara Drains	392.52	36.200	86.031	565.411
Total SWD length	562.841	902.28	1579.074	3033.041
Road Length	506.46	927.65	507.05	1941.16
No. of Water Entrances	30878	609	1706	30208

BRIMSTOWAD Project details

Categories	Unit	Cost (Rs. In Crores)				Revised Cost
		City Area	Eastern Suburbs	Western Suburbs	Total	
Rehabilitation of Old SWD System	24.45 Kms	203.62	-	-	203.62	
Widening, Deepening and Training of Nallah	102.95 Kms	153.33	283.27	272.31	708.91	
SWD Pumping Stations	8 No.s	148.00	29.00	111.00	288.00	
Total	-	504.95	312.27	383.31	1200.53	3535.41

- Need to set up a mechanism/ system at ward and central agency level to monitor, prevent & remove obstruction of utility
- No proper enforcement mechanism to prevent use & disposal of plastic bags
- Interconnections between sewerage network & stormwater drains
- No comprehensive GIS mapping to establish flood plain zones & minimize flood damages
- Techniques of rainwater harvesting need to be established
- No mechanism to prevent damage to the parent network from new utility service works
- Encroachments alongside drains damage the network and hence there is a need of a system that permits assessing the quality of the drainage inventory

▪ **Key Issues**

- Long term sustainability of BRIMSTOWAD projects
- Chronic waterlogging spots
- No formal internal drainage within slum areas
- Clogging of drains with refuse
- Protection of drainage channels



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