- URBAN WATER AND SANITATION IN MAHARASHTRA -

A Report Prepared by

All India Institute of Local Self Government Mumbai

In collaboration with
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Urban Development Dept., GoM
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Submitted to
PAS Project, CEPT University

June 2011

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Acknowledgement

The authors and the co-authors deeply acknowledge the consistent encouragement and support received from Dr. (Prof.) Sneha Palnitkar, Director, Regional Centre for Urban and Environmental Sciences (RCUES) of All India Institute of Local Self-Government, Mumbai. She has been the major source of inspiration for undertaking this and other initiatives of the PAS Project in Maharashtra. Her valuable guidance on the content and articulation of this document enabled us to refine it to the present form.

We also express our gratitude towards Prof. Dinesh Mehta, Professor Emeritus, CEPT University and Prof. Meera Mehta, Professor Emeritus, CEPT University whose advice of capturing the experiences and learnings of the project team in the form of systematic assessment was the distinct trigger for initiating this documentation.

We express our gratitude towards the entire AIILSG, Mumbai PAS team for their precious support. It is also worthwhile to mention that interactions with the CEPT, Ahmedabad PAS team provide valuable insight to us vis-à-vis this and other documentation initiatives. We hereby acknowledge their contribution to our enhanced understanding.

PAS TEAM,
MAHARASHTRA

ABBREVIATIONS

AIILSG	All India Institute of Local Self Government
Avg.	Average
BOD	Biochemical Oxygen Demand
CEPT	Centre for Environmental Planning and Technology
CIDCO	City Industrial Development Corporation
COD	Chemical Oxygen Demand
CPHEEO	Central Public Health and Environmental Engineering Organisation
DCB	Demand Collection Balance
DPO	District Project Officer
ESR	Elevated Service Reservoir
GIS	Geographic Information Systems
GoI	Government of India
GoM	Government of Maharashtra
GW	Ground water
HH	Households
HQ	Head Quarter
Hrs	Hours
LAI	Local Action Indicator
Lpcd	Litres per capita per day
MC	Municipal Corporation
MCl	Municipal Councils
MJP	Maharashtra Jeevan Pradhikaran
MLD	Million Litres per Day
MoUD	Ministry of Urban Development
MSW	Municipal Solid Waste
Na	Not applicable
Nd	No data
NMC	Nagpur Municipal Corporation
NMMC	Navi Mumbai Municipal Corporation
NP	Nagar Panchayat
NRW	Non-Revenue Water
O&M	Operation and Maintenance
PAS	Performance Assessment System
RDF	Refuse Derived Fuel
SLB	Service Level Benchmark
SLF	Scientific Land Fill
STP	Sewage Treatment Plant
SWM	Solid Waste Management
TPD	Tonnes Per Day

ABBREVIATIONS

ULB	Urban Local Body
WDS	Water Distribution Station
WS	Water Supply
WTP	Water Treatment Plant
WW	Waste Water

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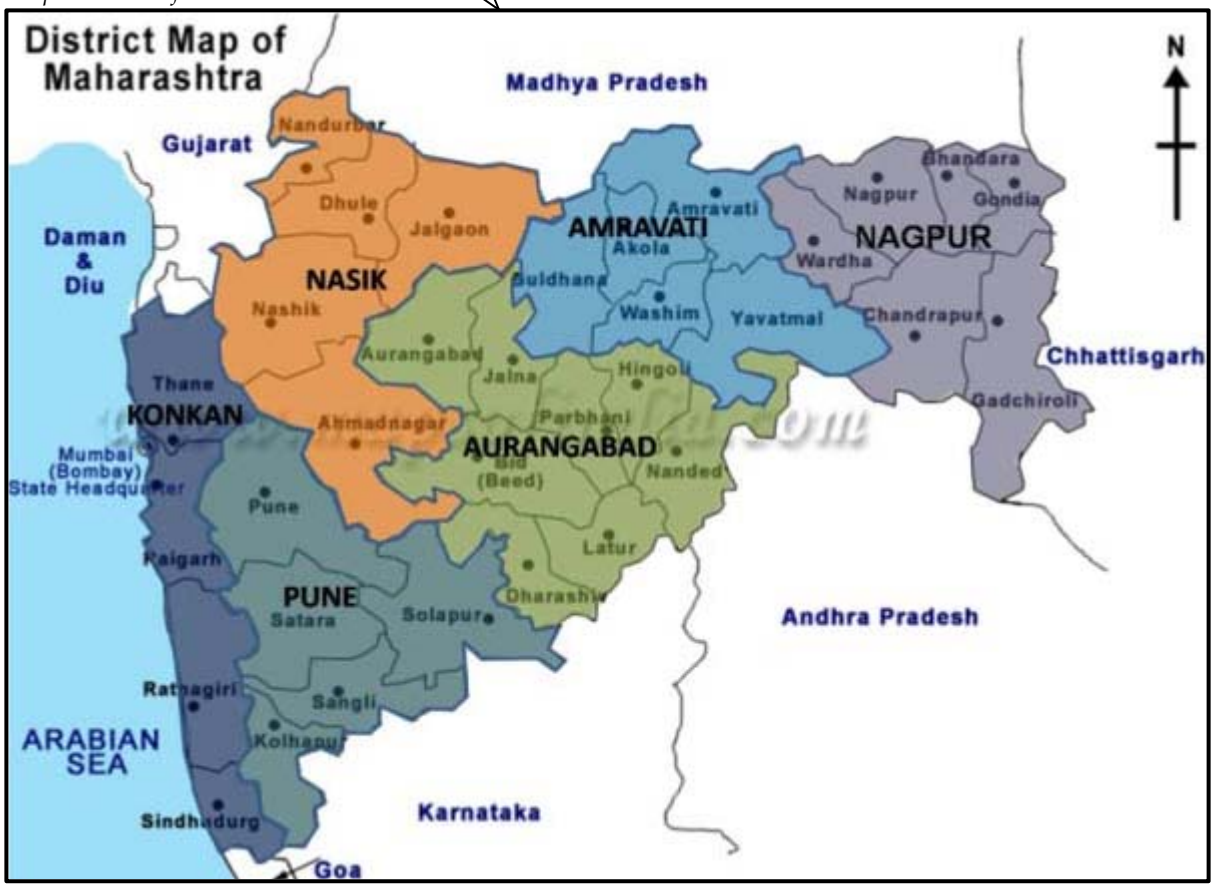
1.1 State Overview

Map 1-1- Location Map of State of Maharashtra

1.1.1 Introduction

Maharashtra, spread over an area of 3.08 lakh sq.km, is the third most populous State in India, with a population of 96.86 million as per 2001 Census. It is the most urbanized State in the country, with about 42.43 percent of its population residing in urban areas, as against the national average of 27.78 per cent. The urban population in Maharashtra is spread over 248 Urban Local Bodies (ULBs) (Year 2009), comprising 23 Municipal Corporations (MCs), 219 Municipal Councils (MCls) and 6 Nagar Panchayats (NPs)

Map 1-2- State of Maharashtra- 6 Divisions



Municipal Councils are further classified into A, B and C classes according to their sizes and population. Table 1.1 gives the classification of ULBs and range of population of ULBs in each class.

Table 1.1 Classification and Number of ULBs in Maharashtra (Year 2008-09)

Classification of ULBs	No. of ULBs	Range of Population
State	**248**	
Municipal Corporations	23	> 3,00,000
A Class Municipal Councils	15	>1,00,000 < 3,00,000
B Class Municipal Councils	59	>40,000 < 1,00,000
C Class Municipal Councils	145	< 40,000
Nagar Panchayats	6	As Notified

Maharashtra is divided into 34 districts, which are grouped into 6 revenue divisions: **Konkan, Pune, Nashik, Amravati, Aurangabad and Nagpur**.

Geographically and historically Maharashtra has five main regions: Konkan (Konkan Division), Desh or Western Maharashtra (Pune Division), Khandesh and Northern Maharashtra (Nashik Division), Marathwada (Aurangabad Division) and Vidarbha (Nagpur and Amravati divisions)

Table 1.2-Classification of Regions, Divisions, No. of Districts and No. of ULBs (Year2008-09)

S.N.	Regions	Divisions	No. of Districts	No. of ULBs
1	**Konkan**	Konkan	6	33
2	**Desh/ Western Maharashtra**	Pune	5	47
3	**Northern Maharashtra**	Nashik	5	41
4	**Vidarbh**	Amravati	5	41
		Nagpur	6	31
5	**Marathwada**	Aurangabad	8	55
		TOTAL	35	248

Maharashtra is predominantly a hilly region with tall ridges forming an important climatic divide, causing a rain shadow effect to its eastern side from the prime west to east monsoon winds. About one third of the state falls in the rain shadow zone, and about 40% of the State falls under heavy rainfall zone. The major river basins are *Godavari, Krishna, Tapi and Narmada.*

Map 1-3 Maharashtra State: Agro climatic Zones: Maharashtra

The water sources in the State are managed through various ministries and departments. The surface water resources, as allocated to the State, are managed by the Irrigation Department. Ministry of Irrigation allocates the resources to its various users, viz. drinking water, irrigation and industry. The groundwater resources are regulated and monitored by the Water Supply and Sanitation Department at state level

1.1.2 Sectoral Background:

Maharashtra is the first state in the country to prepare a White Paper on the State of the Drinking Water Supply Programme and to initiate institutional reforms with a view to improving the performance of local bodies responsible for provision of drinking water facilities. The State Government facilitated the reform process by bringing out enabling orders and actually implementing them in the field.

1.1.2.1 Maharashtra's White Paper on Drinking Water

The White Paper prepared in 1995, primarily addressed the issues of disparity in water supply and water availability, level of service and depleting groundwater. A few recommendations were made in the report concerning water supply in rural as well as urban areas, enforcing various legislations and stressing upon more effective management of water supply. Important recommendations included decentralization and proposed involvement of private sector agencies for O & M.

1.1.2.2 Service Level Benchmarking in selected ULBs of GoM- (under MoUD, GoI.)

Recognizing the growing importance of improving efficiency in delivery of basic civic services in (1) Water Supply,(2) Sewerage, (3) Solid Waste Management, and (4)Strom Water Drainage-in Indian ULBs the Ministary of Urban Development (MoUD), GoI has launched a series of initiatives aimed at enabling ULBs to meet the unprecedented challenges that they face today. As a part of the ongoing endeavour to facilitate critical reforms in the urban sector, the Ministry of Urban Development, GoI has now adopted National Benchmarking in these Four Key Sectors.

The Indicators and Benchmarks at a Glance:-

Table 1.3- List of indicators and Service Level Benchmarks- Water Supply

1. Water Supply		
S.N.	**Proposed Indicator**	**Benchmark**
1	Coverage of water supply connection	100%
2	Per capital supply of water	135lpcd
3	Extent of metering of water connection	100%
4	Extent of non-revenue water (NRW)	20%
5	Continuity of water supply	24 hours
6	Quality of water supplied	100%
7	Efficiency in redressal of customer compliance	80%
8	Cost recovery in water supply services	100%
9	Efficiency in collection of water supply-related charges	9

Table 1.4-List of indicators and Service Level Benchmarks- Sewage Management (Sewage and Sanitation)

2. Sewage Management (Sewage and Sanitation)		
S.N.	**Proposed Indicator**	**Benchmark**
1	Coverage of toilets	100%
2	Coverage of sewage network services	100%
3	Collection efficiency of the sewage network	100%
4	Adequacy of sewage treatment capacity	100%
5	Quality of sewage treatment	100%
6	Extent of reuse and recycling of sewage	20%
7	Efficiency in redressal of customer complaints	80%
8	Extent of cost recovery in sewage management	100%
9	Efficiency in collection of sewage charge	90%

Table 1.5-List of indicators and Service Level Benchmarks- Municipal Solid Waste Management

3. Municipal Solid Waste Management		
S.N.	**Proposed Indicator**	**Benchmark**
1	Households levels coverage of solid waste management services	100%
2	Efficiency of collection of municipal solid waste	100%
3	Extent of segregation of municipal solid waste	100%
4	Extent of municipal solid waste recovered	80%
5	Extent of scientific disposal of municipal solid waste	100%
6	Efficiency in redressal of customer complaints	80%
7	Extent of cost recovery in SWM services	100%
8	Efficiency in Collection of SWM charges	90%

Table 1.6-List of indicators and Service Level Benchmarks- Storm Water Drainage

4. Storm Water Drainage		
S.N.	**Proposed Indicator**	**Benchmark**
1	Coverage of storm water drainage network	100%
2	Incidence of water logging / flooding	0

3 Municipal Corporations (MCs) in Maharashtra viz**. Nashik, Kolhapur and Pimpri-Chinchwad** were selected for assessment under this initiative by MoUD, GoI.

The Need for Services Level Benchmarking:-

Every sector has a few key performance indicators that are understood by all stakeholders in that sector. In the urban sector there have been number of performance indicators related to urban management and service delivery that have been defined, measured and reported. However, most of the initiatives in performance management so far, have been observed to have some key limitation.

1. Different sets of performance indicators have been defined under different initiative.
2. The definition or the assessment method may vary for the same performance indicators.
3. Most of the measurement exercises have been externally driven (by agencies external to the agency responsible for delivery against those performance parameters), leading to the key issues of ownership of performance reports.
4. Most of the performance measurement initiatives have not been institutionalized, limiting the benefits of monitoring trends in performance over time;
5. The process of performance measurement has not been taken forward into performance management.

These limitations mean that systems for measuring performance and taking further action on them have not been institutionalized in urban bodies. It is therefore important that the basic minimum standards set of performance parameters are commonly understood and used by all stakeholders. Depending on the specific need, additional performance parameters can be defined and used.

Measuring service levels of urban bodies implies measuring outcomes, and indirectly also reflects on institutional capacity, financial performance and other parameters. Service level parameters can be measured either from a utility manager's/planner's perspective or from a citizen's or consumer's perspective. In addition, to facilitate comparison in between ULBs/service delivery jurisdictions, and changes in performance over time, it is important that the performance levels are benchmarked, and monitored against those benchmarks.

Thus policies and initiatives by MoUD, GoI clearly indicate that the states should focus on critical reforms in water & sanitation sectors following the defined benchmarks as above.

1.1.2.3 Initiatives by Govt. of Maharashtra in Water supply & Sanitation Sectors

Following are the initiatives taken by the GoM for critical reforms in water & sanitation sectors.

1) Govt. Resolution dated 15th Sept. 2000/28th Sept. 2000 introduced following fundamental tenets of policy-
   - Demand driven approach
   - In water supply scheme /waste water disposal scheme, a community contribution of 10 %.
   - Realisation that water supply is not solely the responsibility of Govt.
   - Water is a scarce resource and needs to be used properly.
   - Beneficiaries must deem it a service which should be paid for to ensure sustainability and continued service.
   - Increase in supply.
   - Rain Water Harvesting, Conservation, Preservation of Water

- Manage demand
- Community initiative in inter-sectoral allocation of Water
- Regulate over-abstraction
- Implementation of Ground Water Act.
- Removal of cap on water charges.
- Restructured Capital Grants Program to create incentives for efficiency improvements such as leakage reduction and energy savings (30 percent of the state grants are reserved for this purpose)
- Issued guidelines for water and energy audit
- Issued guidelines for private sector participation
- Technical Service Providers (TSPs) for water and energy audit are being shortlisted.

2) The WSSD identified constraints as follows:-
   - **Lack of reliable database for the schemes**
   - Lack of paying culture
   - Lack of political will
   - Lack of skilled/technical staff.

   WSSD also identified a few encouraging points:-

   - **People are willing to pay if service is good and reliable**
   - Of late, political executives/decision makers are showing an increasing inclination to hand over unpopular but unavoidable tasks to independent players
   - Increasing awareness among public for quality service in basic needs like water & sanitation
   - **Maximize Outsourcing**
   - Facilitate Competitive, Market driven environment

1.1.2.4 Sant Gadge Baba Abhiyan- (SGBA) Urban Sanitation Campaign

SGBA is being implemented by GoM since the year 2002-2003. Every year campaign starts on 2nd October.

The objective of SGBA is to ***incentivize ULBs for improvement in the field of public and individual cleanliness including- making area open defecation free, adequate supply of clean drinking water, management of waste water, solid waste management and enhancement of public health.***

Every year participating urban local bodies need to do a baseline survey as on October, which is the starting date of the campaign. On the basis of the survey urban local bodies are graded as follows:-

Table 1.7Gradation of ULBs participating in SGBA

Gradation of ULBs participating in SGBA			
A+	90% above	**C**	50% to 69%
A	80% to 89%	**D**	Less than 50%
B	70% to 79%		

The goal of the Campaign is: -

1. To encourage ULBs to become fully sanitized. While underground sewerage systems might be most desirable, they need

A) Adequate quantity of water to run the systems.

B) Financial resources

C) Committed electricity to run the systems

These are in short supply and hence it is not immediately feasible for all ULBs to go for underground sewerage system.

2. ULBs should adopt range of onsite sanitation arrangement in order to achieve total sanitation.

For Sant Gadge Baba urban sanitation awards, two groups are formed- group A and group B. It is mandatory for all the ULBs to participate in group A and to qualify for the 'cleanest city' award and excel in group B**.**

Table 1.8-SGBA_Group A marks allocation

I	Group A - Marks Allocation	Marks
1	Water Supply and Management	100
2	Waste Water Management	100
3	Sanitation (Toilet) Management(Individual, Public Toilets)	100
4	Defection Free City, Public Health IEC	100
5	Solid Waste Management	100
	Total of group A	**500**

Table 1.9-SGBA_ Group B marks allocation

II	Group B - Marks Allocation	Marks
1	Implementation of urban facilities, surroundings, betterment of roads, beautification and development	100
2	Encroachment removal, restriction on unauthorized construction	100
3	Education, social facilities, mother—child welfare	100
4	Human resource, financial arrangement and good governance.	100
5	Financial progress, employment, poverty alleviation	100
	Total of group A	**500**
	Total of Group A & Group B	**1000**

1.1.2.5 Sujal Nirmal Maharashtra Abhiyan (SNMA)

Building on the experience gained in Sant Gadge Baba Abhiyan and with a view to further main-stream and highlight this agenda, the GoM launched Golden Jubilee Programme- **"Sujal Nirmal Maharashtra Abhiyan-2010"** to mark 50 years of the establishment of the State.

The key objective of SNMA-2010 is ***to ensure universal access to water supply and sanitation services. The path breaking decision of the government seeks to provide technical, managerial and financial assistance to the urban local bodies for improving infrastructure and achieving technical, financial and environmental sustainability of these services.***

Implementation of SNMA is proposed in three levels: level-I, level-II, and Level-III, details of which are described below**.**

Under the Sujal Nirmal Maharashtra Abhiyan: Level–I, following reforms are to be implemented:

1. **100% consumer survey, detection of illegal connections and regularization.**
2. **Install bulk meters in all urban water supply schemes**.
3. **Conduct water audit and energy audit.**
4. Hydraulic modeling of water supply schemes.
5. G.I.S. mapping of all the water supply schemes.
6. **Private sector participation in source development, operation and maintenance of water treatment plants or entire water supply schemes for bringing efficiency.**
7. **Clustering of ULBs for O and M service contracts.**
8. **Computerization of billing and collection and private sector participation.**
9. **Double entry ring fenced accounting system.**
10. Preparation of city sanitation plan.
11. **Solid waste collection and disposal arrangement and improve present service level**

Under the Sujal Nirmal Maharashtra Abhiyan: Level– II, following reforms will be implemented:

1. 24x7 water supply projects in pilot area and improved water supply services
2. Sustainable water source development
3. Metering of 80% household connections
4. 80% recovery of O and M cost of water supply and sanitation
5. Achieve 80% collection efficiency.
6. Providing safe collection and disposal of drainage and sewerage
7. Creating MIS at various levels

8. Establish system of framing water tariff
9. Introduce scientific solid waste collection, transportation and safe disposal system
10. Achieve open defecation free cities

Under the Sujal Nirmal Maharashtra Abhiyan: Level– III, following reforms will be implemented:

1. **City wide 24x7 water supply system**
2. **100 % consumer metering**
3. **100% O and M cost recovery**
4. **100% billing and collection efficiency**
5. **City wide drainage / sewerage system for safe collection, conveyance to sewage treatment plant.**

1.1.2.6 Maharashtra Suvarna Jayanti Nagarotthan Maha-Abhiyan – (MSJNM)

The major objective of this Maha-Abhiyan is to provide various urban infrastructure in the urban areas of the State as per the standards prescribed by the Government, develop infrastructure facilities related to education and health as per the class of the city and enhance the social infrastructure along with aesthetic features of the cities. MSJNM will be applicable to all the `D' Class Municipal Corporations and all Municipal Councils / Nagar Panchayats in the State. Under this Maha-Abhiyan, first priority will be accorded to urban local self governments at the level of Divisional Headquarters and District Headquarters. ULBs at the level of Taluka Headquarters in each district will get next priority depending on the size of their population followed by other ULBs. In the first phase of this Maha-Abhiyan, based on such priority and excluding `A', `B' and `C' Class Municipal Corporations covered under the Jawaharlal Nehru National Urban Renewal Mission, cities at the level of District Headquarters from each district and the immediately next populous cities from respective districts are being included. In addition, if the district has any State level famous Hill Station or Pilgrimage Centre, such city is also being included in the first phase.

Projects included in the CDP will only be considered for financial assistance under MSJNM. However, during the first year of the Maha-Abhiyan, projects under the water supply, sewerage and solid waste management sectors will be considered for financial assistance without waiting for preparation of the CDP considering the local needs and subject to other terms and conditions of the Maha-Abhiyan. However, in such cases also, preparation and submission of CDP as specified above within the next one year will be mandatory.

The major reforms to be adopted by the ULBs desiring to participate in the Maha-Abhiyan are as follows:

1) Adopting Double Entry Accounting System
2) Computerization of the operations of Municipal Corporations / Councils

3) Property Tax Reforms
4) Reforms related to levy of appropriate user charges
5) Making appropriate budgetary provision for urban poor
6) Provision of necessary urban services to the settlements of urban poor
7) Rain water harvesting
8) Recycling and reuse of waste water
9) Implementation of water conservation measures in the jurisdiction of ULBs
10) Implementation of energy saving measures in the jurisdiction of ULBs
11) Promoting projects and measures based on Public Private Partnerships
12) Administrative reforms.

In addition, the Government will include from time to time other reforms as may be required under the Maha-Abhiyan

The Government sponsored Maharashtra Urban Infrastructure Development Co. Ltd. (MUIDCL) will help those ULBs in the development of projects, which lack the capacity to prepare Detailed Project Reports (DPRs). A Project Development Fund (PDF) has been operationalised in the MUIDCL for helping the urban local self governments in this regard. After approval of the project by the Project Sanctioning and Monitoring Committee, the projects granted final approval as per prevalent rules of business at the Government level, can be implemented in following 3 manners –

1. Fully through Public Private Partnership (PPP)
2. By approving grants or loans for projects, which cannot be fully taken up on PPP basis and can be made feasible through Viability Gap Funding
3. By approving grants and loans for projects, which cannot be taken up on PPP basis at all.

After administrative approval is granted for projects related to infrastructure to be taken up under the Maharashtra Suvarna Jayanti Nagarotthan Maha-Abhiyan, financial assistance as per the following funding pattern will be permissible and payable for such projects:

(a) For projects which can be fully implemented under the PPP, no financial assistance in any form will be required.

(b) For projects which cannot be fully implemented under PPP alone and would require some financial assistance in the form of Viability Gap Funding (VGF), the following financial assistance will be permissible and payable:

Sr. No.	Urban Local Self Government	Grants (Out of VGF)	Maximum Loan from MUIDCL/MMRDA (Out of VGF)
1	`B' & `C' Class Municipal Councils / Nagar Panchayats	80%	20%
2	`A; Class Municipal Councils and `D' Class Municipal Corporations	50%	50%

For projects which cannot be implemented on PPP basis, following financial assistance will be permissible and payable:

Sr. No	Urban Local Self Government	Grants (Out of Approved Project Cost)	Maximum Loan from MUIDCL/MMRDA (Out of Approved Project Cost)
1	`B' & `C' Class Municipal Councils / Nagar Panchayats	80%	20%
2	`A; Class Municipal Councils and `D' Class Municipal Corporations	50%	50%

The percentage of loan in the above tables indicates the maximum limit. If the concerned urban local self government makes available certain cost of the project from its own funds, the proportion of loan will reduce accordingly.

1.1.2.7 13th Finance Commission Report (2010-2015) (Published in Dec. 2009)-

During the consultation with the Commission, the Ministry of Urban Development, GoI, noted that the urban population, which was 28 per cent of the total population in 2001, is slated to rise to 38 per cent by 2026. Urban growth will account for two-thirds of the aggregate population increase during this period. This significant growth will pose a number of challenges to civic bodies in terms of meeting the basic needs of the existing as well as incremental population. ULBs will need to ensure inclusive growth, while planning for optimal utilisation of urban space and creation and maintenance of assets for providing essential services. Based upon the consultation the Commission expressed its views that there is a need to be effectively addressed to further empower local body institution, improve service delivery and ensure financial sustainability.

The Thirteenth Finance Commission recommended following types of grants to be released to the States:-

1) The general basic grants.
2) The general performance grants.
3) The special areas basic grants.
4) The special areas performance grants.

Incentive Framework for General Performance Grant

This distribution arrangement will be subject to the following conditions. For all five years between 2010- 11 and 2014-15, all states will be eligible to draw their share of the general basic grant. This will be done in two installments, latest by 1 July and 1 January of each year, subject to submission of an Utilisation Certificate (UC) for the previous installment drawn. No other documentation need to be stipulated. This Utilisation Certificate will provide details of the distribution of the concerned installment to urban and rural local bodies and is not required for the first installment in 2010-11.

For the years 2011-2012, 2012-13, 2013-14 and 2014-15, a State Government will be eligible to draw down its share of the general performance grant only if it complies with the following nine conditions. These conditions must be met by the end of a fiscal year (31 March) for the state to be eligible to draw down its performance grant for the succeeding fiscal year.

I. The State Government must put in place a supplement to the budget documents for local bodies (separately for PRIs and ULBs) furnishing the details. (other than those relating to Finance Accounts) They should require the PRIs to maintain accounts. They should also require urban local bodies to maintain accounts. To demonstrate compliance with this condition, a State Government should: (a) submit the relevant supplement to the budget documents and (b) certify that the accounting systems as recommended have been introduced in all rural and urban local bodies.

II. The State Government must put in place an audit system for all local bodies (all categories of ULBs and all tiers of PRIs)

III. The State Government must put in place a system of independent local body ombudsmen who will look into complaints of corruption and maladministration against the functionaries of local bodies, both elected members and officials, and recommend suitable action. This system should be made applicable to all elected functionaries and officials in all MCs, MCls and Zilla Parishads at least.

IV. The State Governments must put in place a system to electronically transfer local body grants provided by this Commission to the respective local bodies within five days of their receipt from the Central Government. Wherever this is not possible due to lack of easily accessible banking infrastructure, the State Governments must put in place alternative channels of transmission such that funds are transferred within ten days of their receipt.

V. The State Governments must prescribe through an Act the qualifications of persons eligible for appointment as members of the SFC consistent with Article 243I (2) of the Constitution. The passage of relevant legislation and its notification will demonstrate compliance with this condition.

VI. All local bodies should be fully enabled to levy property tax (including tax for all types of residential and commercial properties) and any hindrances in this regard must be removed. Self-certification by the State Government will demonstrate compliance with this condition.

VII. State Governments must put in place a state level Property Tax Board, which will assist all MCls and MCs in the state to put in place an independent and transparent procedure for assessing property tax. The Board (a) shall, or cause to, enumerate all properties within the jurisdiction of the municipalities and corporations; (b) shall review the present property tax system and make suggestions for a suitable basis for assessment and valuation of properties; and (c) shall make recommendations on modalities for periodic revisions. The findings, suggestions and recommendations of the board will be communicated to the respective urban local bodies for necessary action. The exact model to be adopted is left to the respective state. The board should be staffed and equipped in such a manner as to be able to make recommendations relating to at least 25 per cent of

the aggregate number of estimated properties across all MCs and municipalities in the state by 31 March 2015. The board should prepare a work plan indicating how it proposes to achieve this coverage target and the human and financial resources it proposes to deploy. Passage of the relevant legislation or issue of the necessary executive instructions by the State Government for creation of the Property Tax Board as well as publication of the work plan by the Board in the State Government gazette will demonstrate compliance with this condition.

VIII. **Lack of resources often results in local bodies diluting the quality of services provided by them. State Governments must gradually put in place standards for delivery of all essential services provided by local bodies. For a start, State Governments must notify or cause all the MCs and MCls to notify by the end of a fiscal year (31 March) the service standards for four service sectors-water supply, sewerage, storm water drainage, and solid waste management proposed to be achieved by them by the end of the succeeding fiscal year. This could be in the form of a declaration of a minimum level of service for the indicators mentioned against each of these four service sectors in the Handbook on Service level Benchmarks published by the Ministry of Urban Development. For example a State Government may notify before 31 March 2011 that by 31 March 2012, all MCls and MCs in the state will provide a specified minimum level of service for each of the indicators for the four service sectors of water supply, sewerage, storm water drainage and solid waste management. These levels may be different for different municipalities. We envisage such a commitment to be achieved through a consultative process with the local bodies. Such a notification will be published in the State Government gazette and the fact of publication will demonstrate compliance with this condition.**

IX. All MCs with a population of more than 1 million (2001 census) must put in place a fire hazard response and mitigation plan for their respective jurisdictions. Publication of these plans in the respective State Government gazettes will demonstrate compliance with this condition.

Incentive Framework for Special Area Performance Grant

A state will be able to draw down its special area performance grant only if it satisfies the conditions mentioned in paragraphs of 10th chapter of 13th Finance Commission.:

It will be seen that the GoI desires all its ULBs to attain the service level benchmarks. As also departments of water supply and sanitation and urban development through all their programs aim at progressing towards service level benchmarks and gradation of ULBs on the basis of their performance. However it should be noted that progress towards achieving SLB needs systematic planning and for planning it is very necessary to have qualitative data on which planning has to be based.

1.1.3 Institutional Mechanism: For Water Supply and Sanitation

In Maharashtra, the **Water Supply and Sanitation Department** was created in 1996 to exclusively concentrate and improve upon the poor coverage and access to these essential

services in both urban and rural areas. The Department is responsible for setting the policies for the State in this sector and coordinate with the Central Government and other key institutions. The Secretary heads the Water Supply and Sanitation Department (WSSD).

WSSD in Government of Maharashtra plays a very important role in service delivery in water supply and sanitation sectors in Maharashtra. The WSSD is supported by two technical wings viz: **Maharashtra Jeevan Pradhikaran** (MJP) **and Groundwater Survey and Development Agency** (GSDA). Besides, the rural water supply and sanitation programs are being implemented through Reform Support and Management Unit (RSMU) situated at Navi Mumbai, Maharashtra.

Along with WSSD, MJP and GSDA, following institutions at various levels are responsible for water supply and distribution in the State

Table 1.10- Institutions responsible for Water Supply and Sanitation in Maharashtra

Institutional Set-Up	Area of Functioning
WSSD (Maharashtra Water Supply and Sanitation Dept.)	State-level Department. Formulates and implements policies, operates and maintains regional water supply schemes in **both rural and urban areas**
MJP (Maharashtra Jeevan Pradhikaran)	One of the most important government bodies for **urban water supply**. Formulates and executes schemes and determines tariff structures, though its objectives do not encompass financial sustenance.
GSDA (Groundwater Survey and Development Agency)	Implements schemes based on groundwater resources **mostly in rural areas**. However, since many peri-urban areas without piped water supply are increasingly being dependent on groundwater, role of this organization is becoming important
MIDC (Maharashtra Industrial Development Corporation)	Established to promote **industries**. The organization eventually undertook development of water works. Though not a regular agency for domestic water supply, it does supply water to a few towns in the state of Maharashtra.
ZP (Zilla Parishad)	Mainly responsible for **Rural Water Supply schemes**
ULB (Urban Local Body)	Elected municipal body or institution of self-government for comprehensive development of urban areas, responsible for provision of civic amenities and economic development.

1.1.4 Performance Assessment Systems (PAS) in Maharashtra

Center for Environmental Planning and Technology (CEPT) University, Ahmedabad has received a major grant from the Bill & Melinda Gates Foundation to undertake research on services in Urban Water Supply & Sanitation (UWSS), embodied in the project "Performance Assessment Systems for Urban Water Supply and Sanitation".

CEPT has entrusted the anchoring of the activities of the project Performance Assessment System (PAS) for Urban Water Supply and Sanitation to All India Institute of Local Self Government (AIILSG), Mumbai for the State of Maharashtra and to the Urban Management Centre, Ahmedabad for the State of Gujarat.

PAS is a five year project (2009 – 2013) funded by Bill & Melinda Gates Foundation and is being supported by the state governments of Maharashtra and Gujarat. The project will be implemented in all ULBs in Maharashtra and Gujarat. The project covers entire urban population of 41 million in Maharashtra and 18.9 million in Gujarat. Access to water and sanitation services in urban India is widespread, but little is known about the quality and level of service, and coverage of the poor households. Importance of these services is amply reflected in the fact that more than 50% of funds allocation of the Jawaharlal Nehru National Urban Renewal Mission (JnNURM), the flagship urban development programme of Government of India is envisaged in this sector. Against this background, the PAS project aims to develop a sustainable statewide Urban Water Supply & Sanitation (UWSS) Performance Assessment System in the respective states that can be used for improving service delivery making it more efficient, equitable and sustainable.

1.1.4.1 PAS Project Overview

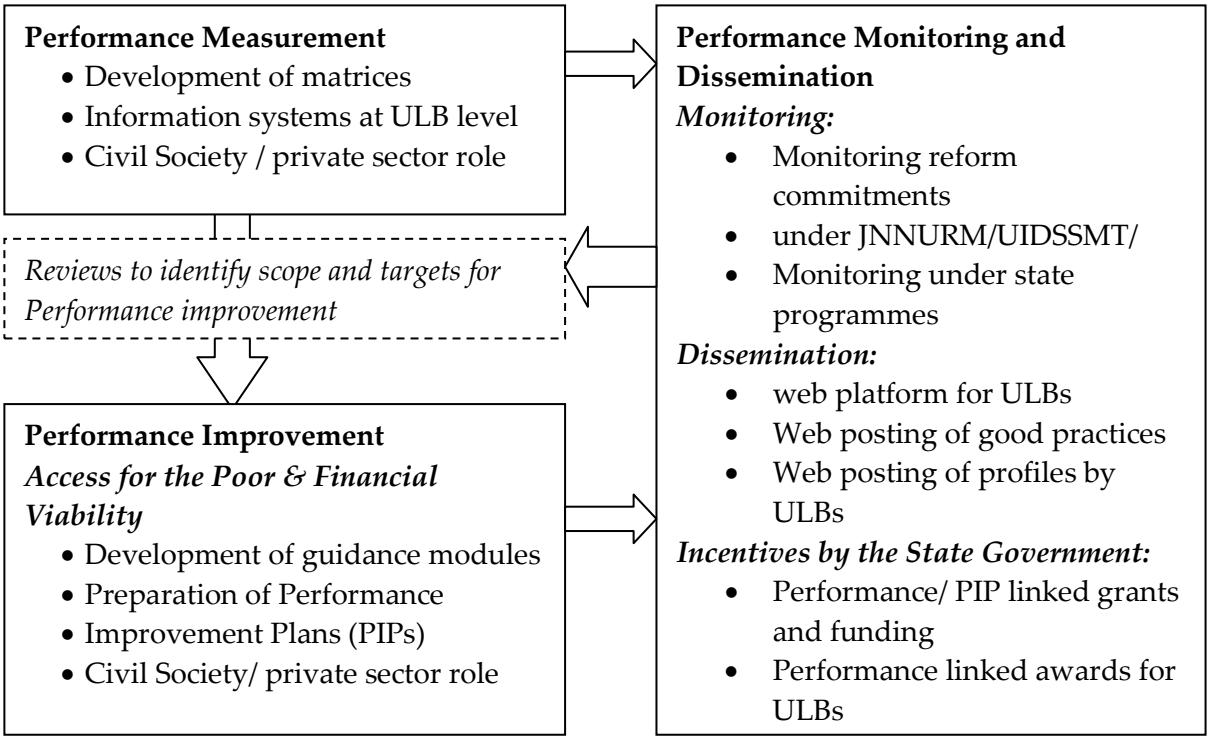
The project is to be rolled out in three components –

1. Performance Measurement
2. Performance Monitoring and
3. Performance Improvement.

Current Phase of Performance Measurement is being utilized to develop indicators through studies and stakeholder consultations at state level. Indicators for access and coverage, service level and quality, financial management, spatial equity and efficiency in service operation have been developed.

Performance Measurement refers to development and implementation of measurement metrics. The measurement metrics relate to development of indicators for performance on service goals and reforms measures.

Performance Monitoring includes setting up appropriate systems at state level for annual and real-time information, and detailed analysis of indicators, developing benchmarks, and documenting good practices. Comparative analysis will be made available to compare performance with peers. The performance monitoring will be also linked to performance linked grants, monitoring performance on reform commitments under the JNNURM and rewards for better performing local governments.



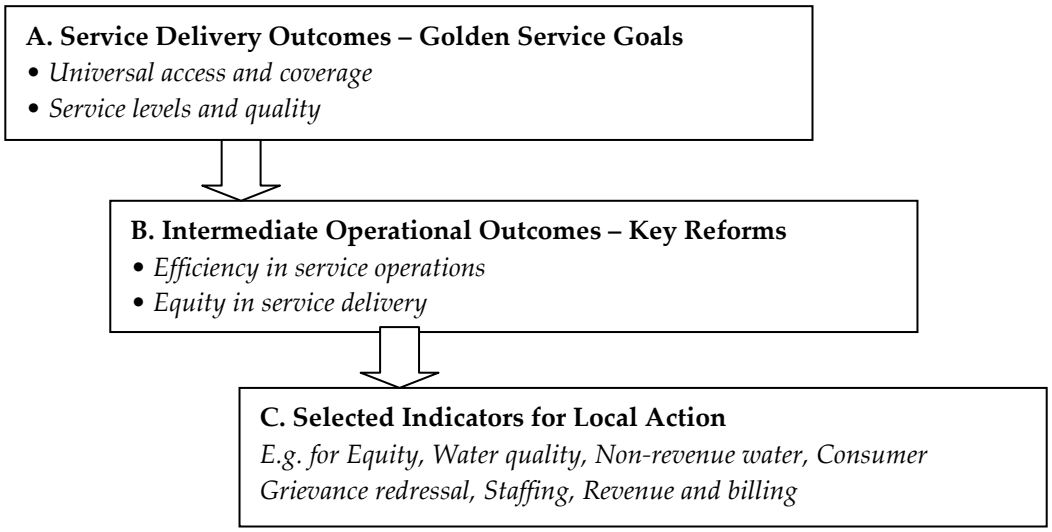
Performance Improvement relates to use of information to improve service performance. The project will provide support to local governments to develop performance improvement plans for reaching the poor and unserved and increasing financial viability.

First year of the Performance Measurement Phase was devoted to development of checklist to understand the present status of water supply and sanitation in all ULBs. The checklist was designed to collect information on water supply, sanitation, sewerage, solid waste management, deployment of staff and finance in each ULB. It was finalized after pilot testing in 18 ULB to upscale the effort of data collection to all ULBs of Maharashtra.

Embarking on learnings from the pilot phase, different methods were explored to achieve the challenging target. AIILSG team made conscious decision to adopt both centralized and decentralized methods of data collection. Initially four methods were explored – ULB to ULB, Centralised Method, Divisional Method and District Based Method which could be over viewed in section II.

2 SECTION II: PREPARATORY FOR PERFORMANCE MEASUREMENT

PERFORMANCE MEASUREMENT FRAMEWORK



Goals-Reforms-Local Actions: The above figure outlines the approach to performance measurement framework for the PAS Project.

The key performance indicators (KPIs) are distinguished for *service delivery outcomes* (or main goals of public services) and *intermediate operational outcomes* that reflect the plans and reforms needed to achieve the service delivery goals. This enables distinct identification of reforms needed to achieve these goals. In the PAS performance framework additional indicators have also been identified for local government actions to improve performance on selected key reform areas such as equity, nonrevenue water, water quality and cost recovery. While goals and reforms will be monitored by both higher levels and local governments themselves, the local action indicators are more suitable for local monitoring and for performance improvement planning.

In order to measure the performance of the ULBs, it was necessary to create a good quality database to begin with. The first year work plan of PAS Maharashtra consisted of Data Collection from all 248 ULBs in Maharashtra. Before the beginning with the endeavor, it was necessary to test the process of data collection by applying it on a set of ULBs. A set of 18 pilot ULBs was thus selected to be covered as an opening phase of data collection, which provided a platform for decision making in later stages, about the methods to be adopted for collecting data from rest of the ULBs as well as necessary actions to be taken to make the process run smoothly.

2.1 Pilot Phase

This phase was launched in the month of May 2009. 3 ULBs covered under MoUD's SLB + 15 non-SLB ULBs were covered under the pilot phase.

2.1.1 Selection of ULBs

ULBs were selected on the basis of inputs received from GoM through frequent discussions. The criteria behind selection of these ULBs were:

- Large, Medium and Small ULBs (equal weightage to M. Corporations and A, B, C class M. councils)
- Representing all 6 Divisions of Maharashtra. (Konkan, Pune, Nasik, Amravati, Aurangabad and Nagpur)
- ULBs with high floating population
- 3 ULBs which are part of the Government of India's Service Level Benchmark initiative (SLB): Kolhapur, Pimpri-Chinchwad and Nashik

2.1.2 Process of Data Collection

The task of collecting data from pilot ULBs was entrusted to Mumbai (HQ) Node as well as Pune Node of the PAS project at AIILSG. Out of 18 ULBs, Mumbai Team took charge of 11 and rest 7 was taken care by the Pune team. AIILSG team members visited ULBs in person for collecting the data. In the first round, it was not viable to receive 100% data from all ULBs. It took second or even third rounds for rest of data collection, which were carried out either by the telephonic conversation or by personal revisits to the ULBs, as per the requirement of the respective city.

2.1.3 Identification of Issues

During this entire process, there were many difficulties and issues that the research team had to face, which could be enlisted as follows:

- Subsequent modifications in the PAS checklist that made the process iterative.
- Limitations of ULBs to understand the checklist.
- Varying degrees of initial response from ULBs.
- Need for consistent endeavor to upkeep co-ordination between data collection team and data entry staff.
- Spending time as per convenience and availability of the ULB officials in the ULB.
- Data entry errors (Syntax)
- Disparities in the formats maintained by the ULBs and the formats in which the information was required.

2.1.4 Learnings

The major challenge while planning for rest of the ULBs, was to overcome these issues, because of which it took 8 long months to cover only 18 ULBs. Whereas, the allotted time period for data collection from remaining 230 ULBs was only 2 calendar months. The first challenge was to develop methods to be adopted for process of data collection to meet the deadlines.

2.2 Roll Out Plan

The roll-out plan to cover all ULBs of Maharashtra was prepared in December 2009. Embarking on learnings from the pilot phase, different methods were explored to achieve the challenging target. A combination of centralised and decentralised methods of data collection was consciously adopted owing to the following factors:

1. The project concept has potential for replication in wide range of socio-political contexts. Thus it was strongly felt that the project should develop learnings for replication vis-à-vis relative strengths, weaknesses and niche suitability of various methods for, not just data collection but, facilitating with the ULBs.
2. A salient feature of the project is its long term nature in which data collection is just a starting point. Of greater importance is the subsequent handholding with the ULBs for establishing self-sustaining systems of self-assessment and performance improvement. This has an added significance when one considers the perceived positioning of the project vis-à-vis the ambitious urban development programmes such as JnNURM and the processes triggered therein.
3. The project has a huge coverage of all urban local bodies in Maharashtra. All these ULBs had to be covered in a relatively shorter time span which necessitated that a quicker methodology needs to be adopted for a large mass of ULBs. Thus, a Centralised Method was adopted for 178 out of 230 ULBs that enabled relative time efficiency.
4. At the same time, the phase of data collection was to be utilised to gain deeper insight into the functioning of decentralised machinery of the municipal administration of GoM, and potential roles for the nodes therein for the next phases of performance monitoring and improvement. Thus a combination of decentralised methods of data collection was adopted in case of 52 ULBs.

In sync with the above, the other important considerations were:

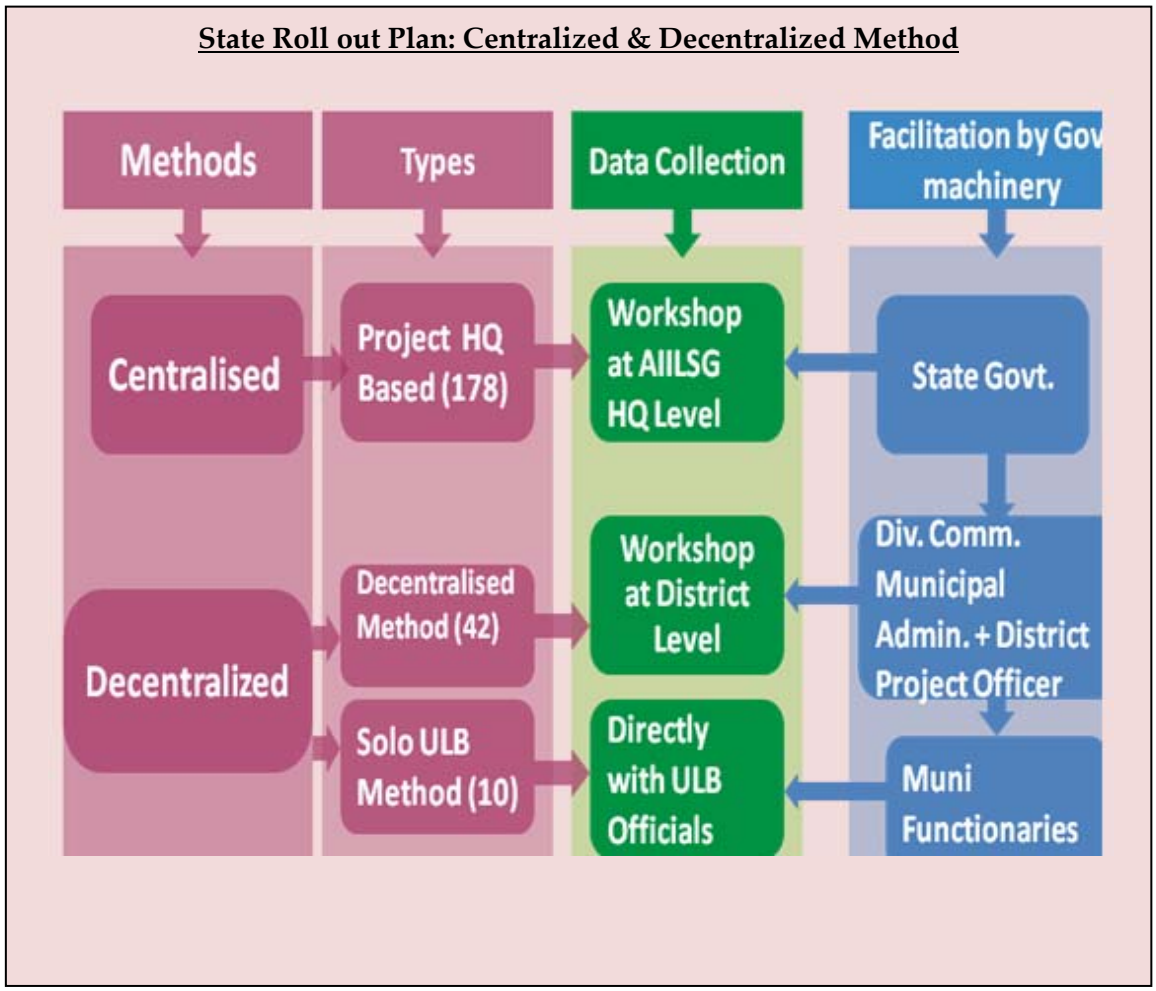
- The limited time span
- Nature of the required data to be collected being technical, there is need for trained human resources
- The two key aspects, not to be compromised on, were quantity and quality of data that is received from the ULBs.

Against this back drop, the data collection methods can be overviewed as follows:

2.2.1 Centralised Method (CM) of Data Collection

The process was initiated at the state level whereby Directorate of Municipal Administration (DMA) Office directed ULBs to support the endeavor. It involved holding Workshops at AIILSG Head Quarter (HQ). The checklist was disseminated to the respective ULBs in advance through post and also circulated during the capacity building workshops conducted in month of December and January 2009. ULBs were given the time to compile available data, documents and maps prior to the data collection workshops were launched. Thereafter, ULBs were invited to the HQ in further months, along with the required data and documents. Data was entered in soft copies during workshops itself by the AIILSG

Data Collection Team. Further sanitization of the data was undertaken simultaneously by the feedback team and the group of experts at the AIILSG, Mumbai office itself.



2.2.2 Decentralized Data Collection: District Level

The process was initiated at the divisional level whereby Divisional Municipal Administrative Office directed district municipal administrative machinery to support the endeavor and passed on necessary information to the ULBs. The workshops were held at the district level with facilitation support of the District Project Officer (DPO). The entire Data Management Team camped and functioned at district level itself and then continued the process for next district.

2.2.3 Solo ULB Method

This method was similar to the one which was adopted to collect data from the Pilot ULBs. This involved visiting the ULBs at their local offices for data collection. Application of this method for all the ULBs in the entire state demanded for more human resources as well as time. But it was found suitable to cover a set of ULBs such as "A" Class MCs, where it was unlikely to receive all the data, over various sectors, from a single representative of the ULB. Thus it was required to visit the ULB office in person.

2.3 Data Collection

2.3.1 Capacity Building of ULBs

From the experience of Pilot ULBs Phase, the need was felt for building ULB's capacity, to make them understand the significance of the project and to train them for filling up the data, into PAS checklist. This was done by the AIILSG Mumbai team by conducting centralized workshops at the AIILSG Mumbai Office. Division wise batches were formed to cover all the MCls and a separate batch for all 23 MCs in the state. In all, 7 workshops were conducted over the period of one month.

One day workshop module was designed as, in the first session; objectives of the project were highlighted with respect to the benefits that the ULB is going to have from PAS. It facilitated them to understand the relevance of the efforts that they are taking in commuting to the centralized or decentralized workshops and providing the data in hand. Second half was an interactive session wherein, PAS checklist was discussed in detail with the ULB officials arrived from respective departments of the ULBs.

Blank checklists were also circulated during this, so that the ULBs can start compiling the required data and revisit the AIILSG Mumbai Office to participate in the data collection workshops which were planned to be taken place in the further months.

2.3.2 Pilot Workshop

The concluding of capacity building workshops saw proactive initiative of two ULBs- (Parli -Vaijanath and Deglur Municipal Councils) in the State of Maharashtra, to participate in the process and approached the project team, even before the data collection workshops were launched. A decision was taken to invite these ULBs to the AIILSG Mumbai Office and test the designed module for its applicability.

On 14th Jan 2010, a small workshop was conducted, wherein; each ULB was provided with a data collection facilitator, a work station and other necessary logistics. The workshop was successful, with good amount of data along with the documents received at the end of the day. This experience also brought to a notice some minor issues that appeared in the process of entering the data, such as:

1) If ULB brings the data in the hard copy or ULB has made any changes in the format of the checklist which was circulated previously, it may take more time for a data collection team to extract the data, recalculate and enter it into PAS checklist.
2) Even if a ULB brings the data in the appropriate manner, a team member has to reenter the same into a fresh blank checklist to avoid discrepancies if any.
3) If a person attending the workshop is not same as the one who attended the capacity building workshop, it takes more time to deal with the untrained municipal officials.
4) If any confirmation or addition is required, a telephonic conversation with a concerned municipal officials placed at their ULB office is required, which may again take additional time.

It was also possible that data enumerators may have to face some random issues other than such predictable ones.

2.3.3 Hiring and Training of Data Collection Team Members

Because of insufficient availability of in-house human resources, it was essential to hire a few data enumerators. A set of candidates was interviewed from which a few with required qualification were selected. Hired data enumerators were trained to grasp the subject and fill up the data into PAS format by extracting it from the raw data that the ULB brings. They were also trained to communicate with the ULB officials skillfully to make the interaction easier and also to perceive & note such facts about the ULBs that cannot be captured in the PAS format. This helped in further sanitization and analysis of the data as well as in identification of good practices.

2.3.4 Data Collection Workshops

One working-day module was designed for data collection workshops, for filling up the data in soft copies of the PAS checklist. A workshop room of capacity 45 was provided for the same where each ULB was facilitated with a dedicated data enumerator and a work station with on demand guidance from experts. Data enumerators were to interact with the ULBs to capture the pertinent data in the PAS format. The aim was to capture maximum data within one working day. If a person attending the data workshop is unable to respond to the queries asked by the enumerators, other officials from the respective departments were contacted over phone to get all the queries resolved. The data was stored with the Administrative Cell on a daily basis in the form of soft as well as hard copies.

2.3.5 Data Enhancement

A dedicated Cell was established at AIILSG Mumbai Office to undertake the process of data refinement. Refinement of data was processed simultaneously with the process of data collection. It included identification of data gaps and errors which required to be eliminated to obtain factual and final results of the ULB. Depending on the extent, identified data gaps and errors were rectified either by arranging second round of workshops or by telephonic follow-ups with the ULBs.

Sincere efforts by the research team to create the foundation for further data collection process enabled the team to conduct the workshops all over Maharashtra successfully. This resulted into a generation of a good quality data bank for the project. Analysis of this tremendous amount of data is attempted in the section III.

3 SECTION III: PERFORMANCE MEASUREMENT

Observations from the first round of data collection could be discussed as follows:

1. During data collection process, it was observed that the information formats maintained by the ULBs did not match with the PAS format on certain data heads and ULBs made efforts to furnish the data by readjusting the data maintained by them.
2. Some ULBs expressed their inability to provide some of the required data.

However, based on the data provided by each ULB, initial data collection phase has been completed. The data recorded is as per the information given by the ULBs. Validation of this data is proposed to be done in the Phase II of the project. The baseline in assessing the performance in service delivery is the indicators and benchmarks prescribed by the Ministry of Urban Development- Government of India. Sector-wise reports on Indicators and benchmarks under Service Level Benchmarking are produced below:

SECTORAL ANALYSIS

The sector-wise analysis under each sector, namely water supply services, sanitation and waste water and solid waste management is described at the state level followed by class wise and division wise analysis. State level analysis indicates the performance of the entire state in each sector based on the indicators.

Class wise analysis is divided into two; analysis based on Performance Indicators and analysis based on Context Information. Analysis based on Performance Indicators is further divided to 5 themes, namely **access and coverage, service level and quality, financial management, equity and efficiency in service level operations.** Key Performance Indicators (KPIs) in each sector are clubbed together under the above themes which are explained in detail under each sector.

State of Maharashtra is geographically divided into 6 divisions which are explained further in detail. Division-wise analysis gives a better understanding of the performance of the state with respect to its administrative set up.

The analysis is done keeping in mind the reliability of the indicators. Class-wise analysis is followed by reliability analysis for each indicator. Four scales of reliability are used: A+ being the highest reliability and D being the lowest. This approach enables a transparent and consistent comparison across all ULBs. It also facilitates ULBs to ascertain the reliability and quality of their existing data systems, and to identify the systems required to improve them to higher reliabilities.

3.1 Water Supply and Services

While presenting the water supply data analysis, along with Service Level Benchmarks set by MoUD of GoI, reference has also been made to the Central Public Health Environmental Engineering Organisation's (CPHEEO) Manual, a Govt. of India Publication. The benchmarks set by MoUD and norms specified in CPHEEO Manual are as follows:

Table 3.1- Performance Indicator and Service level benchmarks

	PROPOSED PERFORMANCE INDICATORS	SERVICE LEVEL BENCHMARKS	UNIT
1	Coverage of water supply connections	100	%
2	Per capita supply of water	135	Ltr.
3	Extent of metering of water connections	100	%
4	Extent of non-revenue water	20	%
5	Continuity of water supply	24	Hrs
6	Quality of water supplied	100	%
7	Efficiency in redressal of customer complaints	80	%
8	Cost recovery (O&M) in water supply services	100	%
9	Efficiency in collection of water supply related charges	90	%

Table 3.2- Norms specified in CPHEEO Manual

RECOMMENDED PER CAPITA WATER SUPPLY NORMS FOR DESIGNING SCHEMES		
	CLASSIFICATION OF ULBS	**RECOMMENDED MAX. WATER SUPPLY LEVELS (LPCD)**
1	ULBs provided with piped water supply but without Sewerage System	70
2	ULBs provided with piped water supply where sewerage system is existing/ contemplated	135
3	Metropolitan and Mega Cities provided with piped water supply where sewerage system is existing/ contemplated	150

3.1.1 State Level Scenario

PAS Key Performance Indicators (KPIs) of water supply are generated on the basis of MoUD's Performance Indicators, with addition of 3 essential indicators based on equity oriented issues, which cover slum related aspects as well as spatial variation of services within the city.

The data received in 248 checklists was utilized to generate the ULB wise KPIs. From 248 individual PAS checklists, water supply results were compiled to form a state level scenario, which provides a broader sight at the sector status and values of the Performance Indicators at the state level. The state level status in terms of data availability, applicability of performance indicators and their average values could be discussed as follows:

Table 3.3-Water Supply- State Level Key Performance Indicators

	KEY PERFORMANCE INDICATORS	Total Cities	Mean Count	Nd	>Ceiling	<Floor	Na	Avg.	Unit
1	Coverage of water supply connections	248	242	6	0	0	0	52	%
2	Per capita supply of water at consumer end (served pop.)	248	233	15	0	0	0	100	LPCD
	Per capita supply of water at treatment level (total pop.)	248	242	1	0	5	0	89	LPCD
3	Continuity of water supply	248	241	2	0	5	0	1.7	Hr./ day
4	Quality of water supplied	248	242	5	1	0	0	98	%
5	Cost recovery (O&M) in water supply services	248	225	21	2	0	0	68	%
6	Spatial variations in water supply connections	248	70	178	0	0	0	0.5	Ratio
7	Spatial variations in per capita supply of water	248	200	46	2	0	0	1.2	Ratio
8	Coverage of WS connections in 'slum settlements'	248	169	30	1	0	48	24	%
9	Extent of non-revenue water	248	230	6	2	10	0	31	%
10	Efficiency in redressal of customer complaints	248	219	29	0	0	0	94	%
11	Extent of functional metering of water connections	248	58	2	0	0	188	52	%
12	Efficiency in collection of water supply related charges	248	222	25	1	0	0	68	%

Nd: No Data available, Na: Not Applicable
Mean Count; is the no of ULBs that have reported a reliable value for the said indicator
>Ceiling; is the no. of ULBs that have reported a value higher than a reliable, logical value for the said indicator.
<Floor; is the no. of ULBs that have reported a value lower than a reliable, logical value for the said indicator.

Table No. 3.3 emphasizes on the state level Key Performance Indicators in Water Supply Sector. Each individual KPI at state level is a simple average of city level indicators of recorded ULBs. Recorded ULBs (Mean Count) include all those ULBs which have provided satisfactory data to be able to calculate satisfactory value of the KPI, which falls in between the floor and the ceiling values set for a particular KPI. Number of recorded ULBs varies from KPI to KPI, on the basis of data availability and applicability of an indicator to a ULB.

Significant facts to be noticed from the Table No. 3.3 are:

1. Coverage of individual connections of water supply at Household level is 52%, which is less vis-à-vis 78% of water supply network coverage in terms of area.

2. Per capita supply of water at consumer end is more than that at treatment level, as supply at treatment level is calculated with respect to the total population in the ULB, whereas, supply at consumer end is calculated based on the population served. Higher LPCD at consumer end than treatment level indicates that the population served is much lesser than the total population of the state.
3. 179 "nd"s in "Spatial variation in water supply coverage" indicates that 72% ULBs out of 248 do not maintain ward wise data on water supply connections.
4. Data availability on slum settlements and finance related KPIs (5 and 12) is comparatively less.
5. Only 58 ULBs (23%) out of 248 practice metering of water supply connections.
6. 49 ULBs report that they do not have slum settlements within their municipal limits. Several crucial initiatives by GoI and GoM have helped ULBs to improvise level of service delivery in slums. This could be discussed subsequently.

Along with averages, highest and lowest values for a particular KPI, within which other KPI values are fluctuating, are given in the Table No. 3.4 below

	KEY PERFORMANCE INDICATORS	Avg	Max	ULB	Min	ULB
1	Coverage of water supply connections	52	99	Nashik (MC)	10	Shirdi (NP)
2	Per capita supply of water at consumer end (served pop.)	100	333	Malwan (C)	20	Sangola (C)
	Per capita supply of water at treatment level (unserved pop.)	89	306	Pune (MC)	21	Tumsar (B)
3	Continuity of water supply	1.7	24	Malkapur (NP)	0.36	Sinnar (C)
4	Quality of water supplied	98	100	165 ULBs	38	Shrigonda (C)
5	Cost recovery (O&M) in water supply services	69	181	Murud Janjira (C)	4	Nilanga (C) ,Pavni (C)
6	Spatial variations in water supply coverage	0.5	2.4	Vasai Virar (MC)	0.07	Malkapur (NP)
7	Spatial variations in per capita supply of water	1.2	2.4	23 ULBs	0.01	Amalner (B)
8	Coverage of WS connections in 'slum settlements'	24	100	PCMC (MC), Daryapur (C)	0	37 ULBs
9	Extent of non-revenue water	32	69	Deulgaon Raja (C)	10	Malegaon (MC)
10	Efficiency in redressal of customer complaints	94	100	147 ULBs	38	Mangalwedhe (C)
11	Extent of functional metering of water connections	60	100	Anjangaon Surji (B), Panchgani (C), Panhala (C), Malkapur (NP)	0.000001	Beed (A)
12	Efficiency in collection of water supply related charges	68	100	Vengurle (C)	0	Ner Navabpur (NP)

Table 3.4-Water Supply-maximum and minimum of KPIs at state level

Table No. 3.4 highlights names of the ULBs recording highest and lowest values of KPIs. It is interesting to note that C Class MCls are performing best in 5 out of 12 indicators as indicated in the Table above. Further remarkable facts include:

1. Malkapur NP is the only ULB in the state, having successfully implemented 24 x 7 water supply schemes and 100% functional metering within its entire municipal limit. Also, spatial variation in water supply coverage is lowest in Malkapur NP which highlights efforts taken by the ULB on the equity front as well.
2. Though 37 ULBs report 0% coverage of individual connections of water supply in slums, it is remarkable that 2 ULBs have been able to achieve 100% coverage in slums, out of which one is MC and one is C Class MCl.
3. Out of total 58 ULBs having metered WS connections in place, 4 have achieved implementing 100% functional metering of WS connections. Malkapur is the only NP in the class practicing metering of WS connections with 100% extent of functional metering.
4. Major area of concern in some ULBs is availability of water in liters per capita per day. Though some large scale ULBs are enjoying more than 200 LPCD, small scale ULBs are facing problems with LPCD as low as 21 Ltr, which cannot even meet citizens' daily requirements.

State level averages could be organized further within the specified ranges of KPI values, as follows:

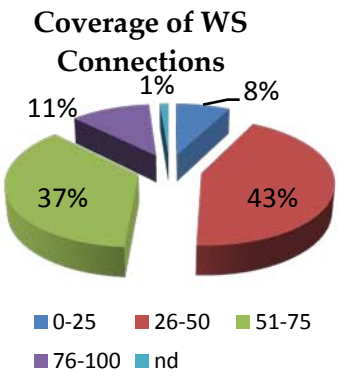


Chart 3-1 WS_ Coverage of WS connections_ Ranges

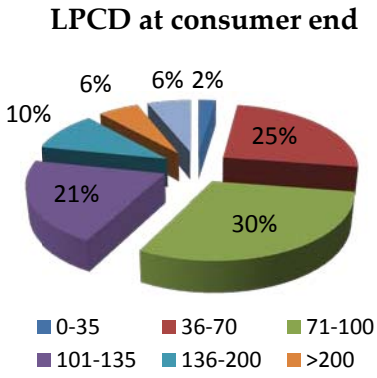


Chart 3-1 WS_LPCD at consumer end-Ranges

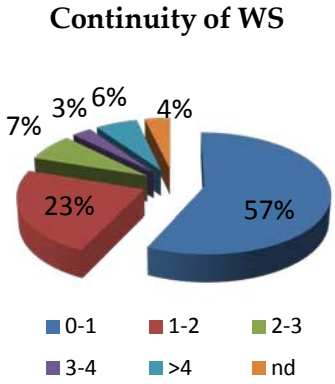


Chart 3-3- WS_ Continuity of WS_ Ranges

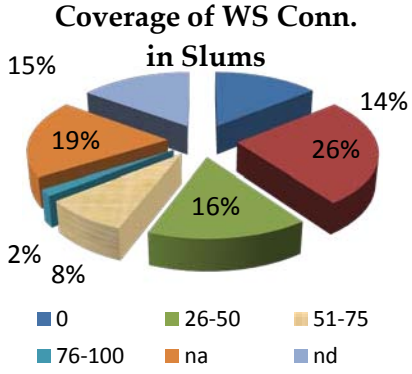


Chart 3-4 WS_ Coverage connections in slums_ Ranges

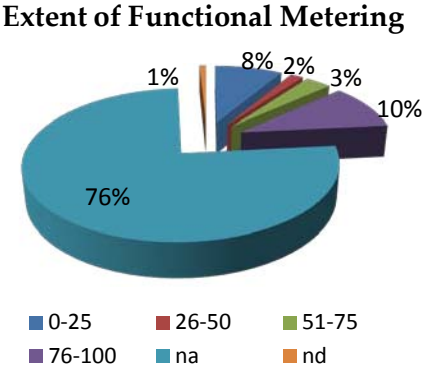


Chart 3-5 WS_ Extent of funct. metering_ Ranges

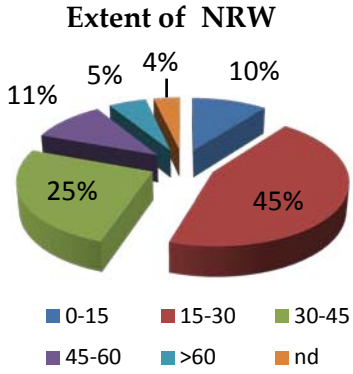


Chart 3-6 WS_ Non Revenue Water_ Ranges

Charts 3.1 to 3.6 provide a glance at KPIS at a further scale than the state level averages. Charts allow read values of KPIs for all ULBs falling within the specified ranges. State level average could be interpreted in various ways, but the specified ranges give a clear idea about a KPI and its extent of deviation. e.g. It is noticeable that even though state level coverage of individual water supply connections is 52%, 43% ULBs have recorded coverage in between 26% to 50 %. Some more observations could be framed as:

1. Coverage: 11% ULBs have more than 75% of coverage of water supply connections in the ULB. However, only 2 % have more than 75% of coverage of WS connections in slums.
2. LPCD at Consumer end: 16% (39) ULBs have crossed the benchmark of 135 LPCD. Out of which 6 are MCs.
3. Functional metering of WS Connections: Within the ULBs having metering in place, 47% ULBs have more than or equal to 75% connections metered.
4. NRW: Out of 5% ULBs reporting more than 60% NRW, only 1 is MC. This indicates that LPCD for lower class ULBs, having low LPCD at production level, may further reduce if calculated by means of actual consumption.

Key Observations and Issues:

1. Low coverage of individual connections of water supply hints either at no connections or at the practice of group connections.

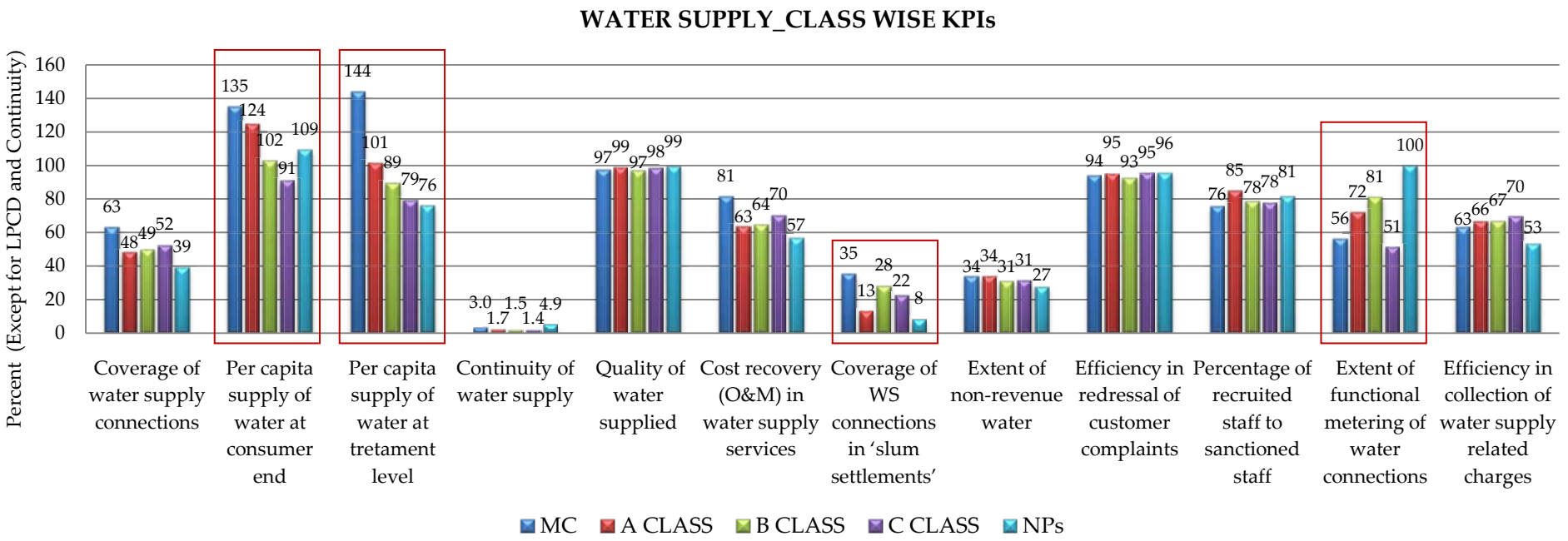
   MCs like Kalyan Dombivali, Mira-Bhayender, Thane and MCls like Ambejogai, Shirpur, Shirur have initiated providing group connections or converting public stand posts to group connections. This is discussed further in detail in the equity chapter of this report.

2. LPCD: Average of ULB level LPCDs gives a state level LPCD as 89 at the treatment level and 100 at the consumer end. If calculated on the basis of total water production in the state vis-à-vis total population in the state gives a state level LPCD as 180 liters per capita per day, as an effect of 205 liters per capita per day only in MCs. This indicates sufficient water production but inadequate water supply to the consumers as an effect of physical water losses or uneven water distribution.
3. Current value of continuity of water supply gives a bare value of hours of supply in a day irrespective of days of supply in a month. If seen with respect to the days of supply in a month, the state level average of continuity of water supply may reduce substantially.
4. Less data availability in financial sector is an effect of ambiguity and disparity in budget heads of Municipal Annual Budgets maintained by each ULB.

3.1.2 Class Wise Thematic Assessment

For appropriate presentation of KPIs, they are divided into 5 sections falling under 5 key themes viz. a) Access and Coverage, b) Service Level and Quality, c) Financial Management, d) Spatial Equity and e) Efficiency in Service Operations. Class wise thematic assessment is to detail out strengths and issues in MCs, MCls and NPs reflected through their KPIs in a systematic manner.

Graph 3-1-WS_ Class wise KPIs



The Graph 3.1 produces overall comparison of all significant KPIs at state level. (2 KPIs on spatial equity are intentionally excluded from this. They will be discussed in detail under the relevant themes.) Large scale variation exists in **per capita water supply, coverage of WS connections in slums and extent of functional metering.**

3.1.2.1 Performance Indicators Based Assessment

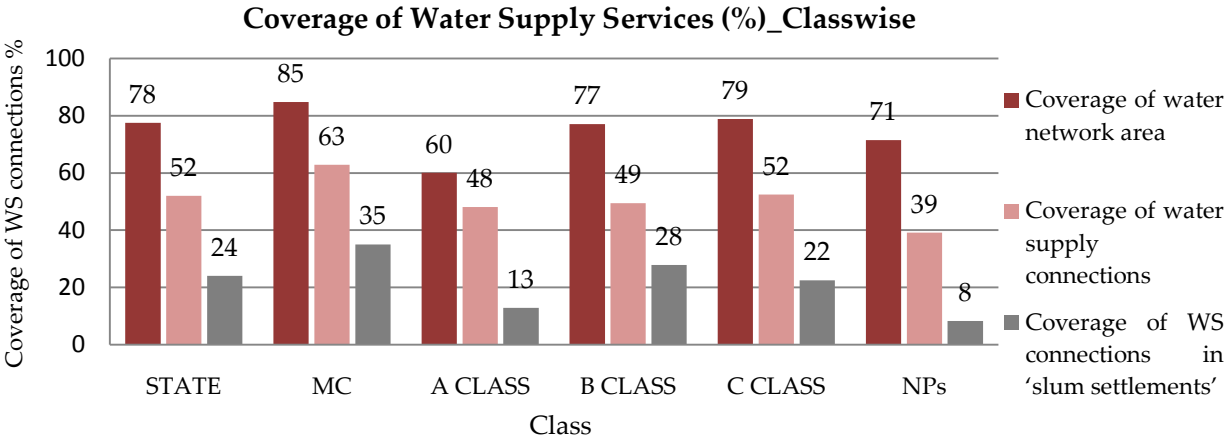
a. <u>Access and Coverage</u>

Key Performance Indicators:

1. ***Coverage of Water Supply Connections***
   <u>Definition</u>: Total households connected to the water supply network with individual (not shared) service connection, as percentage of total households in the ULB
2. ***Coverage of Water Supply Connections in slum Settlements***
   <u>Definitions</u>: Total households in slum settlements connected to water supply network individual (not shared) service connection, as percentage of total households in all slum settlements in the ULB.

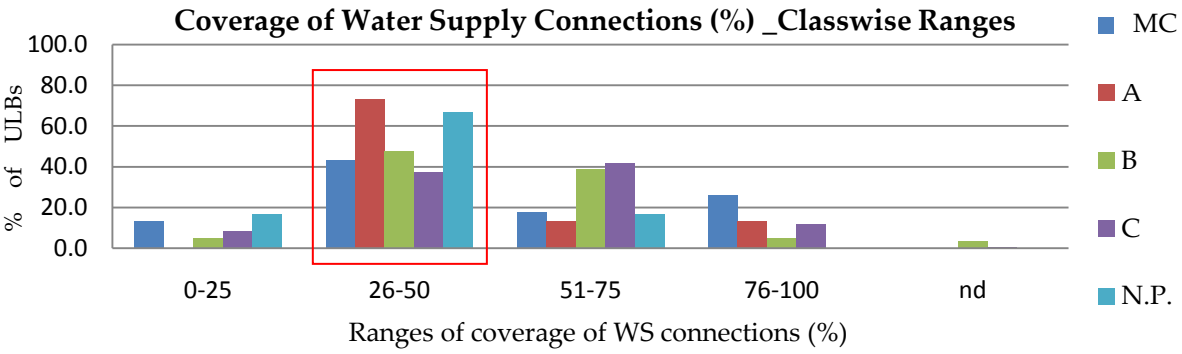
Another broad based indicator of coverage is by the area spread of water supply distribution network in the UBLs which is a Local Action Indicator (not a KPI), could also be compared with these 2 KPIs.

Graph 3-2-WS_ Coverage of WS Services (%)_Classwise

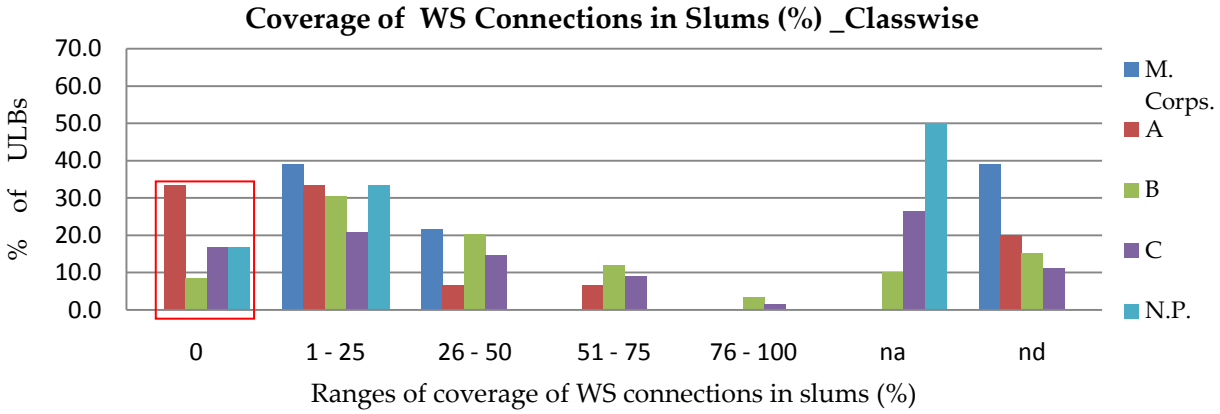


Coverage of water supply network area-wise is much more than coverage of water supply connections at HH level in many ULBs. Even if the network is in place, consumers are not willing to avail the WS connections because of perceived high charges or taxes. This results into increasing no. of illegal connections and eventually low coverage of WS connections.

Graph 3-3-WS_ Coverage of WS Connections_ Classwise Ranges



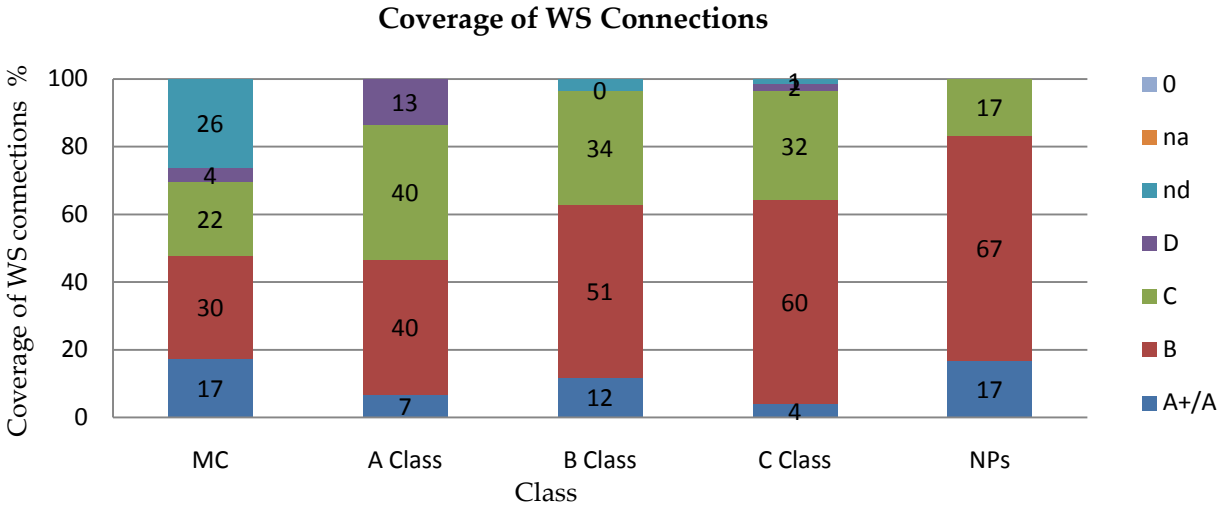
Graph 3-4-WS_Coverage of WS connections in Slums_ Classwise



If class wise averages are split into suitable ranges, it could be noticed that around 40% to 60% of total no. of ULBs, across the classes, have reported only 26% to 50% coverage of WS connections in the ULB. Very few ULBs report more than 25% of coverage of WS connections in slums.

Reliability Analysis_ Coverage of Water Supply Connections

Graph 3-5-WS_ Reliability _ Coverage of WS connections



1. 4 MCs viz. Amravati, Nanded, Nagpur and Nashik fall under reliability A, showing that they maintain computerized records of water supply connections. Nashik MC indicates highest coverage of water supply connections with highest reliability within MCs which is an indication of the best performance of a ULB in terms of coverage of water supply connections.
2. 1 ULB in A class, 7 in B Class, 6 in C class and 1 in NPs fall under reliability A, which shows that out of total 248, 19 (7.67%) ULBs maintain computerized records of water supply connections.
3. 134 ULBs falling under reliability B indicate that majority of the ULBs could provide number of H/Hs with individual connections for which the records are maintained

manually. 79 ULBs falling under reliability C have provided estimations on number of H/Hs served on a single residential connection.

4. Out of total 248, only 6 ULBs are not certain about the number of individual connections in the ULB but can provide a total number of residential connections.

Key Observations and Issues: - (Coverage of Water Supply Connections in ULB)

1. None of the ULBs meet the benchmark of 100% coverage of individual water supply connections at ULB level.
2. Though some ULBs have a perception of 100% ULB area covered with the distribution network, in technical parlance, they do not show more than 50% coverage of individual water supply connections in the ULB. An important reason is that many ULBs practice granting of group connection than individual connections or supply water through public stand posts. This may also depict that ULBs are still dependant on non-piped supply like tankers etc.
   e.g. Shirdi, a pilgrim centre, with 10% coverage of WS connections is largely dependent on non piped supply in order to cater to the huge floating population (pilgrim camps) which is 370% to its native population.
3. Another major reason behind low coverage is presence of illegal connections in the ULB. This could be illustrated as follows:

Table No. 3.5 talks about the prospects of ULBs to upgrade their coverage of WS connections in ULB as well as slums just by identifying and regularizing illegal connections. Various figures in the table also help in identifying the location of illegal connections e.g. In Bhusawal, illegal connections could be seen mainly in slums as the coverage in slums is very low with respect to that at ULB level. Whereas, Mowad and Khamgaon show comparatively higher coverage in slums, which indicates the probability of illegal connections to be present in areas of ULB other than slums.

Table 3.5-WS_ Coverage of WS connections

	ULBs	Cls	Coverage of dist. network	Covrg. of ind. WS conn.	Covrg. of ind. WS conn. in slums	No. of illegal WS conn.	% of illegal WS conn. to the total legal WS conn.
1	Nagpur	MC	100	44	17	51492	29.9
2	Bhusawal	A	66	43	2	11000	63.5
3	Parbhani	A	69	34	16	10000	45.5
4	Majalgaon	B	85	39	nd	2300	49.5
5	Khamgaon	B	79	49	31	2500	28.8
6	Mowad	C	29	51	32	850	80.2
7	Mudkhed	C	100	18	nd	600	54.0
8	Kaij	NP	100	52	na	1200	37.8

Key Observations and Issues: - (Coverage of Water Supply Connections in Slums)

1) Policy of granting water supply connections to individual H/Hs in slums is not uniformly followed. MCs have different policies than MCls. As per the GoM's recent GR, non notified slums before 1995 and all slums established after 1995 are not eligible for basic amenities. This may create a major barrier for ULBs in achieving benchmark of 100% coverage of individual WS connections in slums.
2) The policy differs for slums declared as legal slums and for slums undeclared. (Notified and Non-notified slums)
3) The policy differs depending upon the ownership of land on which slum settlement exists- a) Central Govt. Land, b) State Govt. Land, c) Municipal Land, d) Private Land e) Forest Land f) Salt Pan Land. *(Point no. 1, 2 and 3 are discussed in detail in the Equity Chapter of this Report.)*
4) Some ULBs like Brihan-Mumbai MC do not grant individual water connections in slums. Only group connections are granted, wherein a group shall consist of minimum 5 H/Hs.
5) Granting individual water connections also depends upon the infrastructure facilities available in the slum settlement.

b. Service Level and Quality

Key Performance Indicators:

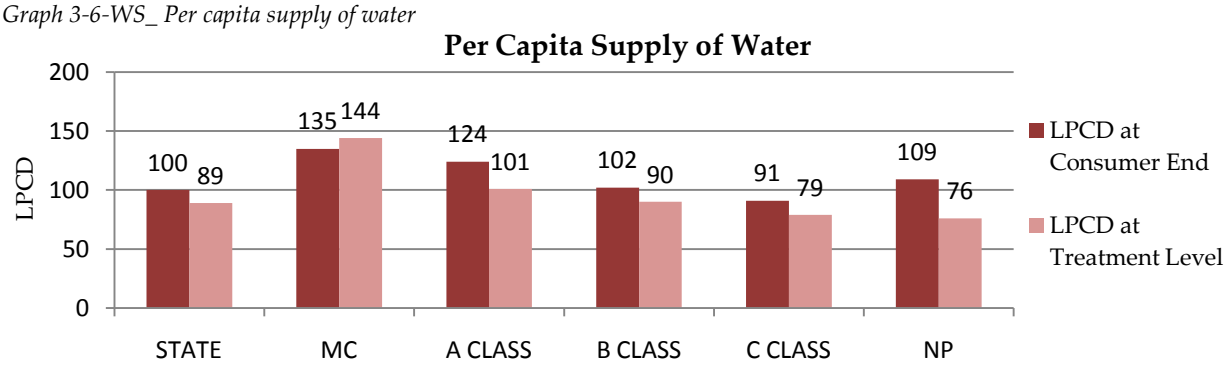
1. ***Per Capita Supply of Water***

   Definition: Total treated water supplied per day into the distribution system expressed by population Served.
2. ***Continuity of Water Supply***

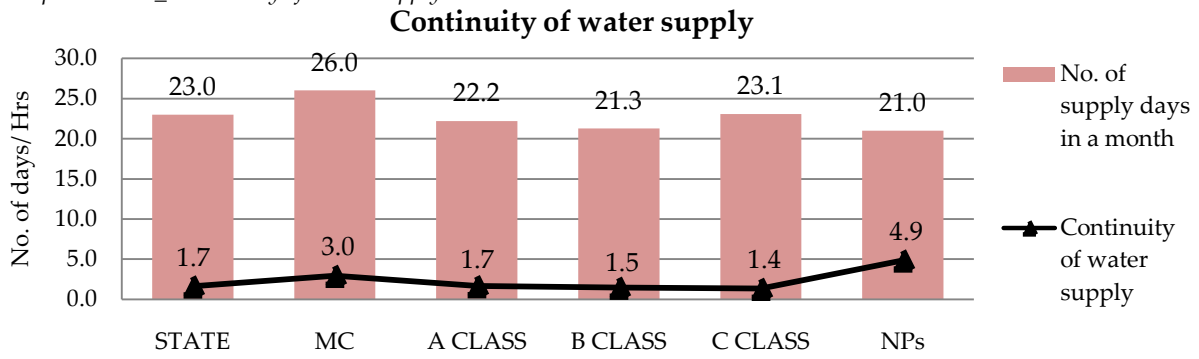
   Definition: Continuity of supply is measured as: Average number of hours of pressurized water supply per day.
3. ***Quality of Water Supplied***

   Definition: Percentage of water samples that meet or exceed the specified potable water standards and sampling regime, at treatment plant outlet and consumer points as defined by the CPHEEO.

Graph 3-6-WS_ Per capita supply of water



Graph 3-7- WS_ Continuity of Water supply



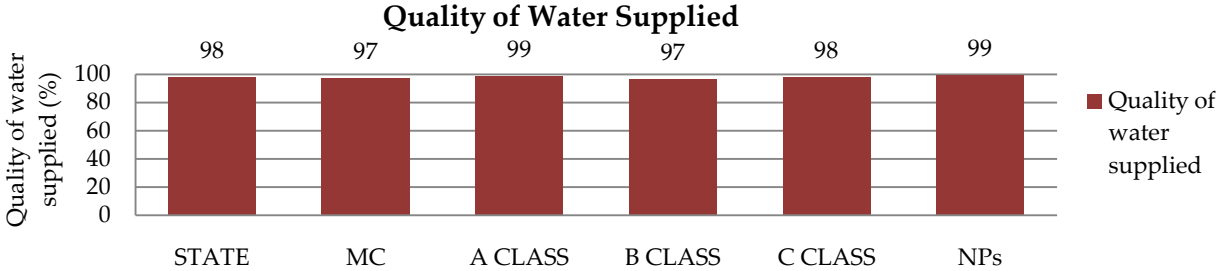
1. LPCD varies from NPs to MCs in ascending order with a substantial difference of 68 in LPCD at treatment level. Whereas, NPs record higher LPCD than B and C class MCls at consumer level.

Table 3.6-WS_Days of supply in a month

Days of Supply in a month	% of ULBs out of total
< 10 days	9
10 to 15 days	28
15 to 20 days	2
20 to 25 days	2
25 to 29 days	9
30 days	51

2. In NPs, LPCD at consumer end is 109 which is calculated on the basis of served population and 76 at the treatment level which is calculated for total population in ULB, which shows that the population served with piped supply in NPs is comparatively less.
3. Table 16 shows that 49% of the ULBs do not receive daily water supply. 6 ULBs in Aurangabad and Amravati Division receive water for just 3 to 5 days in a month. Out of total 33 ULBs receiving water for <=10 days a month, 26 are from Aurangabad and Amravati Divisions and 6 are from Nashik Divisions.
4. All ULBs in Konkan Division receive water for more than 24 days a month and in Pune & Nagpur divisions, more than or equal to 15 days a month.
5. In terms of continuity of water supply, there is no much variation across municipalities, except for NPs, where avg. is higher, because of 24 Hrs. daily water supply in Malkapur NP. For rest of NPs, avg. hrs. of supply is only 1.1, which is least amongst all the classes.
6. Continuity of water supply expressed here talks about hours of water supply in a

Graph 3-8-WS_ Quality of water supplied

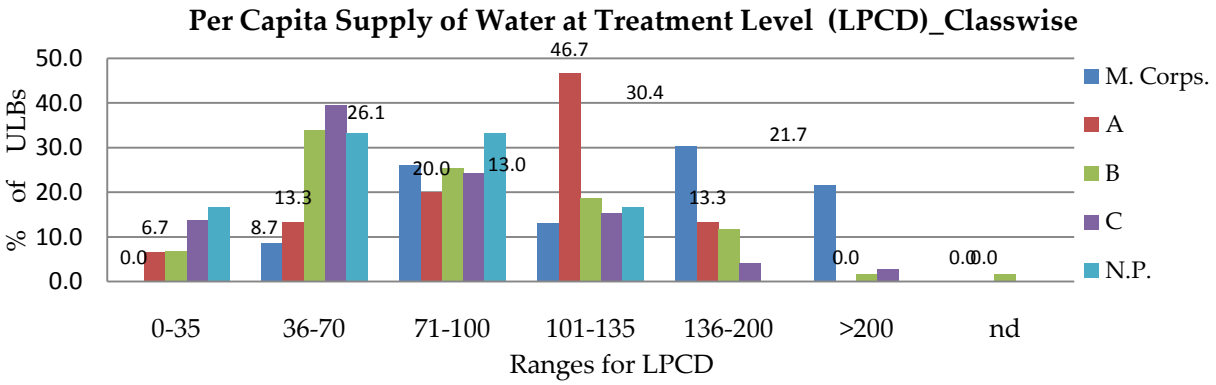


day. Further, if seen with respect to the days of supply in a month the effective hours of supply in a day at ULB level reduces substantially.

7. Almost all ULBs report quality of water supplied more than 95%. 165 ULBs out of 248 report that all the water samples tested meet the prescribed standards indicating 100% supply of potable water. This is because, in many ULBs, if the sample is rejected during any test, an immediate action is taken in the field till water sample taken passes the test.

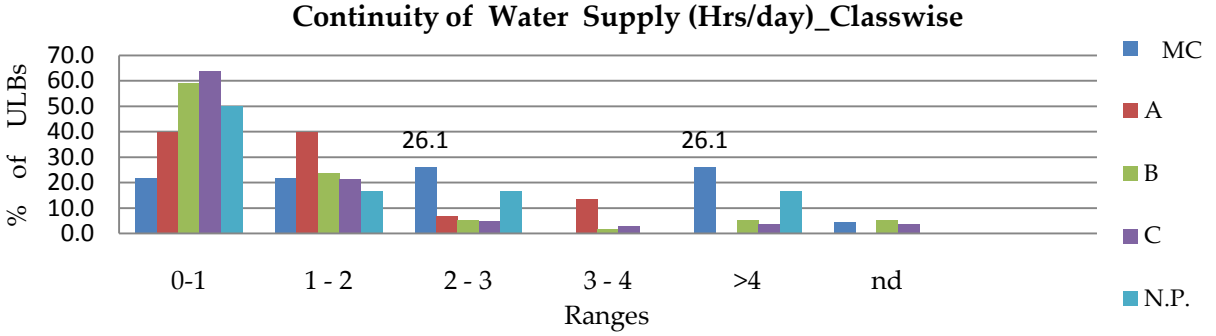
LPCD and Continuity of water supply if further seen with respect to No. of ULBs falling in various ranges of values of indicators could be discussed as follows:

Graph 3-9 WS_ Per Capita Supply of Water at Treatment Level (LPCD) _ Casswise Ranges



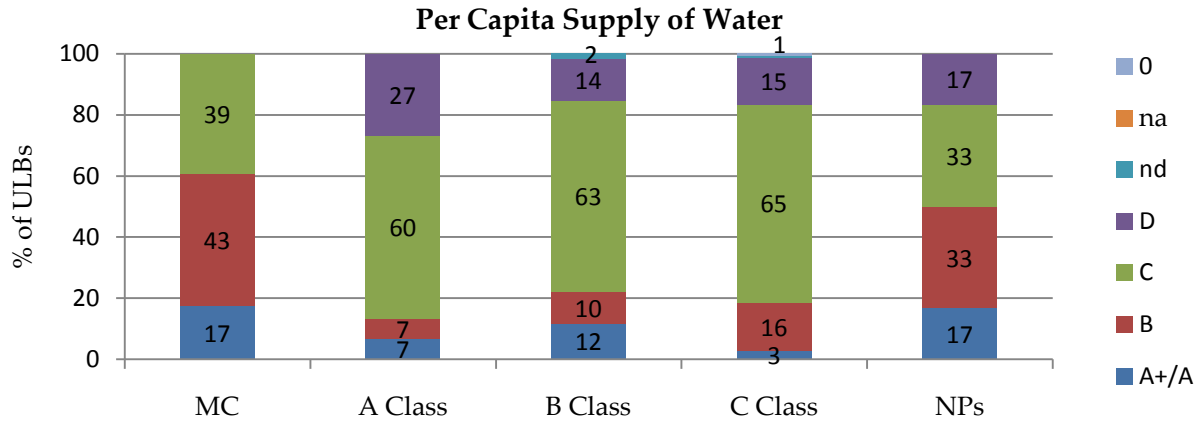
1. Around 60% A class MCls have LPCD more than 100 liters; However, 52% MCs report LPCD more than 135 liters. Very few B and C class ULBs have crossed the benchmark of 70 or 135 LPCD, as per the norms specified in CPHEEO manuals. Majority of MCls have hours of water supply ranging from 0.3 to 1 hr/day and majority of MCs have hours of water supply ranging from 2 to 3 or more than 4 hrs/day.
2. Though the class level averages of continuity of water supply are not more than 5 hrs, there are several ULBs, not only MCs but also MCls, that are coming up with innovative models for implementing 24 X 7 water supply either totally or partially. (*Box no. 1)*

Graph 3-10 WS_ Continuity of Water Supply (Hr./day)_Classwise Ranges



Reliability Analysis_ Per Capita Supply of Water

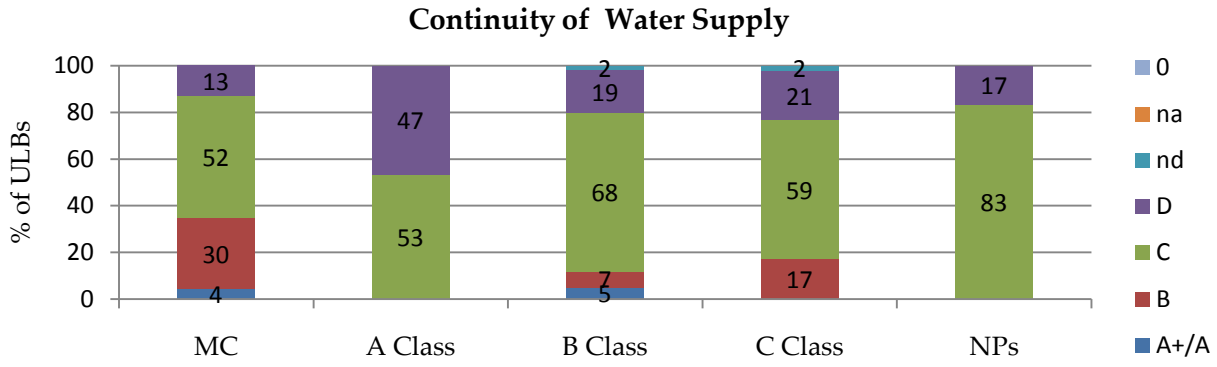
Graph 3-11-WS_ Reliability _ Per Capita Supply of Water



1. Graph 3-11 indicates that 43% of the MCs have reported B reliability for the said indicator. In case of MCls, the reliability for more than 60% ULBs shifts to lower scale i.e. C reliability except for NPs. Only 10 MCs out of 23 report reliability A showing that they have records of water distribution based on the bulk water meters.
2. MCs like Greater Mumbai, Navi-Mumbai, Pimpri-Chinchwad, and Nagpur record the data to the reliability scale of A. The indicator value for these ULBs is also more than the benchmark of 135 lpcd. MCls like Karad and Kulgaon Badlapur have also shown reliability A with higher values of the indicator.

Reliability Analysis_ Continuity of Water Supply:

Graph 3-12-WS_ Reliability_ Continuity of Water Supply



1. There are only 4 ULBs in the state which have automated systems like SCADA to monitor the hours of water supply and the zone wise population is based on past trends or surveys. Out of these Greater Mumbai is the only MC which has reported B reliability with 2.5 average hrs of supply.
2. It is clear from above graph that more than 50 % of the ULBs have reported C reliability indicating that majority of the ULBs in Maharashtra do not have proper

maintained records both manual or computerized for hours of pressurized water supply.

Key Issues

1. While calculating LPCD, the pressure criteria could not be verified as many ULBs do not have pressure measuring and recording systems in place.
2. Water Supply timings are mainly based on valve operation schedule.
3. ULBs do not have specific guidelines on number of water samples to be tested for residual chlorine, chemical and bacteriological tests.
4. Guidelines are also necessary in selecting location for collection of samples and the methodology in collection of samples.
5. Third party audit of quality of water is not being practiced in majority of ULBs.

Box no. 1
CONTINUOUS WATER SUPPLY- (Good Practices)

Kulgaon Badlapur Municipal Council

KBMC switches to a continuous water supply regime on a pilot basis, using a hydraulic modeling process to successfully provide round the clock and reliable potable water supply. Having successfully carried out leak management, upgradation of distribution network, efficient practices and financial reforms in the pilot zone, the efforts of the Maharashtra Jeevan Pradhikaran, is now focused on providing continuous water supply to the entire city.

Malkapur Nagar Panchayat

Malkapur has taken an initiative for providing 24x7 Water Supply since year April 2009. The 24x7 water supply scheme compliments the metering of water connections which ensures no wastage of water by the residents. For maintaining continuous supply and to reduce water losses, special types of pipes are used. For a length of 56 kms HDPE pipes and for 8 Km DI pipes are used.

Navi Mumbai Municipal Corporation

Navi Mumbai partially achieves its vision of working towards 24x7 water supply by acquiring and operating its own source of water. The key features of this initiative are the pro poor bias in the provision of water supply along with technical and financial reforms.

Till the year 1999, water supply for the NMMC area was operated and maintained by the City and Industrial Development Corporation (CIDCO) and later (1 November 1999) it was handed over to NMMC. The Navi Mumbai MC purchased potable water from Maharashtra Jeevan Pradhikaran (80 MLD), Maharashtra Industrial Corporation (100 MLD) and City & Industrial Development Corporation (20 MLD), and supplied to 70% of its area for three hours in the mornings and an hour in the evening. The NMMC had been purchasing water at the rate of Rs. 7.50 per cum to MJP and MIDC and charged the citizens Rs. 4.75 per cum. The subsidy was a heavy burden on the finances of NMMC. Besides the financial burden, low water pressure and inadequate water supply was a cause of concern in certain areas of NMMC. NMMC, therefore, decided to acquire its own independent and operational source of potable water and a water treatment plant.

The NMMC appointed a committee to estimate water demand, assess its financial strength and decide on the feasibility of developing its own source by constructing a dam.

The corporation carried out extensive leak detection programmes through physical testing at critical points and also by using the conventional method, thereby reducing unaccounted for water significantly. Of the 32 distribution zones, 12 zones are being supplied with 24 hours of water per day while the remaining are supplied water for 8 hours a day.

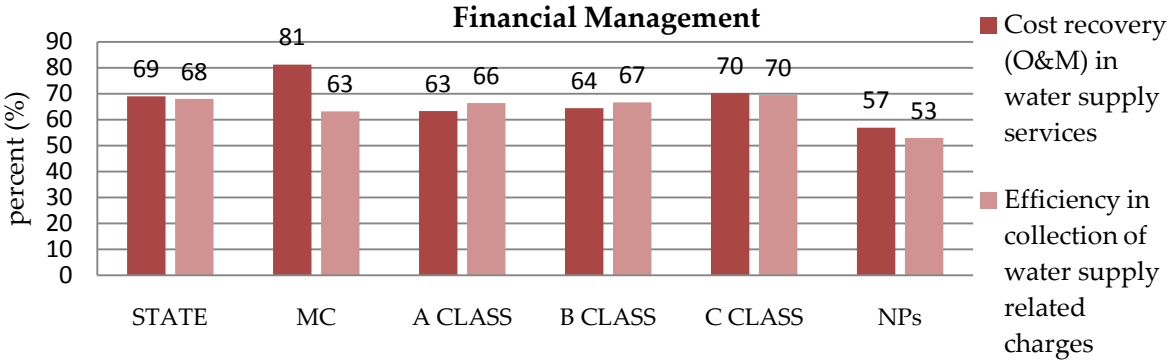
Compulsory metered connections were approved for urban area, slums and *gaothan* areas in 1999 itself. Subsequently, meters were installed at all residential connections thus enabling the corporation to provide 24X7 water supply for the entire city.

c. Financial Management

Key Performance Indicators

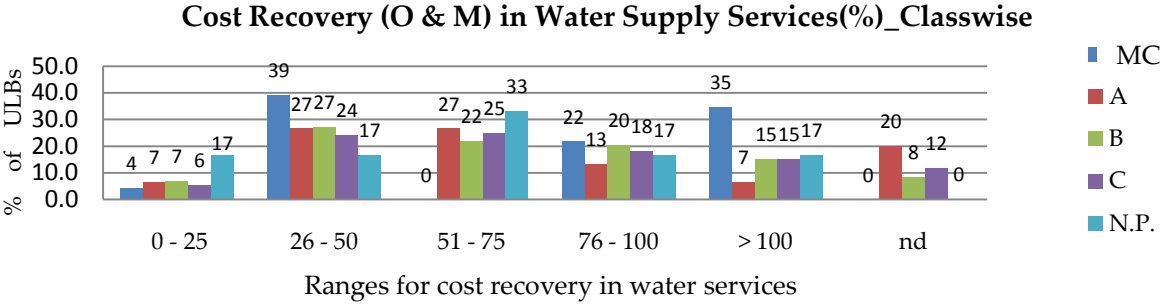
1. ***Cost Recovery(O&M) in Water Supply Service:***
   Definition: Percentage of total operating revenues from water supply-related charges to total operating expenses on water supply
2. ***Efficiency in Collection of Water Supply Related Charges:***
   Definition: Percentage of current year revenues collected from water supply related taxes and charges as a percentage of total billed amounts (for water supply)

Graph 3-13-WS_ Financial Management



Relatively, no variation in averages of cost recovery in (O & M) water supply and efficiency in collection of water supply related charges at class level. Higher cost recovery in MCs than efficiency in collection of charges, indicates that MCs acquire more other revenue income than only taxes and charges.

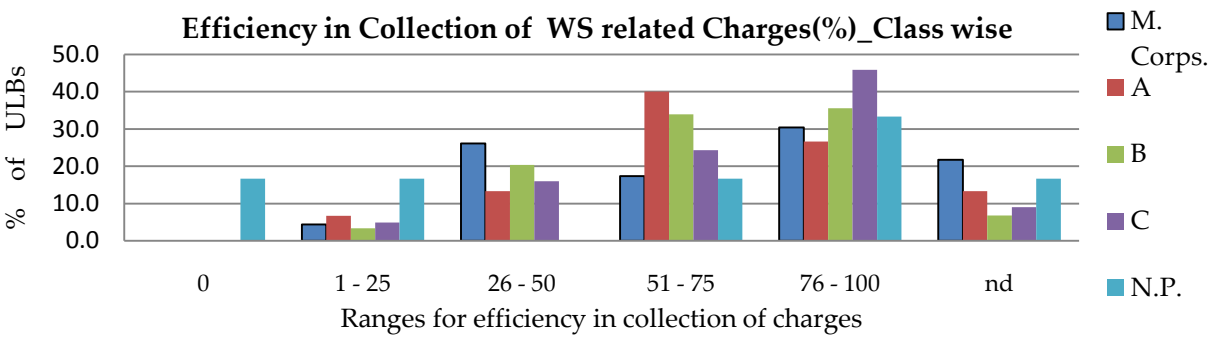
Graph 3-14-WS_ Cost Recovery (O&M) in Water Supply Services (%)_ Classwise



Ranges for cost recovery in water services

1. Surprisingly, in one of 6 Nagar Panchayats, efficiency in collection of water supply related charges is 0% in 2008-09.

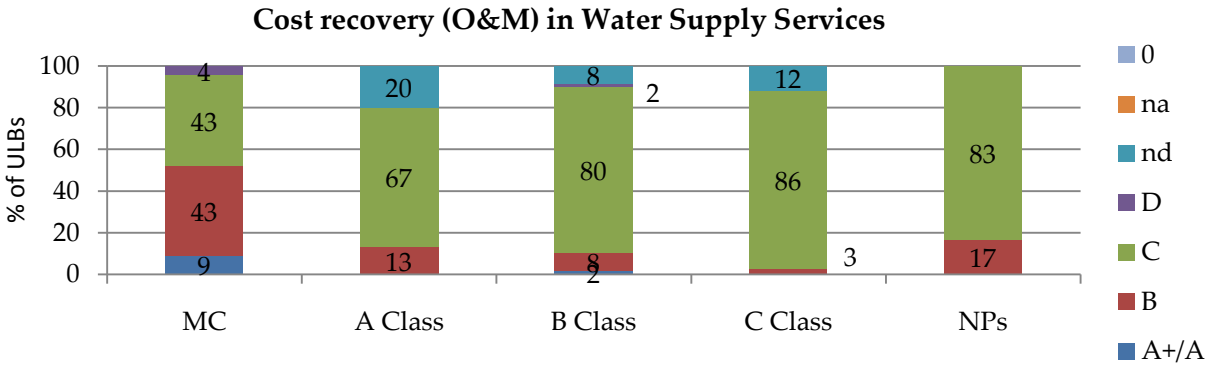
Graph 3-15- WS_ Efficiency in Collection of Charges(%)_ Classwise Ranges



2. B and C class municipal councils and NPs illustrate an analogous behavior of fluctuation within the ranges of finance related KPIs vis-à-vis that in MCs and A class MCls.

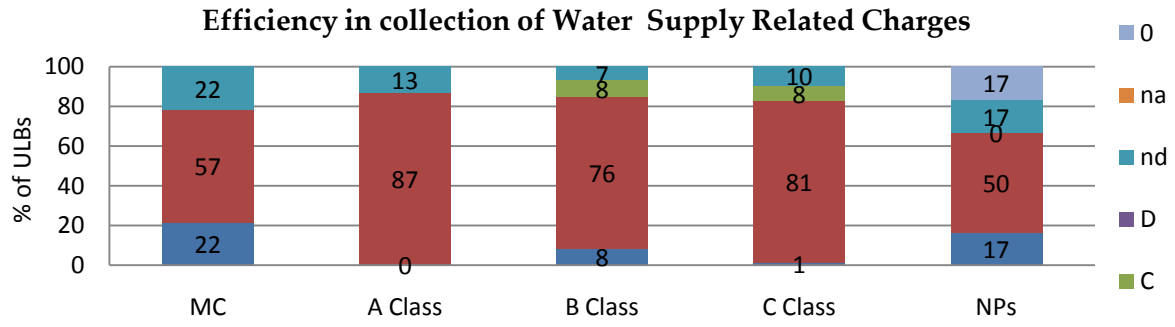
Reliability Analysis_ Cost recovery (O&M) in Water Supply Services

Graph 3-16-WS_Reliability_Cost recovery (O&M) in Water Supply Services



1. Pimpri-Chinchwad MC has reported Reliability A as it maintains segregated heads for all the three sectors. Along with double entry accounting system it also practices cash based accounting.
2. More than 75% ULBs in Maharashtra have reported C reliability indicating that these ULBs have partially segregated heads for water supply, waste water and solid waste management. This also means that 75 % (196) ULBs depends upon cash based accounting system.

Graph 3-17 WS_Reliability analysis_ Efficiency of Collection of Water Related Charges



3. For efficiency in collection of water related charges, 13 ULBs fall under A+ or A reliability. It indicates that these 13 ULBs report to have accrual based accounting system and DCB table are linked to the billing and collection systems. 192 ULBs out of total 222 reported, fall under reliability B, which indicates that 192 ULBs do not follow accrual based accounting system but the DCB tables are linked to the billing and collection systems.

Key Observations and Issues

1. Majority of the ULBs do not practice separate accounting system for each of water supply, sewerage, solid waste management and storm water drainage services, except for a few MCs who have separate budgets for water supply and sanitation services.
2. Double entry accounting system, even though initiated by the GoM, is not practiced fully. Ring fence accounting system is not also implemented.
3. Tariff for water supply, is inadequate to meet revenue expenditure on O & M.
4. Water Charges are billed in the following manner-
    a) Volumetric: where meters are provided on the connections.
    b) Telescopic Billing System: Higher the consumption, higher the rate, based on consumption slab defined.
    c) Size of ferrule
    d) Flat wise
5. Water tax as percentage of property tax.
6. Frequency of billing - monthly, quarterly, half yearly or yearly.
7. Proper maintenance of records of bills issued, revenue received, and action taken against defaulters is not up to date in many ULBs.
8. Other water supply related charges are:
    a. Cost of application form for water connection.
    b. Water Connection charges
    c. Meter removal/ fixing/ repairing/ testing charges
    d. Charges for supply of water by tankers
    e. Penal charges for delay in payment of bills towards water supply.

These charges are one time charges and are normally recovered in advance except Penal Charges which are recovered along with bills for water supply.

d. Spatial Equity

Key Performance Indicators:

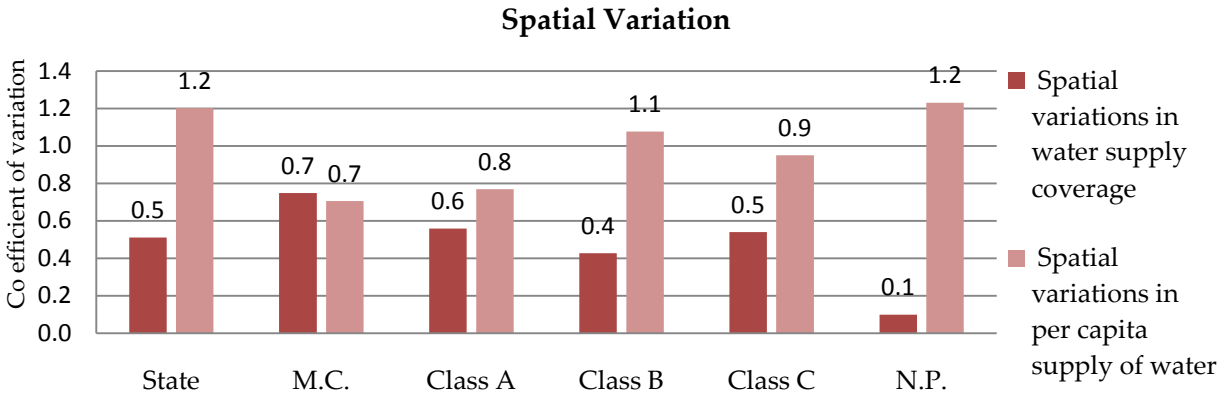
1. ***Spatial variations in coverage of water supply connections***

Definition: Coefficient of variation (defined as standard deviation divided by mean) of zonal values for "total households connected to the water supply network with individual (not shared) service connection, as percentage of total households"

2. ***Spatial variations in per capita water***

   Definition: Coefficient of variation (defined as standard deviation divided by mean) of zonal values for "Total treated water supplied into the distribution system expressed by population served per days of water supplied"

Graph 3-18- WS_ Spatial Variation



On the spatial equity front, except for MCs, all classes have reported, higher coefficient of spatial variation in per capita supply of water than that in coverage of WS connections. This highlights the issue of uneven distribution of water within the municipal limits, which is more prominent than the issue of laying physical distribution network and eventually WS connections at the consumer end.

Key Issues:

1. Majority of ULBs were unable to provide ward wise data to be able to calculate spatial variation indicators, as they do not maintain the ward wise records.
2. Even if it is available, a spatial unit used for recording such data is different for different data heads, which does not help in capturing and comparing different data sets.

e. Efficiency in Service Operations

Key Performance Indicators:

1. ***Extent of Non-Revenue Water****:*

   Definition: Difference between total water produced (ex-treatment plant) and total water sold expressed as a percentage of total water produced.
   (NRW includes: (a) consumption which is authorized but not billed, such as public stand posts; (b) apparent losses such as illegal water connections, water theft and metering inaccuracies; (c) real losses which are leakages in the transmission and distribution networks)

2. ***Extent of Functional Metering of Water Supply Connections****:*

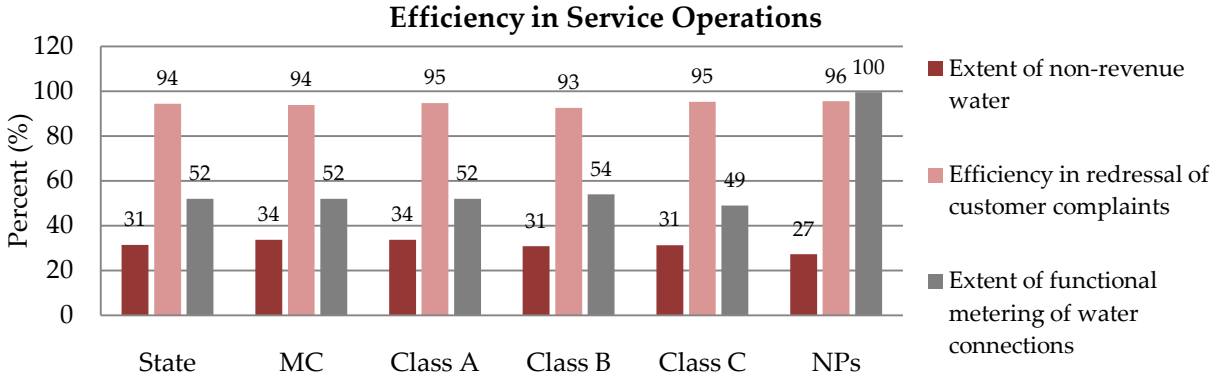
   Definition: Total number of functional metered water connections expressed as a percentage of total number of water supply connections (including public stand post connections)

3. ***Efficiency in Redressal of Customer Complaints:***

   Definition: Total number of water supply-related complaints redressed within time stipulated in citizen charter of the ULB, as a percentage of the total number of water supply-related complaints received in that year.

In terms of efficiency in service operations of water supply, 3 aspects were taken into consideration, which are non revenue water (NRW), redressal of customer complaints and functional metering of WS connections. For State level and classwise presentation, extent of functional metering of WS connections is calculated for only those ULBs practicing metering of WS connections.

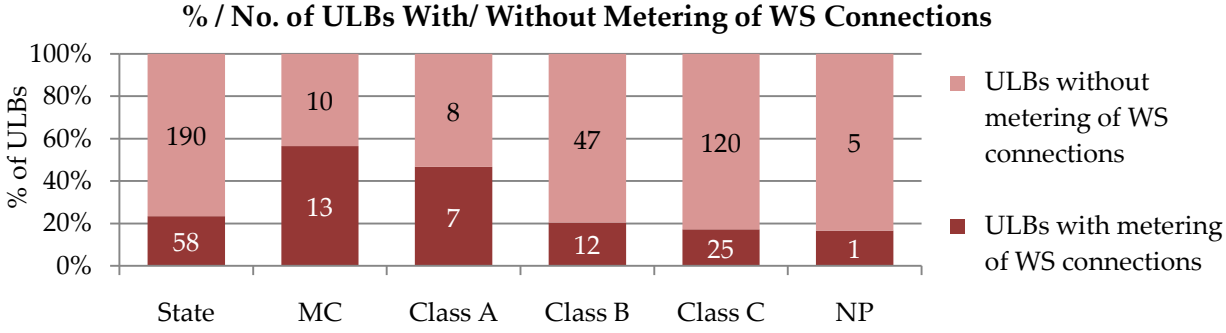
Graph 3-19- WS_ Efficiency in Service Operations



Though overall NRW values do not show significant variation across the classes, the sub-factors of NRW such as unavoidable real losses, water thefts (illegal connections and others) and non metered consumption shows considerable variation across classes and divisions (geographical locations)

1. As discussed earlier in the state level scenario, 58 ULBs out of 248 have initiated practicing metering of WS connections. These 58 ULBs are spread across the classes as follows:

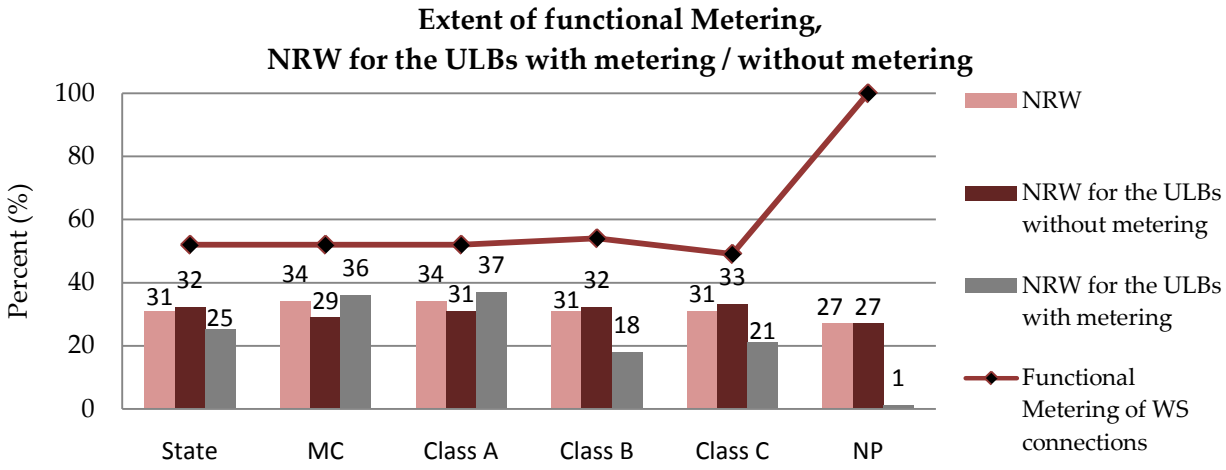
Graph 3-20-WS_%/ No. of ULBs With/Without Metering of WS Connections



2. Class level average of NP in functional metering of WS connections is 100%, because of only one ULB, Malkapur, having extent of functional metering equal to 100%. All rest NPs, do not even practice metering.

3. Across the classes, redressal of water supply related complaints is more than 90%. Redressal of complaints is recorded by the ULBs on the basis of norms specified in their citizen charters.
4. Though redressal of customer complaints is an independent activity, NRW and functional metering of water supply connections have a strong interrelation.

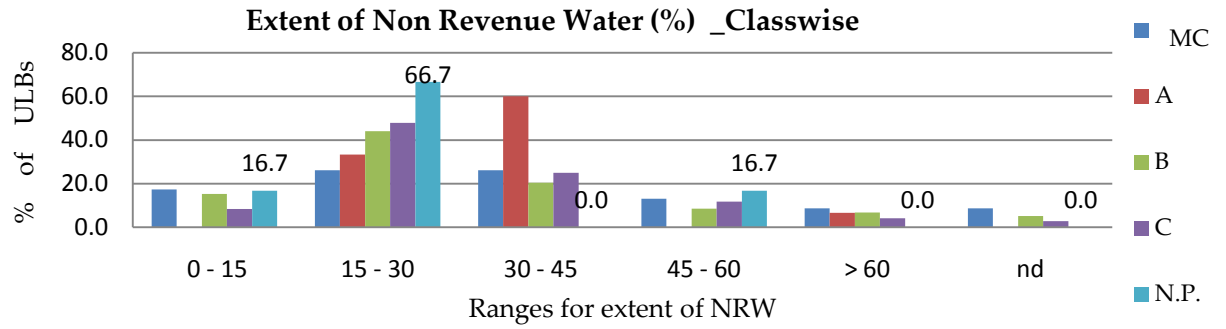
Graph 3-21-NRW of ULBs With /Without Metering



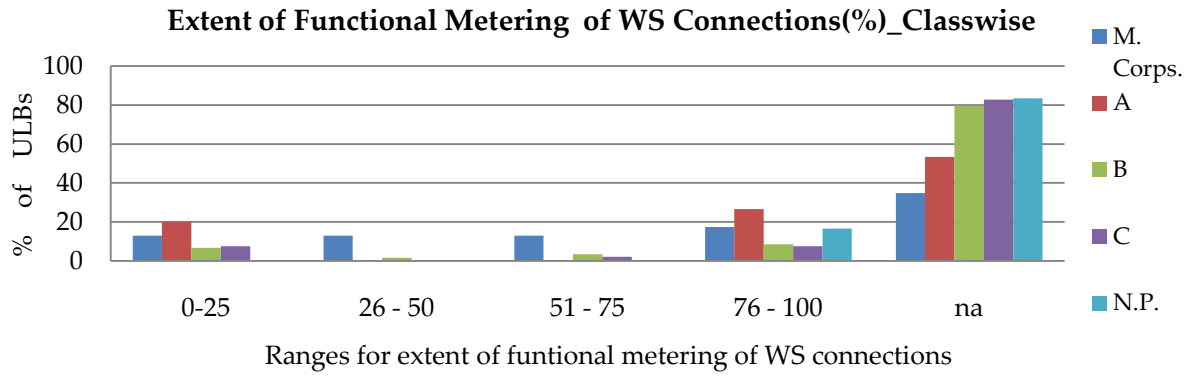
Though at state level, NRW for the ULBs practicing metering is less than that of the ULBs without practicing metering, MCs and A class MCls illustrate an inconsistency in the behavior, wherein, NRW for the ULBs having metering of WS connections in place, is more than that of the ULBs without metering. It is likely in case of MCs and A class MCls, that the NRW in the ULBs having metered connections is captured accurately because of metered quantity of consumption, than that in the ULBs having non-metered connections, wherein the NRW is calculated on the basis of estimations on daily water consumption which may not reflect the factual values of NRW.

Except for A Class MCls, NRW for majority of ULBs across other classes fall in between 15% and 30%. A Class MCls show altogether a different pattern, in which around 70% ULBs have recorded NRW more than 31%, which is the average value of NRW at state level.

Graph 3-22-WS_ Extent of Non Revenue Water (%)_ Classwise



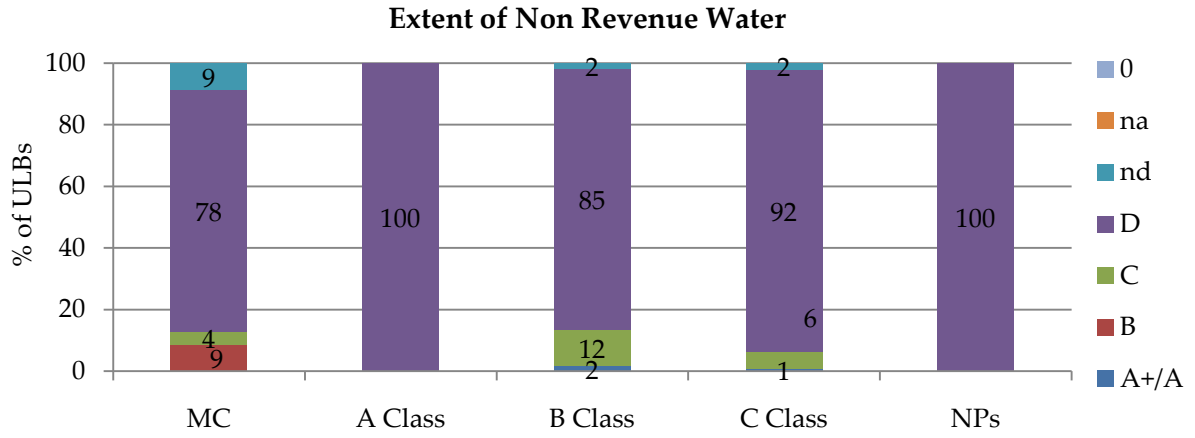
Graph 3-23- WS_ Extent of Functional Metering_ Classwise



Majority of ULBs in each class show functional metering of WS connections falling in between either 0+% to 25% or 76% to 100%. Out of total 58 ULBs in state, 21 (36%) record extent of functional metering of WS connections in between 0+ to 25%. Out of these 21, 17 ULBS, including 2 MCs, 3 A class, 4 B Class and 8 C class MCls. have initiated practicing metering of WS connections by metering only industrial or commercial WS connections and their extent of functional metering falls within the range of 0+ to 2%.

Reliability Analysis_ Extent of Non Revenue Water

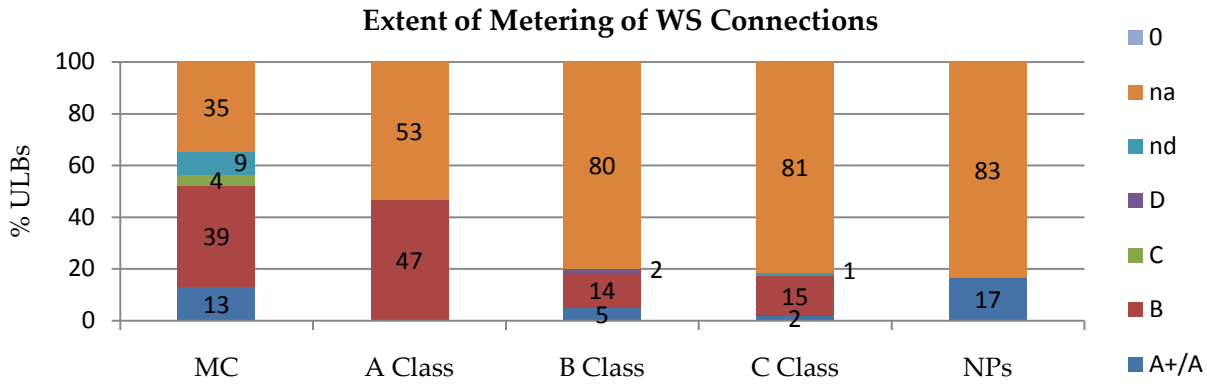
Graph 3-24-WS_Reliability Analysis Extent of Non Revenue Water



1. Karanja and Daryapur are the only two ULBs which have reported reliability A for non revenue water. The quantity of water produced is computed based on bulk water meters. Karanja has reported 10% NRW with the reliability A.
2. 90% of the ULBs have reported D reliability for the said indicator. The indicator is computed based on the estimations furnished by the ULBs which do not maintain any records of quantity of water consumed.

Reliability Analysis_ Extent of Metering of WS Connections

Graph 3-25-WS_Reliability_ Extent of Metering of WS Connections



1. Navi-Mumbai is the only MC with reliability A+ for extent of WS connections with the indicator value of 83%. Out of 248 ULBs only 10 ULBs have reported A/A+ reliability.
2. Malkapur NP has 100% extent of metering of WS connection and a reliability scale of A. Anjangaon-Surji, Vengurla, and Karanja are some of the MCls which have reported more than 90% extent of metering of WS connections

Key Issues:

1) Most of the data furnished by the ULBs having no metered connections in place is not based on actual measurements of consumption but on estimations.
2) Many ULBs could not even provide estimations on the quantity of water that is consumed per connection per hour.
3) Universal metering of consumer connections is not practiced by many ULBs.
4) As discussed, some ULBs have provided meters only to the commercial or industrial connections, as the tariffs for water supply to these consumers is at a higher rate than the residential.
5) Meter management, especially maintenance of meters is observed to be difficult due to which the local bodies are not keen in metering of consumer connections.
6) Ownership of the meter is another issue, ULBs are not certain about this aspect. Some corporations have ownership with themselves whereas some have put on the ownership on the consumers.
7) Defective meter is to be repaired and tested or needed to be replaced by the owner.
8) Many ULBs do not have meter repairing and meter testing facility in place. This work is done by the private agencies. There are no enough private agencies for repairing and testing of meters at city level.

9) Even though the ULBs are having a procedure for getting non-functional meters on connections to be repaired and tested by the owner, the persuasion of action is rather slow.

3.1.2.2 Context Information Based Assessment

a. Water Production

Chart 3-7- WS_ No. of ULBs by Water Sources at State Level

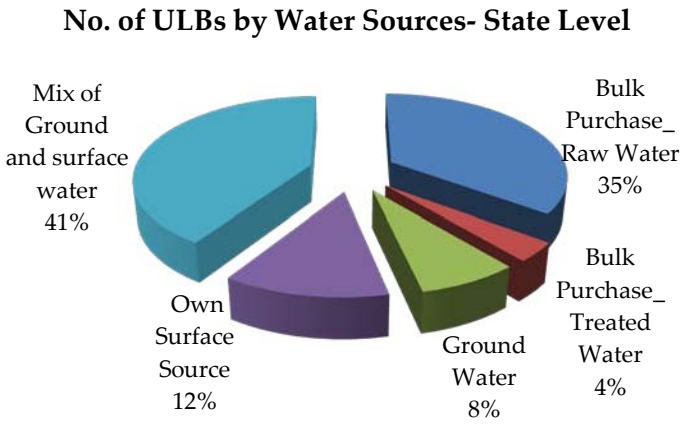
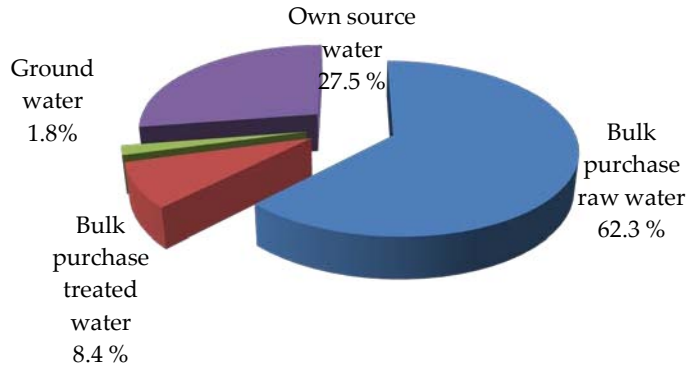


Chart 3-3 shows types of sources of water supply and the percentage of ULBs drawing water from each type of water source.

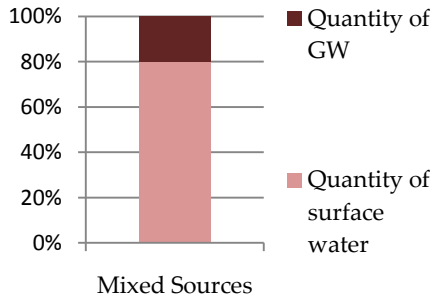
1. 51% ULBs are completely dependent on surface water sources.

2. 41 % ULBs depend on mix-ground and surface water sources, Out of total quantity of mixed water, 80% is surface water and only 20% is ground water.

Chart 3-8- WS_ Water Quantity by Sources at State Level



Graph 3-26- WS_ Water Source _GW & SW



At state level, total quantity of water lifted daily by the ULBs is approx. 9690 MLD, out of which more than 62% is the bulk purchase raw water.

Table 3-7 focuses on the number of ULBs in each class which are dependent on ground water supply and the quantity of GW that is being utilized by each class ULBs. No. of ULBs

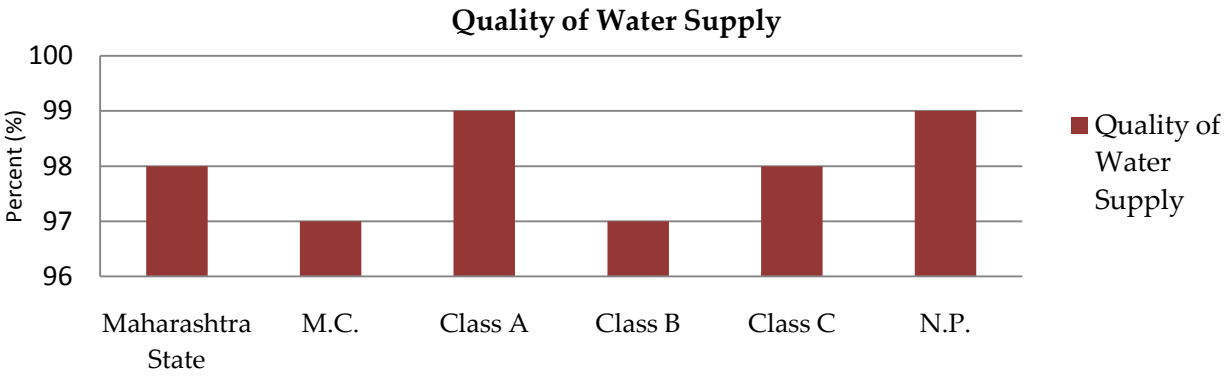
Table 3-7: No. of ULBs vis-à-vis type of water

GROUND WATER USAGE	MC	A	B	C	NP
No. of ULBs dependant on ground water	4	6	19	62	3
% to total ULBS using GW	4.3	6.4	20.2	66	3.2
% to total ULBs in resp. class	17	40	32	43	50
Quantity of GW	43.5	16.6	56.7	54.9	1.5

that are dependent on GW are more in C class, but the quantity of GW that is being utilized is more in B class ULBs.

b. Water Treatment

Graph 3-27-WS_ Quality of Water Supply



By and large, all classes have reported quality of water supplied to the consumers more than 95%. Though the quality of supplied water is near to the benchmark in almost all ULBs, 53 ULBs do not even have water treatment plants in place. This could be further classified as given in Table No. 3-8.

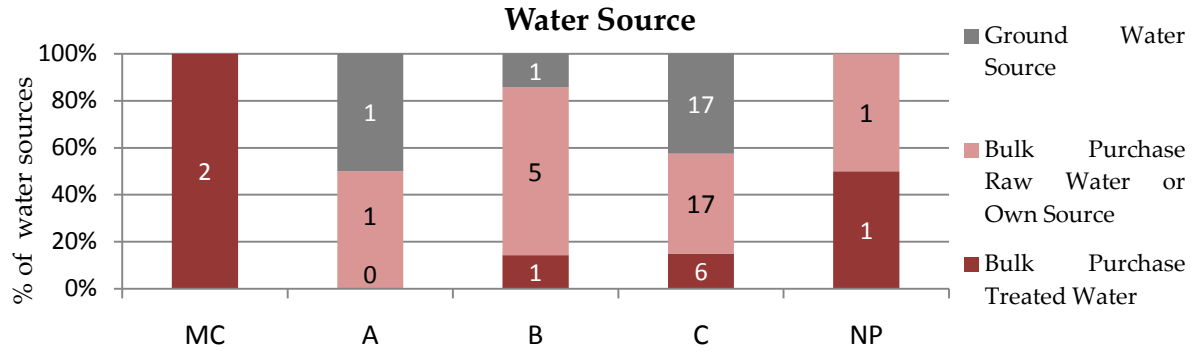
Table 3-8- WS_ no of ULBs with No WTP

No. of ULBs with No WTP		
Bulk Purchase Treated Water	Bulk Purchase Raw Water or Own Source	Ground Water Source
10	24	19
	53	

No. of ULBs with No WTP				
MC	A	B	C	NP
2	2	7	40	2
		53		

Out of 53, 10 ULBs purchase treated water in bulk and thus are assured about the quality of water that they purchase. However, 24 ULBs either purchase surface raw water in bulk or have their own source of surface water and the water they supply to the consumers needs to be treated on daily basis. In such cases, quality of water is taken care by just introducing an adequate amount of chlorine in the water distribution reservoirs itself.

Graph 3-28- WS_ Water Sources



c. Water Distribution

Water Distribution is one of the important components of an entire water supply system as majority of the performance indicators are directly dependent on the distribution system. They include 6 out of total 12 KPIs as follows-

1. Coverage of water supply connections
2. Continuity of water supply
3. Spatial variations in water supply coverage
4. Coverage of WS connections in 'slum settlements'
5. Extent of non-revenue water
6. Efficiency in redressal of customer complaints

The distribution system comprises of – Treated water, transmission main, service reservoirs and pumping stations (Distribution Stations) and distribution network to supply water from service reservoir to the consumers through water connections. Function of distribution system is to supply water in adequate quantity, at designed pressure and of good quality.

100% coverage of water distribution network- area wise is necessary to provide access to water supply to all the citizens in the ULB. Proper operation and maintenance of water distribution system results in to minimum NRW and lesser customer complaints.

Non-Revenue Water is largely constituted of water losses and water consumption through illegal and exempted connections. Illegal connections often could be a major component of non-revenue water even if the physical network is flawless. Eg Latur (A)

Latur, A class MCl, conducted a survey to assess unauthorized consumption of water in the ULB and found 10,000 connections in the ULB to be illegal, which is more than 30% of the total no. of connections in the ULB. This resulted into higher NRW as 34%, which was reduced substantially by regularizing 7300 (73%) illegal connections out of total 10000.

The aspect of illegal connections could also be looked at from the coverage of WS connections point of view. ULBs like Parbhani, Majalgaon and Mukhed present a situation wherein, coverage of WS network is much more than that of individual water supply connections. Coverage of individual WS connections in such ULBs may portray a lower range as no. of illegal individual connections is not getting captured under the coverage aspect. Illegal connections could also be seen with respect to coverage of individual WS connections in slums, as there are more probabilities of illegal connections occurring in slums. Eg. 16% coverage of WS connections in slums in Parbhani could be upgraded just by regularizing illegal connections in slums, which may also help in reducing NRW and increasing ULB level coverage of individual connections of water supply as well.

Table 3.7- WS_ Water Distribution

Illegal Consumption Vs NRW and Coverage of Connections.						
ULB	CLASS	Coverage of distribution network	Coverage of WS connections	Coverage of WS connections in slums	% of illegal connections to total legal connections	**Extent of NRW**
Parbhani	A	69	34	16	45.5	**44**
Majalgaon	B	85	39	nd	49.5	**51**
Mudkhed	C	100	18	nd	54.0	**41**

Increasing NRW eventually leads to reduction in efficiency in water supply related charges. Regularization of illegal connections may enhance ULB's performance by improving coverage, lessening NRW and increasing efficiency in water supply related charges. Mumbai and Thane MCs have recently initiated practice of regularization of illegal connections under Amnesty Scheme. The incentive behind the scheme is- ***'If a consumer has not paid the water bill, he can pay the full outstanding amount in the next two months and get a rebate on the 2 % additional charges'***

Navi Mumbai Municipal Corporation:

Private Sector Participation*- A tool to improve efficiency in Service Delivery by strengthening operation and maintenance of water supply system-*

Outsourcing the operation and maintenance of the water supply system via a performance based contract in Navi Mumbai has resulted in an **80% reduction in complaints** on water pressure and quality and a perceptible increase in revenues of the Navi Mumbai MC

The NMMC took over the water supply system from the City and Industrial Development Corporation (CIDCO) on November 1st, 1999. NMMC had limited manpower for carrying out Operation and Maintenance (O&M) work of water supply. Managing the Operation and Maintenance posed an administrative and technical challenge for NMMC. This is because each of the various components of O&M were out sourced to assigned to a different agency/ contractor viz. electrical, piping, pumps and valves, tanks and chambers, water supply operations, water supply connections, billing and recovery, processing and bill preparation . This made coordination and quality supervision difficult; as a consequence there was frequent breakdown of systems. Further, there was inadequate interface with customers and there was no system for communication and poor mechanism for registering and redressal of complaints.

NMMC integrated all functions related to O&M in a single contract. Having a single contractor responsible for all O&M Functions has reduced administrative transactions significantly as well as improved monitoring of O&M activities. NMMC officers now have adequate time to focus on strategic and long term activities like contingency planning, introduction of 24X7 water supply planning, and MIS.

Effective monitoring of the performance of the contractor who is responsible for O&M of the entire water supply system has resulted in better revenues and efficiency. The NMMC is now able to focus on strategic improvements for the sustainability of the project.

d. Water Demand and Proposed Water Augmentation-

Table 3.8- WS_ Water Demand & Proposed Water Augmentation

	Population (2009)	Floating Population (2009)	Current Supply (MLD)	LPCD as per CPHEEO Norms (Ltr.)	Res. Demand (with LPCD= 135/70) (MLD)	Assumptions			Total Demand without losses (MLD)	Total Demand considering 15 % losses (MLD)	Demand Supply Gap (MLD)	Water Augmentation in next 3 years (MLD)
						10% Institutional Demand (MLD)	3% Commercial Demand (MLD)	2% Industrial Demand (MLD)				
BMC	13893488	3500000	3720	150	2609	261	78	52	3000	3530	-190	**455**
MC	22621894	695800	4641	150	3498	350	105	70	4022	4732	91	**1362**
A	3168225	318000	388	135	471	47	14	9	541	637	248	**109**
B	4238719	398282	482	70	325	32	10	6	373	439	-43	**354**
C	4018232	543558	431	70	319	32	10	6	367	432	1	**263**
NP	170309	170750	12	70	24	2	1	0	27	32	20	**2.3**
STATE	**48110868**	**5626390**	**9675**		**7245**	**725**	**217**	**145**	**8332**	**9802**	**127**	**2545**

Taking into consideration the LPCD norms specified in CPHEEO manual vis-à-vis current population in state, current water demand, at state level, for year 2009 could be calculated approximately as equal to 9802 MLD, wherein current water supply is only 9675 MLD. Though state level supply is in deficit, class level demand and supply gap may vary significantly. Table above highlights water supply deficits in MCs, A & C class MCls and NPs and water supply surplus in Brihan-Mumbai MC and B class MCls. LPCD in Brihan-Mumbai MC and B Class MCls, calculated on the basis of current water consumption are 183 and 89 respectively, which exceeds norms of LPCD specified in CPHEEO manual. However, for rest of MCs and MCls, water demand could be met with water supply augmentation in upcoming years proposed under JNNURM etc.

Table 3.9-WS_Water Augmentation

	141 (58%)				
No. of ULBs with augmentation of water supply in next 3 yrs	MC	A	B	C	NP
	13	6	41	78	3
% of ULBs out of total ULBs having augmentation	9	4	29	55	2
% of ULBs out of total ULBs in the class	65	40	69	54	50

Looking at the class wise classification of proposed water augmentation, it could be noticed that the major share of it goes to MCs than C class MCls and NPs where the requirement is more.

3.1.3 Divisionwise Thematic Assessment

Map 3-1- Maharashtra State- Divisions

Divisions in Maharashtra:

Maharashtra is divided into thirty four districts, which are grouped into six divisions: **Konkan, Pune, Nashik, Amravati, Aurangabad and Nagpur**. These are official revenue divisions of Government of Maharashtra.

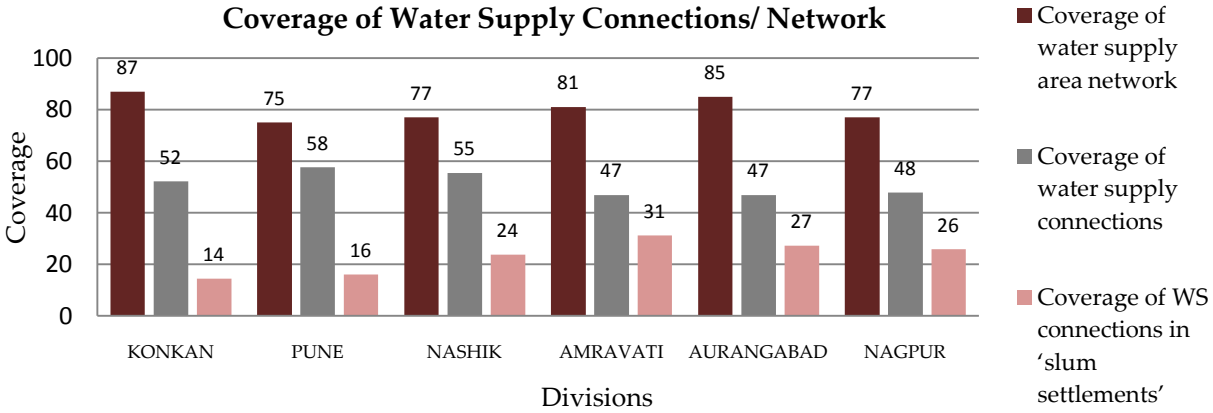
Geographically, historically and according to political sentiments Maharashtra has five main regions: Konkan (Konkan Division). Desh or Western Maharashtra (Pune division), Kandesh and Northern Maharashtra (Nashik Division), Marathwada (Aurangabad Division) and Vidarbha (Nagpur and Amravati divisions)

Muncipal Services such as Water Supply, Sanitation and Solid waste management could be further studied with respect to the state's administrative as well as geographical set up constituted by of 6 divisions.

3.1.3.1 Performance Indicators Based Assessment

a. <u>Access and Coverage</u>

Graph 3-29- WS_ Access and Coverage_ Division wise



Alike 5 classes, 6 divisions also witness higher coverage of water supply network in terms of area than coverage of water supply connections. Though Pune divison indicates lowest coverage of water supply area network, it has achieved highest coverage of water supply

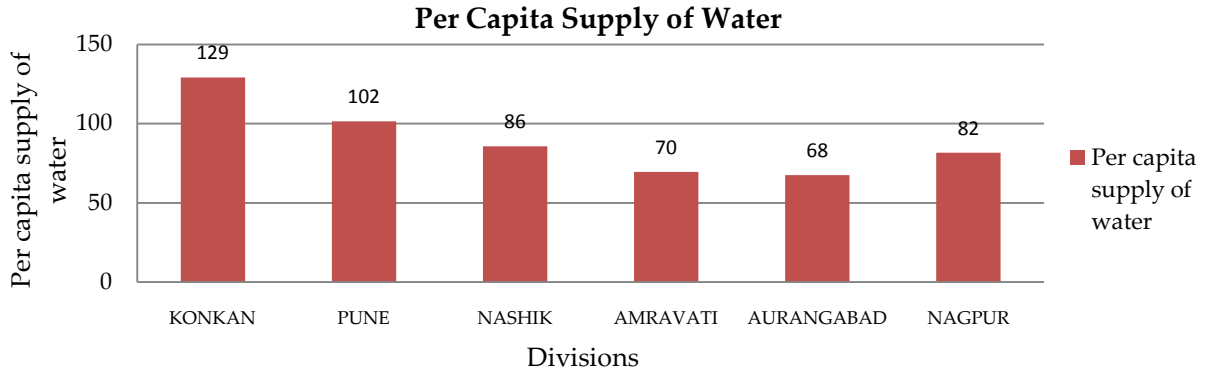
connections within the covered area. Konkan division stands for highest coverage of water supply area network but lowest in terms of coverage of WS connections in slums. It could be because Konkan division shows around 34% population in slums which is highest with respect to that in other divisions.

Table 3.10-WS_Population in Slums

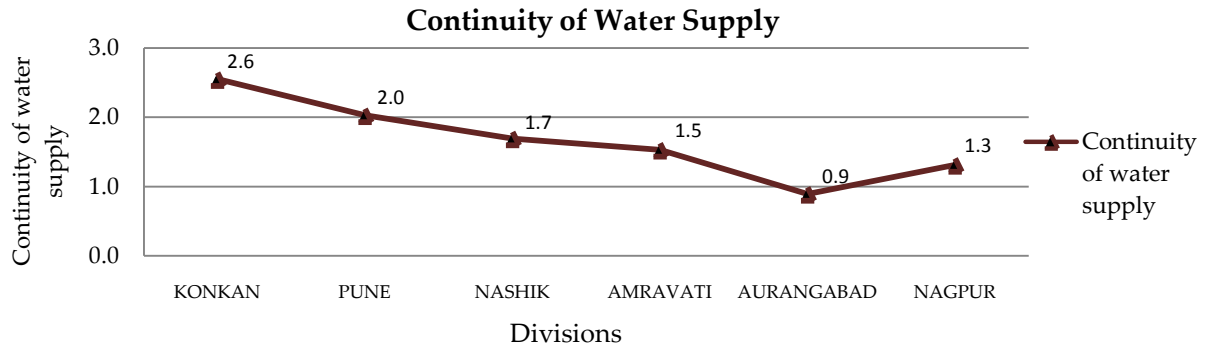
POPULATION IN SLUMS	KONKAN	PUNE	NASHIK	AMRAVATI	AURANGABAD	NAGPUR
Population	23438433	7111527	3839901	3124723	5006317	4573368
Slum Population	8024901	1720774	399063	818146	942796	1291118
% of Slum Population to Total Population	34	24	10	26	19	28

b. Service Level and Quality

Graph 3-30- WS_ Per Capita Supply of Water_ Divisionwise

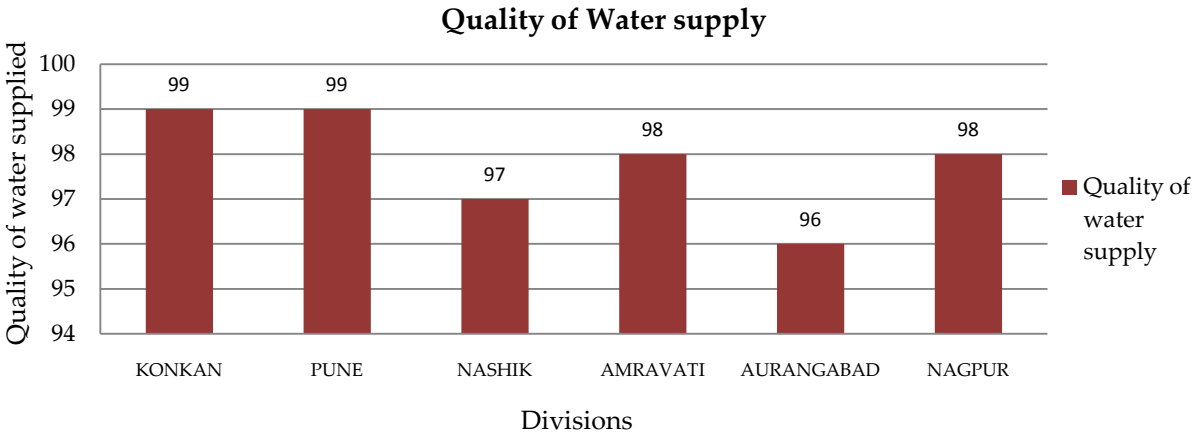


Graph 3-31- WS_ Continuity of WS_ Divisionwise



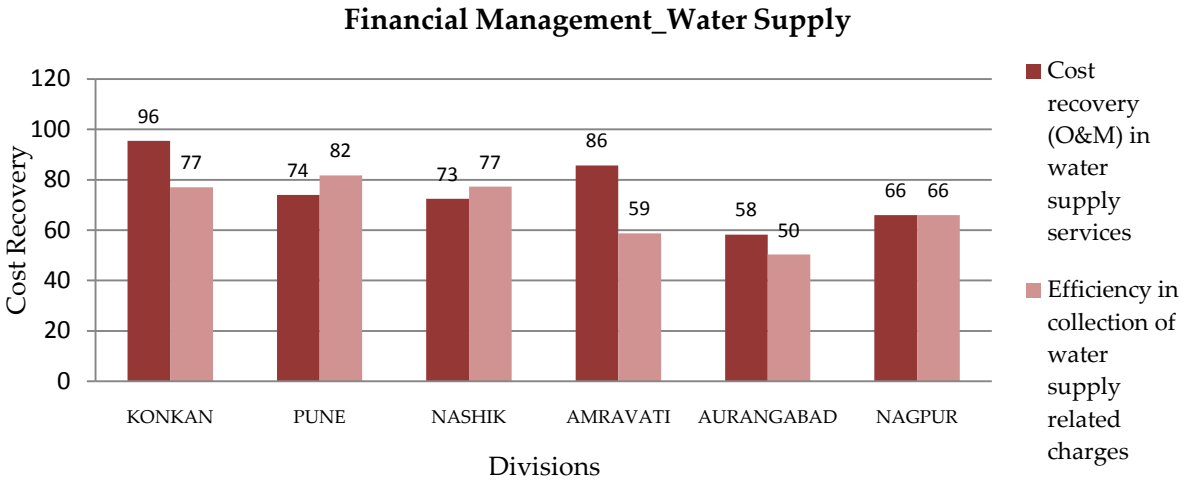
Out of total 6 divisions, Konkan division stands highest for its LPCD, quality of water supply and Hours of supply as well. It encompasses 33 ULBs including 8 MCs out of total 23 in the state. Majority MCs in the state have recorded comparatively higher LPCDs and hours of supply as well. 8 MCs in Konkan Division are- Greater Mumbai, Navi Mumbai, Thane, and Kalyan- Dombivali, Vasai-Virar, Mira-Bhayender, Ulhasnagar and Bhiwandi Nizampur, which are large scale MCs showing avg. per capita supply of water as 154 and hours of supply as 3.1.

Graph 3-32-WS _Quality of WS_ Division wise



This has resulted into an overall up-gradation of KPIs for Konkan Division. However, Pune and Nashik divisions also encompass 5 MCs within the divisions, which are second and third to record higher LPCD and hours of supply at the division level.

c. Financial Management

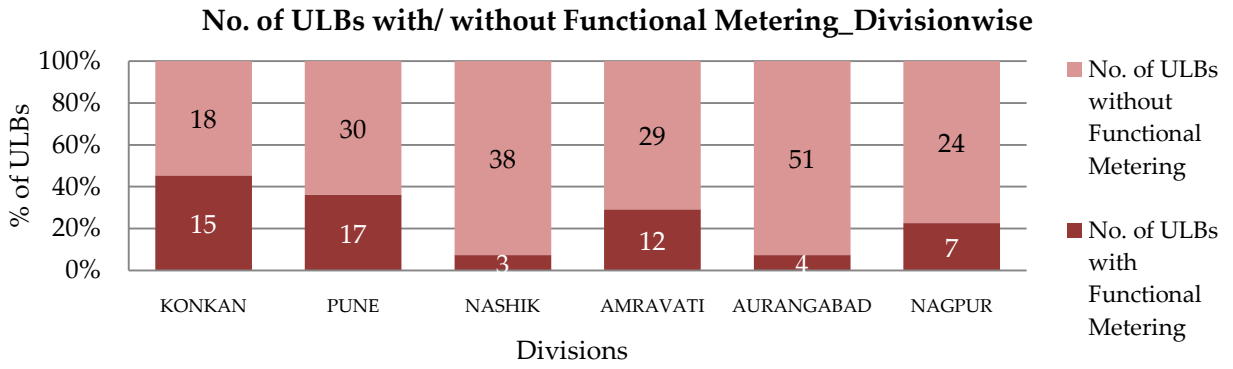


Graph 3-33- WS_ Financial Management_ Divisionwise

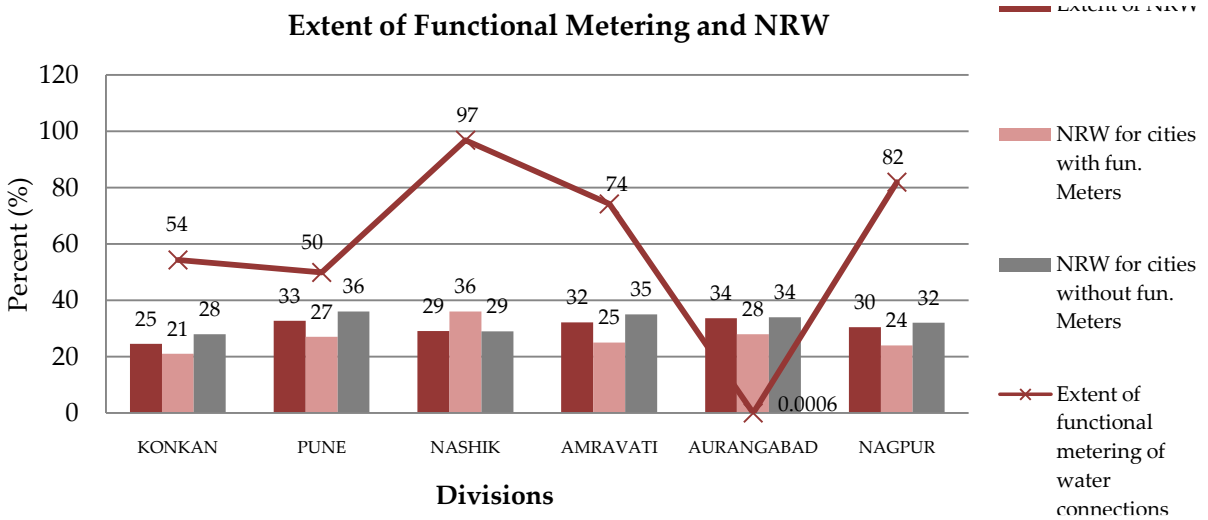
If seen form financial management perspective, across the division, it could be noticed that Konkan Division is again to stand first in terms of highest cost recovery in water supply services. Pune and Nashik Divisions indicate that though they have better efficiency in collection of water supply related charges, their cost recovery is comparatively low. This could be investigated further by looking at tariff structure and its effect on cost recovery. Higher efficiency of collection of water supply related charges and lower cost recovery in Pune and Nashik division focuses on the perceived low tariffs which need to be revised to be able to recover the operation and maintenance expenses.

d. Efficiency in Service Operations

Graph 3-34- WS_ Efficiency in Service Operations



Graph 3-35- WS_ Extent of Functional Metering and NRW



Konkan stands first to have highest percentage of ULBs having functional metering of WS connections in place. Only 3 ULBs in Nashik Division- Nashik (MC), Amalner (B) and Pachora (B) practice functional metering of WS connections with 96.9 % extent of functional metering in Nashik, 0.000004 % in Amalner and 0.001 % in Pachora. However, in Aurangabad division, 4 ULBs, viz. Nanded (MC), Beed (A), Kalamb (C) and Sailu (C), practicing functional metering of WS connections show extent of functional metering of WS connection as low as 0.00061% (Avg.). This indicates that the ULBs (except for Nashik MC) in Nashik and Aurangabad division have recently taken initiatives on this front, by metering only industrial or commercial WS connections to start with. Graph 3-32 indicates extent of NRW in the ULBs in relation with the extent of functional metering of WS connection in the respective ULBs.

a) In Nashik division, division level extent of functional metering as well as NRW for the ULBs with functional metering in place, is the effect of averages of Nashik MC which are dominating over those of other 2 ULBs having functional metering in

place. This has made Nashik the only division having NRW for the ULBs having functional metering of WS connections more than that of without functional metering of WS connections.

b) Though Nashik stands first in the MCs to have highest percentage of extent of functional metering of WS connections in place, it records extent of NRW as high as 58%. This brings in light the higher efficiency of metered system to capture accurate NRW.

3.1.4 Observations and Conclusions:

1. **Though areawise coverage of water supply network is strong in many ULBs, coverage of WS connections is poor because consumers are not willing to avail the connections due to perceived high tariff.**
2. **Regularization of illegal connections could be used as a tool to enhance ULB's performance. It may help in improving coverage, lessening NRW and increasing efficiency in water supply related charges.**
3. **Meter management, especially maintenance of meters is observed to be difficult due to which the local bodies are not keen in metering of consumer connections.**
4. **Less data availability in financial sector is an effect of ambiguity and disparity in budget heads of Municipal Annual Budgets maintained by the ULBs.**

Both Class-wise and Division-wise assessment of water supply related KPIs, context information and the reliabilities facilitate in indentifying names of ULBs for their better or weaker performances. It also provides a baseline for generation of Performance Improvement Plans (PIPs) and Information System Improvement Plans (ISIPs) for the selected ULBs in Maharashtra. However, to achieve the same, it is necessary to look into the other sectors such as Sanitation & Sewerage and Municipal Solid Waste Management, which is undertaken in the subsequent chapters of this report.

3.2 Sanitation and waste water

3.2.1 State level Scenario

"Sanitation is defined as safe management of human excreta, including its safe confinement treatment, disposal and associated hygiene-related practices." (National Urban Sanitation Policy). Urban sanitation in Indian cities has been given low priority and poor awareness for a long period. According to 2001 Census, 18.5% of the HH do not have access to drainage network. Only 38.9% of the HH are connected with open drains. The situation in slums is even worse. More than 37% of human excreta generated are unsafely disposed.

Table 3.11-WW_State Level Scenario

	KEY PERFORMANCE INDICATORS	Total ULBs	Mean Count	Nd	>Ceiling	<Floor	Na	Avg	Unit
1	Coverage of toilets at household level	248	226	22	0	0	0	56	%
2	Coverage of individual toilets (residential + community)	248	232	16	0	0	0	77	%
3	Coverage of sewerage connections at household level	248	26	11	0	0	211	40	%
4	Coverage of waste water network services(residential +non residential)	248	24	11	0	0	213	41	%
5	Collection efficiency of wastewater network	248	21	4	0	0	223	39	%
6	Adequacy of wastewater treatment capacity	248	19	4	1	0	224	37	%
7	Cost recovery (O&M) in wastewater services	248	130	115	3	0	0	13	%
8	Quality of wastewater treatment	248	16	8	0	0	224	93	%
9	Extent of reuse and recycling of wastewater	248	17	7	0	0	224	41	%
10	Efficiency in redressal of customer complaints	248	200	31	1	0	16	96	%
11	Efficiency in collection of wastewater-related charges	248	43	118	0	0	87	74	%
12	Spatial variations in coverage of toilets	248	72	176	0	0	0	0.5	Ratio
13	Spatial variations in coverage of sewerage connections	248	3	31	0	0	214	0.4	Ratio
14	Coverage of toilets in 'slum settlements'	248	168	31	0	0	49	11	%
15	Coverage of sewerage connections in 'slum settlements'	248	21	12	0	0	215	2	%

Table No. 3.13 shows the Key Performance Indicators for sanitation and wastewater in 248 ULBs of Maharashtra.

Key observations from above Table No. 3.13

- Coverage of toilets at HH level is 56% but the coverage of toilets improves if the community toilets are included. The coverage of individual toilets (residential and community) is 77%.
- Indicators which are related to sewerage network, like coverage, collection efficiency and sewerage treatment capacity, 224 ULBs report "Na". this is because either there is no underground network and or do not have secondary treatment system.
- In case of slum indicators, important observation is that 46 ULBs in Maharashtra have reported that there are no Slum settlements in their municipal limits.
- In case of spatial variation of individual toilets, 72 ULBs record the no of HH/properties with individual toilets ward wise. On contrary in case of variation in sewerage connections within wards, only 3 ULBs have records of no HH/properties with individual connections.

Table 3.12 -Waste Water-maximum and minimum of KPIs at state level

	KEY PERFORMANCE INDICATORS	Avg	Max	ULB	Min	ULB
1	Coverage of individual toilets	56	100	Kolhapur (MC), Nashik (MC), Pimpri-Chinchwad (MC), Pune, Kille-Dahur (C)	8	Maindargi (C)
2	Coverage of toilets (indiv + comm)	77	100	57 ULBs	1	Paithan (C)
3	Coverage of individual sewerage connections	40	90	Nashik (MC)	4	Ahmednagar (MC)
4	Coverage of waste water network services (resi +non resi)	41	90	Nashik (MC), Sangamner (B)	5	Dhule (MC)
5	Collection efficiency of waste water network	39	100	Nashik(MC)	0	Karad (B)
6	Sewage treatment capacity	37	94	Pimpri-Chinchwad	0	5 MC (from Kokan division)
7	Extent of cost recovery in waste water management	13	148	Bhusawal (A)	0	70 ULBs
8	Spatial variations in coverage of individual toilets	0	1	Kurundwad (C)	0	Kundalwadi (C)
9	Spatial variations in coverage of sewerage connections	0	0	Lonavla (C)	0	Sangamner (B)
10	Coverage of toilets in slums	11	86	Latur (A)	0	80 ULBs
11	Coverage of sewerage connections in slums	2	30	Nagpur(MC)	0	14 ULBs
12	Quality of waste water treatment	93	100	12 ULBs	33	Kolhapur (MC)
13	Extent of reuse and recycling of	41	100	Karad (B)	0	Meerabhaiandar (MC)

	KEY PERFORMANCE INDICATORS	Avg	Max	ULB	Min	ULB
	waste water					Nagpur (MC), Ulhasnagar (MC), Lonavla (C)
14	Efficiency in redressal of customer complaints	96	100	157 ULBs	26	Vasai-Virar
15	Efficiency in collection of sewerage related charges	74	100	Nandurbar (C), Malwan (C)	0	Navi-Mumbai

Access and Coverage:

In sanitation, access and coverage have following aspects,

- Coverage of toilets at household level
- Coverage of toilets (Household + Community level).
- Coverage of sewerage connections at household level,
- Coverage of waste waster network services (residential + non residential)and
- Coverage of both (toilet and Sewerage Connection) in Slum settlements.

This section talks about Coverage of toilets at HH level and coverage to sewerage connection at HH level in the state. Coverage in slum settlements is discussed in Equity Chapter of this Report.

The state average for coverage of toilets at HH level in Maharashtra is 56%. Out of 248 ULBs, 21 ULBs do not maintain records of No. of HHs with individual toilet connections. Municipal Corporations like Pimpri-Chinchwad, Nasik, and Pune show 100% coverage of toilets at HH level. Kille-Dahur is the only "Class C" ULB which has reported 100% coverage of toilets at HH level, but the reliability is very low i.e. reliability D. At state level, ULBs in NP class have consistently reported higher values for coverage of toilets at HH level.

Chart 3-2-WW_Coverage of Individual Toilets

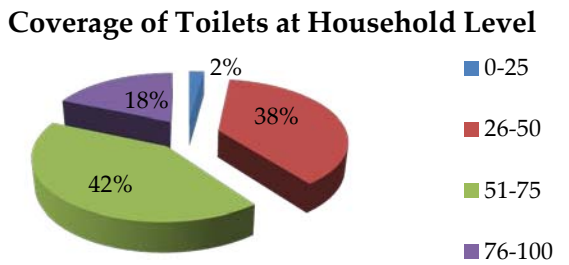
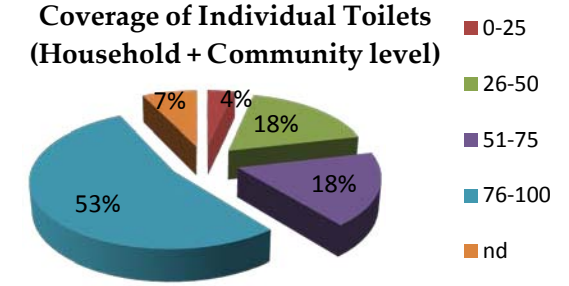


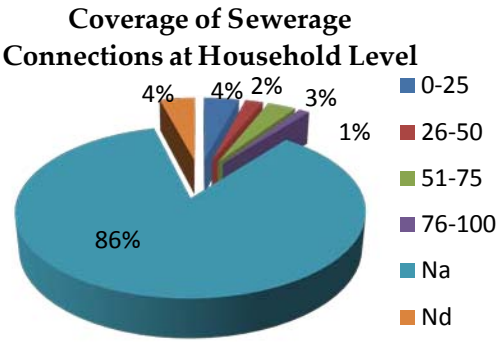
Chart 3-3-WW_Coverage of Individual Toilets (Household + Community)



42% of the ULBs have coverage in the range of 51-75% range and 38% in range of 26-50%. Referring to graph 3.8, it is evident that for coverage of sewerage connections at HH level, 86% of the ULBs do not have sewerage network in place. Only 4% of the ULBs have coverage in range of 0-25% which shows the negligence towards sanitation and wastewater services.

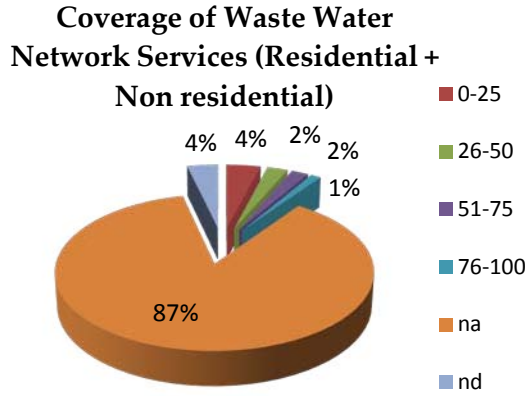
One more indicator on sanitation is developed which looks at the access of individual HH to individual toilets as well as community toilets. The adjacent graph clearly indicates that in more than 50% ULBs in Maharashtra, the average coverage of individual toilets (Household +Community) lies in the range of 76%-100%.

Chart 3-4-WW_Coverage of individual sewerage connections



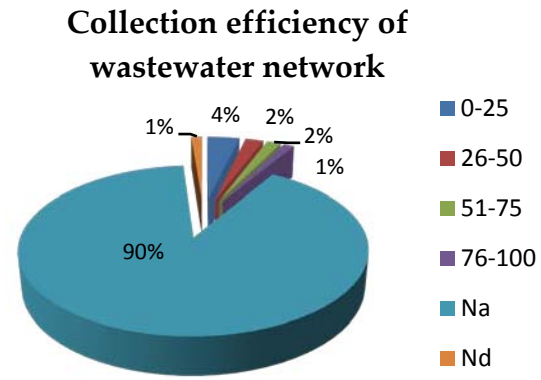
Second aspect of coverage in Sanitation is no. of HHs with individual sewerage network connection. Out of 23 MC only 13 MC have reported coverage of sewerage connections at household level. 6 MC do not have data on number of HH connections to the sewerage system and 4 MC namely Akola, Jalgaon, Malegaon and Vasai-Virar do not have Underground sewerage network at all. State average for this indicator is 40%. There are only 31 ULBs out of 248 in Maharashtra which have partial Underground sewerage network. Nashik MC has reported 90% coverage of sewerage connections at HH level.

Chart 3-5-WW_Coverage of Waste Water Network Services



Coverage of waste water network services captures the coverage of individual residential connections (i.e. HH level) and non residential connections to the underground sewerage system. For 87% (i.e. 215 ULBs) of the ULBs, this indicator is not applicable as these ULBs do not have any underground waste water network. There are only 3 ULBs in the state with coverage of waste water network services for a residential as well as non residential connection is more than 75%. 4% of the ULBs do not have data on no of HH with individual sewerage connections.

Chart 3-6-WW_Collection Efficiency of Waste Water Network



Service Level and Quality:

Under this theme in waste water, Collection efficiency of waste water network and Adequacy of wastewater treatment capacity are included. The first indicator as the name suggests, captures the collection efficiency of the underground sewerage network in terms of quantity of waste water collected at the inlet of

the treatment plant. Average collection efficiency of sewerage network in the state is 39%. Here, only 21 ULBs have recorded this indicator out of 31ULBs which have partial underground sewerage network. Nasik, Nanded, Pimpri-Chinchwad and Ambernath have 100%, 73%, 71%and 90% collection efficiency of underground sewerage network respectively.

The chart 3.9 depicts the percentage of ULBs falling in the given range of averages. It is clear that for 90% of the ULBs this indicator is not applicable either because there is no sewerage network or may not have a treatment plant.

After looking at the collection efficiency of the network, the next important thing is the capacity of the ULB to treat the collected waste water. Average Sewage treatment capacity of ULBs in Maharashtra is 35%. Out of the 31 ULBs in Maharashtra which have partial underground network, only 15 ULBs have secondary treatment capacity. Navi-Mumbai and Pimpri-Chinchwad have reported 84 % and 94% adequacy of sewage treatment capacity. There are four MC which include MC of Greater Mumbai and Kalyan-Dombivli, Ulhasnagar and Bhiwandi, have partial sewerage network but do not have a secondary treatment facility. The observations made clearly show that there are no ULBs in the State which have sewage treatment capacity equal to more than the quantity of waste collected.

Financial Management

Financial management indicator captures the revenues collected as against the expenses incurred on waste water management. In Maharashtra, only 13% of the operation and maintenance cost is recovered. Most of the MCls do not maintain a separate budget head for sanitation in their budget; hence most of the MCls are not able to provide finance related information for waste water. Out of 248 ULBs 118 ULBs do not maintain separate records of their income and expenditure incurred on waste water services.

Efficiency in Service Operations:

Efficiency in service operation in case of wastewater and sanitation services is captured in terms of a set of four indicators;

- Quality of wastewater treatment
- Extent of reuse and recycling of wastewater
- Efficiency in redressal of customer complaints
- Efficiency in collection of wastewater-related charges

To maintain the quality of the natural stream where the waste water is to be disposed, GoI under Central/State Pollution Boards has prescribed the standards for quality of the waste water for its final disposal. Average quality of waste water treatment in the State is 93%.

Only 41% of the waste water treated is reused and recycled in Maharashtra. Karad is the only ULB which practices 100% reuse and recycle of treated waste water. Nanded, Sangli, Ichalkaranji, and Pandharpur are some of the ULBs which practice more than 80% reuse and recycle of the treated waste water.

Efficiency in complaint redressal related to waste water in Maharashtra is 96% there are more than 150 cities in which complaint redressal is 100%. There are some ULBs in the state with efficiency in redressal of customer complains as low as 26%.

Equity

Equity in service delivery is one of the most important aspects when it comes to basic services like water supply sanitation and solid waste. In PAS, for waste water and sanitation there are four sets of indicators which measure the spatial variation in service delivery.

1. Coverage of toilets in 'slum settlements'
2. Coverage of sewerage connections in 'slum settlements'
3. Spatial variations in coverage of toilets
4. Spatial variations in coverage of sewerage connections

It is observed after preliminary analysis that ULBs do not maintain records of HH level individual toilet connections and Sewerage connections. Coverage of Individual HH level toilets in slums in Maharashtra is only 10% and is very less than the state average of 56%. Same is the case with sewerage connections at HH level in slum settlements. The Stat average for coverage of sewerage connections in slum settlements is only 2% in comparison with state average of 40%. It is very clear that service delivery in slums of Maharashtra needs immediate attention.

3.2.2 Classwise Thematic Assessment

3.2.2.1 Performance Indicators Based Assessment

a. <u>Access and Coverage</u>

Urban sanitation in India has received low priority for a very long period. In case of Maharashtra, this is clearly reflected when we look at the indicators related to sanitation and waste water. Coverage of toilets at household level captures the total number of HH which have individual toilets. Coverage of sewerage connections at household level is a ratio of the no of HH in the service area of the ULB to the no of HH with individual connection to the underground sewerage network.

In this section the coverage aspect of sanitation is divided in four aspects:

a. Sanitation in terms of access to individual toilets and access to toilets in slum settlements.
b. Sanitation in terms of access to toilets i.e. both individual as well as community toilets.
c. Coverage in terms of connection to underground sewerage system and
d. Coverage of waste water network services i.e. sewerage connections to both residential and non-residential connections.

Sanitation

Key Performance Indicators:

1. ***Coverage of toilets at household level***
   Definition: Number of households with individual toilets within premise as a percentage of total households in the ULB.

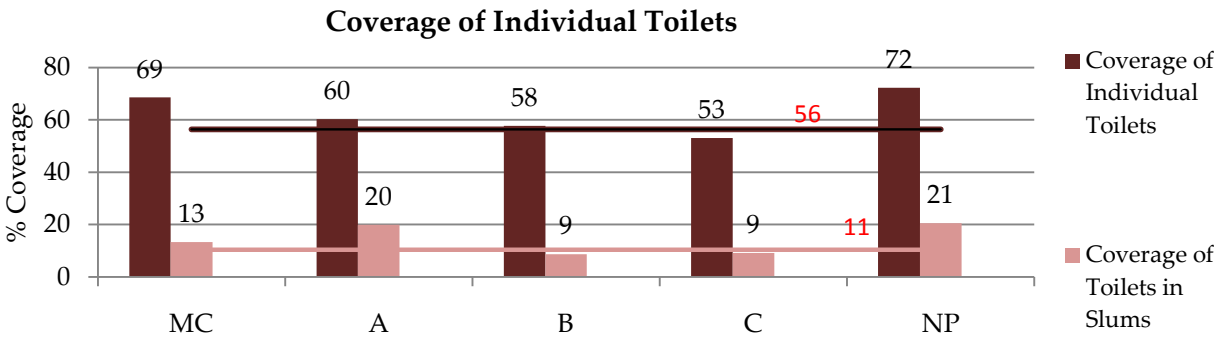
2. ***Coverage of toilets (individual + community)***
   Definition: number of households with access to individual toilets as well as community toilets within premises of the ULB as a percentage of total households in the ULB.

3. ***Coverage of toilets in 'slum settlements'***
   Definition: total households in slum settlement with individual toilets as percentage of total households in all slum settlement in the city.

Graph 3-33 shows the coverage of toilets at HH level across each class. It also compares the status of coverage of toilets in slum settlement with overall coverage of toilets elsewhere in the ULB limit in order to capture the variation in availability of sanitation facilities in such areas.

This indicator captures the level of sanitation services in the ULB governing limit. It is defined as the total number of HH as percentage of total number of HH in the city. The state average of coverage of individual toilets is 56% however the reliability scale at which these

Graph 3-32 WW_ Coverage of Individual Toilets



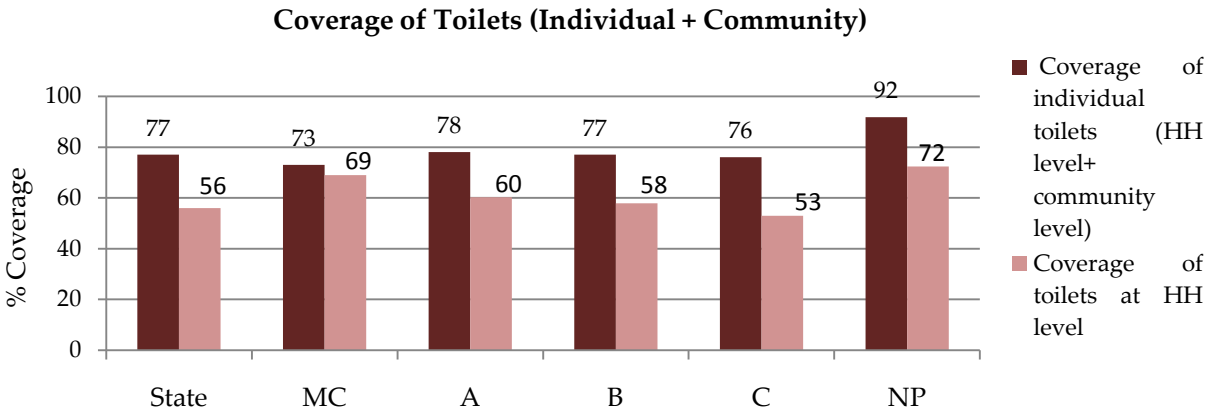
indicators are calculated is very low.

Coverage of toilets at HH level when compared across classes, it is clear that all classes except "Class C" have reported average Coverage of toilets at household level above state average. Sanitation scenario in case of slums needs immediate attention. The State average for coverage of toilets in slum settlements is 11% which is much less than the overall State average of all classes of ULBs. Within classes, Class A and NP seem to be performing relatively better than B and C Class ULBs. There are only 6 ULBs which have coverage above the state average out of which Nagpur is the only MC to achieve this.

In Latur, the coverage in slums is 86%. Apart from Nagpur and Latur, Yavatmal, Manwat, Mehkar and Mowad are few MCls that are performing better.

Above indicator i.e. coverage of toilets at HH level includes only those HH which have individual toilets. There are many people in the urban areas which depend up on public/community toilets. The indicator, coverage of toilets (individual + community) includes number of HH with access to community toilets together with the individual HH. There are 57 ULBs in the state which have reported 100% coverage of toilets (individual +community). At state level the coverage of toilets (individual +community) is 77% which suggests that overall sanitation scenario in the state is much better when compared with percentage of HH with individual toilets.

Graph 3.33 WW_Coverage of Toilets (Individual+ Community)

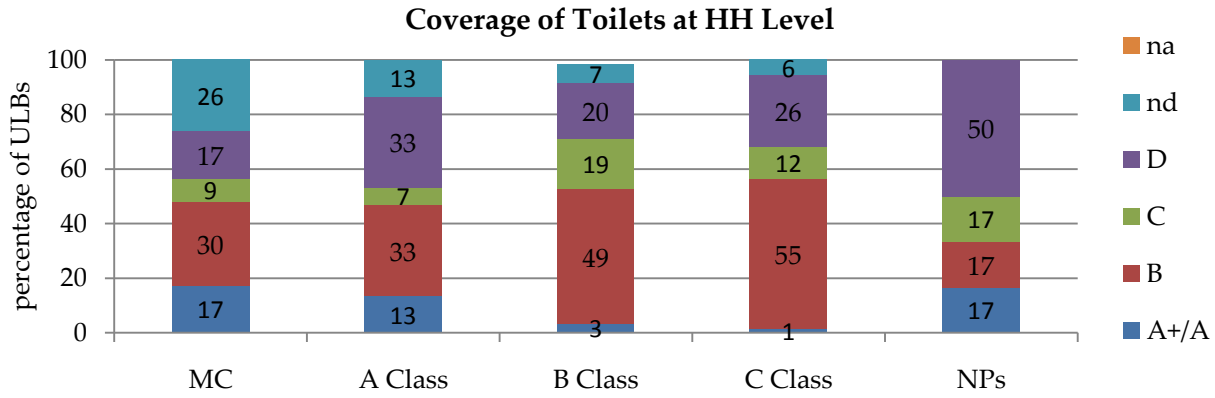


Reliability Analysis _Coverage of Toilets at HH Level

1. 30% of the ULBs have reported B reliability for coverage of individual toilets indicator. Most of the MCs record manually the information on no. of HH with individual toilets. These records are updated based on some periodic surveys.
2. MCs like Kolhapur, Jalgaon and Sangli have reported coverage of individual toilets more than 80% with reliability scale of B.
3. There are 4 MCs which have reported A/A+ reliability for the said indicator. These MCs maintain computerized records of no. of HH with individual toilets and are

updated regularly. PCMC is the only MC which shows 100% coverage of individual toilets with a higher reliability scale i.e. reliability A.

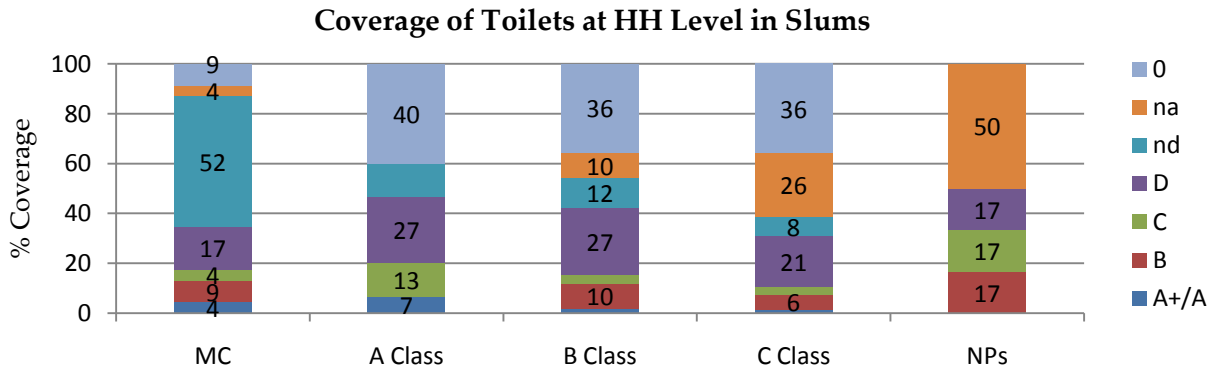
Graph 3-36- WW_ Reliability_ Coverage of Toilets at HH Level



4. Across all the classes except NPs, majority of the ULBs reported B reliability indicating that records are maintained manually for the no. of HH with individual toilets.
5. Katol and Shahada are the only C class MCls which have reported A reliability with Katol showing relatively higher coverage of individual toilets.
6. 80 ULBs out 145 in C class, have reported B reliability. 38 show reliability scale of D for the said indicator.
7. In case of Dapoli which is a NP, the coverage of individual toilets is 88% with reliability A.

Reliability Analysis _Coverage of Toilets at HH Level in Slums

Graph 3-37-WW_Reliability_Coverage of Toilets at HH Level in Slums



1. Nagpur is the only MC which has estimated computerized records of total no. of Slum HH in the ULBs jurisdiction and the no. of HH with individual toilets in slum settlement. The coverage of individual toilets in slums is 30% with reliability A+
2. More than 50% of the MCs (i.e. 12 MC) do not have records of either the total no. of Slum HH or the no. of slum HH with individual toilets.

3. Latur is class A MCl which has reported 80% coverage of toilets in slums, but with lowest reliability D.
4. There are only 4 MCLs which have reported A reliability indicating that only these ULBs have estimated computerized records of HH with individual toilets.

Key Issues

- More emphasis has to be give n on coverage of toilets in slums in order to achieve the States Vision of Open defecation free cities.
- One of the key issues observed here is that many MCs as well as MCls do not maintain the records of no of HH in the city with access to individual toilets.
- In case of slums there are no clear-cut policies at state level and at the ULB level in terms of service delivery in such deprived areas.

Waste Water Network

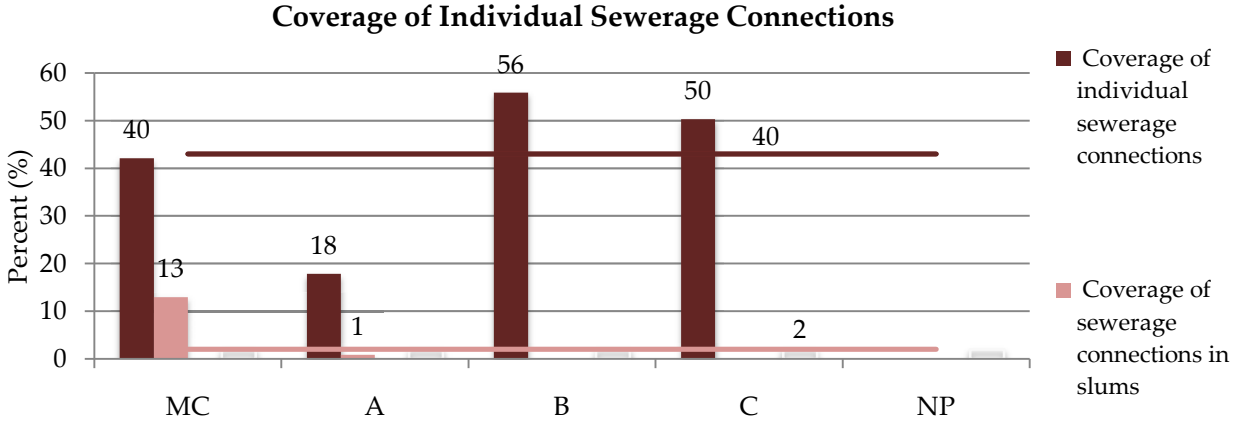
Key Performance Indicators

1. ***Coverage of sewerage connections at household level***
   Definition: Households with individual connections to the sewerage network as a percentage of total households in the ULB.
2. ***Coverage of sewerage connections in 'slum settlements'***
   Definition: Total number of slum households connected to sewerage network as a percentage of total number of slum households.
3. ***Coverage of waste water network services***
   Definition: total number of properties (residential + non residential) with individual connections to sewerage network as a percentage of total number of properties in the ULB.

In Maharashtra, there are 248 ULBs out of which only 31 ULBs have partial underground sewerage network. Out of these 31 ULBs, 13 are MC and remaining are MCls. The average area covered by the underground sewerage network in these ULBs is 63% at state level.

Coverage of Sewerage Connections at Household Level

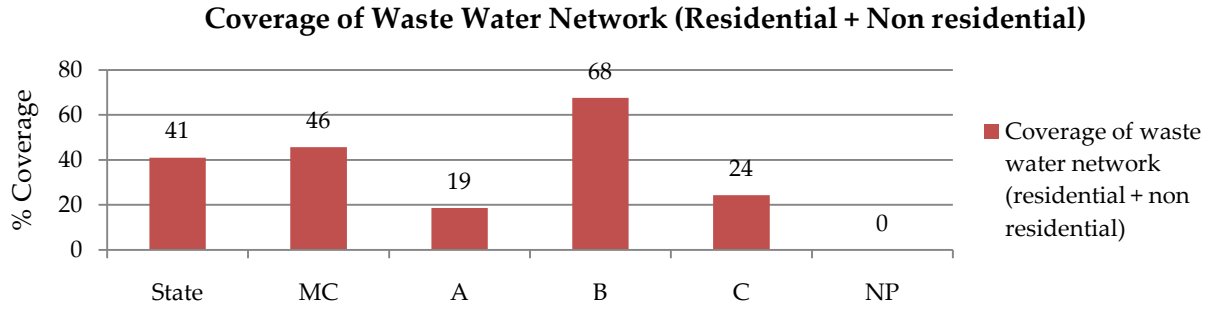
Graph 3-38-WW_ Coverage of Individual Sewerage Connections



As discussed in the previous section, coverage of individual underground sewerage connection at state level is only 40%. The average increase to 45% in case of MC. of Nashik has highest coverage of sewerage connections at HH level (90%) in Maharashtra. Kalyan-Dombivli, Pune, Nanded, and Pimpri-Chinchwad are some of the corporations in Maharashtra which have relatively better Coverage of sewerage connections at HH level. Apart from MCs, Karad Sangamner and Talegao are B class MCls which have reported coverage of 61%, 62% and 67% respectively and are performing relatively better compared to other MCls of same class. Coverage of sewerage connections at HH level in slum settlements needs more and immediate attention than to individual sewerage connection in the state. Situation becomes severe in ULBs of class B and class C as there are no individual sewerage connections in slum settlements of ULBs which have sewerage network. State average for individual sewerage connections at HH level in slum settlements is mere 2%. Nagpur is the only ULB in Maharashtra which has highest coverage of sewerage connections at HH level in slum settlements (30%) with highest reliability.

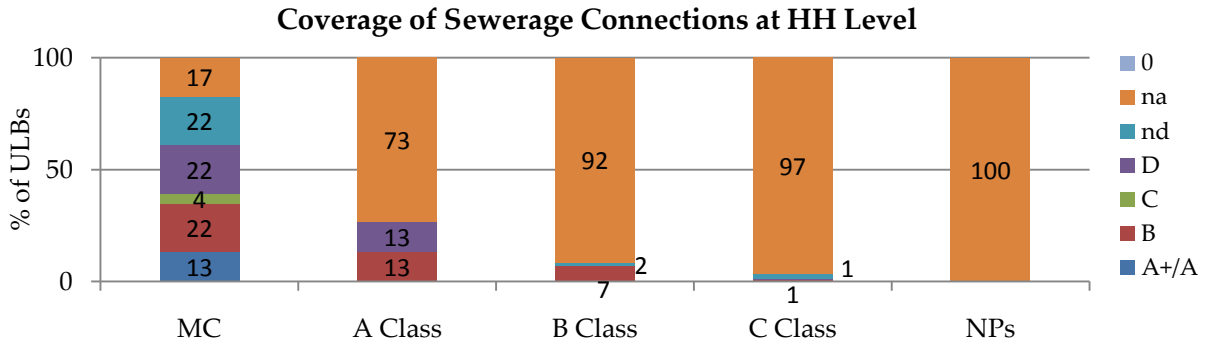
As the indicator of coverage of sewerage connections at HH level did not include non residential connections, one more indicator is developed i.e. coverage of waste water network (residential + non residential) sewerage connections which include residential as well as non residential sewerage connections.

Graph 3.3-39 WW_Coverage of Waste Water (Residential + Non residential)



Reliability Analysis _Coverage of Sewerage Connections at HH Level

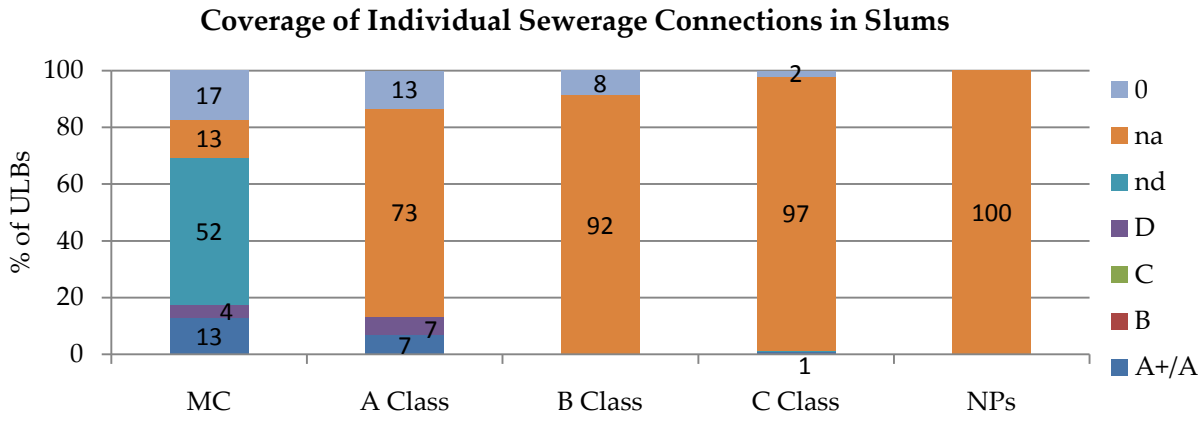
Graph 3-40-WW_Reliability_Coverage of Sewerage Connections at HH Level



Based on the analysis of this indicator in the above sections it is clear now that, there are only 31 ULBs in Maharashtra which have partial underground sewerage network.

1. Only 13% of the MCs that is 3 MCs have maintained computerized records of no. of HH with sewerage connections as maintained in the property tax register/connection register or billing records any of the three.
2. Nashik shows 90% coverage of HH connections to sewerage network but with reliability C, which indicate that the information on no. of individual HH connection to the sewerage network is estimated based on past surveys.
3. In case of class A MCls, none of the ULBs have reported reliability A/A+ for the coverage of HH connection to sewerage network. Panvel and Ambernath are the only two MCls with highest reliability scale of B among class A ULBs.

Graph 3-41- WW_ Reliability_ Coverage of Individual Sewerage Connections in Slums



1. There are only 3 MCs which have provided sewerage services in slum settlements. Nagpur MC has a coverage of individual HH connection to sewerage network is 30% with highest reliability scale i.e. A+. The MC has maintained the computerized records of total no. of HH in slum settlements as well as the no. of HH with individual connection to the sewerage network.

Key Issues

- Firstly there are only 12 % (31) ULBs in Maharashtra which have partial underground sewerage network.
- Secondly, those ULBs which have network do not maintain records of sewerage connections at household level.

b. Service Level and Quality

This theme includes two indicators namely collection efficiency of wastewater network and adequacy of waste water treatment capacity which help us in measuring the service levels of the ULB. Below are the definitions of these two indicators

1. ***Collection Efficiency of Wastewater Network***
   Definition: Quantum of wastewater collected at the intake of the treatment plant to the quantity of wastewater generated.
2. ***Adequacy of Waste Water Treatment Capacity***
   Definition: Quantum of wastewater that can be treated to secondary treatment standards (removal of BOD and COD) as a percentage of total estimated wastewater generated in the ULB.

Collection Efficiency of Wastewater Network

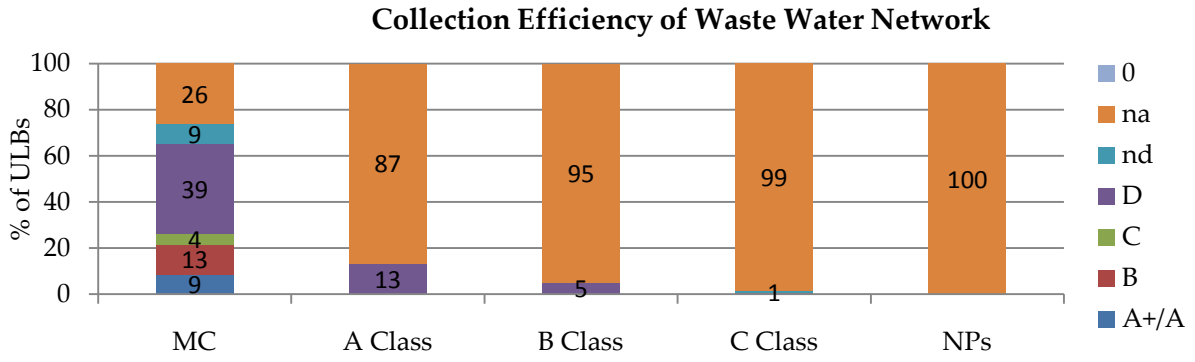
Simply defined, this indicator is a ratio of total quantity of wastewater collected at the inlet of the treatment plant to the total quantity of water supplied in the distribution excluding all losses. As discussed earlier, there are only 15 ULBs which have secondary treatment plant capacity. So the average value of the indicator reflects efficiency only in those 15 ULBs which have treatment plants.

The average wastewater collection efficiency of waste water network in Maharashtra is 39%. In case of MC the average is only 43%.Nasik has 100% wastewater collection efficiency. Other MCs like Nanded, Pimpri-Chinchwad and Navi-Mumbai have relatively better collection efficiency. Ambernath is the only MCl which is reporting high value of collection efficiency of waste water network i.e. 90%.

Reliability Analysis_ Collection Efficiency of Waste Water Network

1. Nagpur and Greater Mumbai MC have reported A+ and A reliability scale respectively. In Nagpur MC, the quantity of waste water collected at the inlet of the treatment plant and the quantity of water supplied into the distribution system is calculated based on the bulk flow meters installed. Automated systems are installed to monitor the operations at the treatment plant.

***Graph** 3-42-WW_Reliability_Collection Efficiency Related to Waste Water Network*



2. Nashik , Nanded and Pimpri-Chinchwad MC have reported the collection efficiency of 100%, 73%& 71% respectively with reliability scale of B. the quantity of water

produced is computed based on the bulk flow meters and manual records. Manual logbook of treatment plant operation is also maintained.

3. Collection efficiency of waste waster network in Ambernath is 90% but the reliability scale at which it is calculated is the lowest i.e. D where no records are maintained and the information used is as furnished by the ULB.

Key Issues

1. The information on the quantity of waste water collected at the treatment plant and the quantity of drinking water supplied into the distribution network is based on estimates in most of the ULBs as there is no option in the system for its measurement, therefore the quantity of waste water generated is also based on estimates.
2. This issue has two sides, first is measurement of waste water collected at treatment plant and the other is measurement of water supplied in the network, i.e. metering of all consumer connection in both cases. This is absent in most of the ULBs.

Adequacy of Waste Water Treatment Capacity

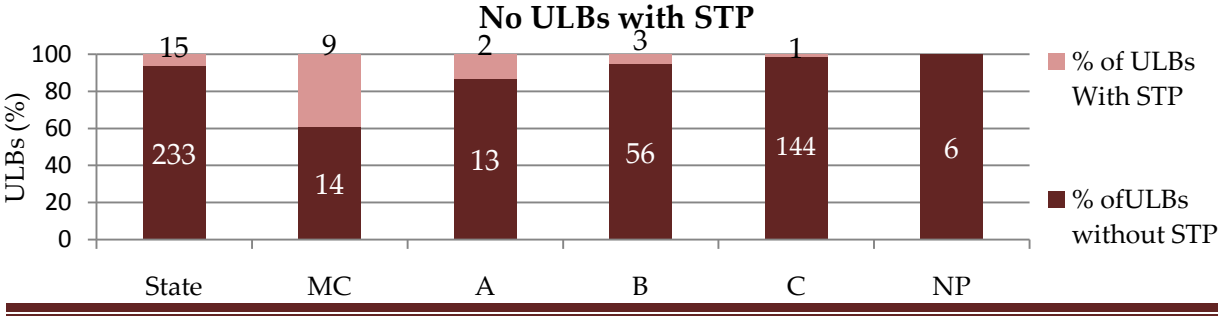
Table 3.13-WW_Adequacy of Waste Water Treatment Capacity (Figures in parenthesis indicate number of ULBs.)

Class	Percentage of ULBs with Sewerage Network	% of ULBs with STPs	% Of WW Treated	STP Capacity
State(248)	13(31)	6(15)	39	37
MC(23)	57(13)	39(9)	40	40
MCls (225)	6(14)	3(6)	38	45

Table No. 3.15 shows the No./percentage of ULBs with sewerage network, primary/Secondary treatment facility and its capacity and percentage of total wastewater treated.

Adequacy of Waste water treatment capacity is the ratio of Secondary treatment capacity to the total waste water collected at the treatment plant to the disposal standards prescribed by the Pollution control board. This is important to measure as in most ULBs where treatment plant exists, it is not functional. After collection of waste water, next important thing is the

Graph 3-43- WW_No of ULBs with STP



treatment of the same. As discussed earlier there are only 13 %(31) of ULBs in Maharashtra which have underground sewerage network out of which only 6 %(15) ULBs have secondary STP facility. MC like Greater Mumbai, Bhiwandi, and Kalyan-Dombivli have STPs, but have only primary treatment facility.

Adequacy of sewage treatment capacity is only 37% in Maharashtra. In case of MC, the adequacy is 35%. MC of Pimpri-Chinchwad and Navi Mumbai has waste water treatment capacity of 94% and 84% respectively. Collection efficiency of waste water network in Pimpri-Chinchwad and Navi-Mumbai is 71% and 69% respectively.

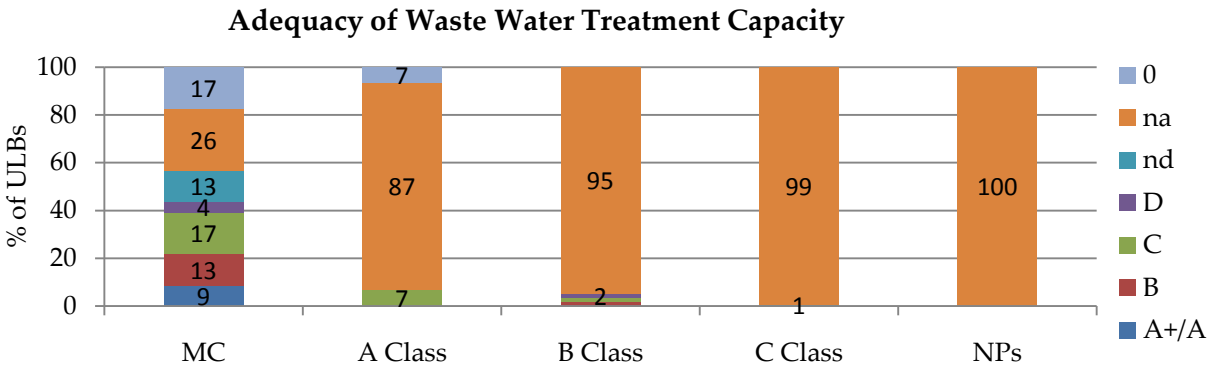
Graph 3-42 shows the no of ULBs which have STP across all the classes with secondary treatment capacity. In Maharashtra Pimpri-Chinchwad is the only MC to have a Tertiary treatment facility for the sewage treatment.

Reliability Analysis_ Adequacy of Waste Water Treatment Capacity

AS said in the earlier sections, only 20 ULBs have secondary treatment capacity out of the 28 which have partial underground sewerage network.

1. Nagpur MC has reported A+ reliability, but the adequacy of treatment capacity is low. Navi-Mumbai MC has reported reliability scale of A for the said indicator indicating that the quantity of water produced is computed on basis of bulk flow meters and automated systems for plant operations.

Graph 3-44-WW_Reliability_Adequacy of Sewerage Treatment Capacity



Key Issues

a) Based on the data furnished by the ULBs and its subsequent analysis, we come to the conclusion that existing sewage treatment capacity is inadequate to treat the generated sewage.
b) MC like Greater Mumbai, Bhiwandi, and Ulhasnagar have only primary treatment facility

c) One more important aspect of this indicator is that- while calculating it, only area covered under the network is considered and not the total area of the ULBs. There are no ULBs in Maharashtra with total area covered with the sewerage network and hence most of the ULBs have treatment facility only for the waste which is collected and not for the total waste generated.

c. Financial Management

This theme includes two indicators which are mainly related to the financial management of the ULBs in waste water department. The first is Extent of cost recovery (O&M) in wastewater management and the other is efficiency is collection of sewerage related charges. Both the indicators are defined below.

1. *Extent of Cost recovery (O&M) in waste water management*
   Definition: Percentage of total operating revenues from sewerage related charges to total operating expenses on sewerage network services
2. *Efficiency in collection of sewerage related charges*
   Definition: Percentage of current year revenues collected from wastewater-related taxes and charges as a percentage of total billed amounts (for waste water).

Extent of Cost recovery (O&M) in wastewater management: As defined above, this indicator captures the revenues (taxes, user charges, fees) recovered by the ULB against the expenses incurred. This denotes the cost control measures, if any, that need to be considered by the ULB, and also a critical factor in tariff charges. As discussed in earlier sections, the state average for O & M cost recovery for WW is only 13%.

Table 3.14-WW_Extent of O & M cost recovery in WW Management & Collection Efficiency of Sewerage Related Charges

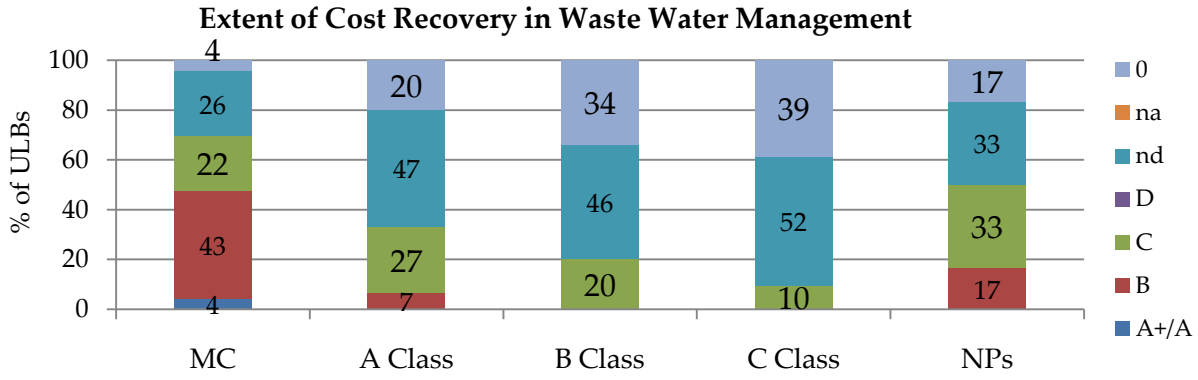
Class	Extent of Cost Recovery in Waste Water Management	Efficiency in Collection of Sewerage Related Charges
State(248)	13	74
MC(23)	35	61
A(15)	29	75
B(59)	13	79
C(145)	7	81
NP(6)	9	nd

Here, it is important to note that out of 248 ULBs, 113 ULBs do not maintain separate records for water and waste water. MCs of Greater Mumbai, Pune and Thane MCs show O & M cost recovery more than 200%. MC of Solapur shows 100% o & m cost recovery for waste water management. MCl of Bhusawal has reported 148% extent of cost recovery in waste water management and is highest in the state after MC of Thane, Pune and Greater Mumbai. 71 out of 145 C class MCls do not have data related to finance for waste water. Average extent of cost recovery in waste water management for C class is only 7%. However there are some

ULBs like Tasgaon, Katol and Saswad which report a very high cost recovery (103% 93% and 88% respectively).

Reliability Analysis_ Extent of Cost Recovery in Waste Water Management

Graph 3-45-WW_Reliability_Extent of Cost Recovery



1. Based on the chart 3.36, it is clear that 43% MCs have reported reliability B for financial indicator of O & M cost recovery in waste water management. O&M Cost recovery in waste water management for Pimpri-Chinchwad MC is 42% with reliability scale of A. The ULB practices Accrual based double entry accounting system parallel to cash based accounting system.

In case of MCls in Maharashtra, more than 40% of ULBs don't maintain separate records for waste water, or do not have separate waste water department.

Efficiency in Collection of Sewerage Related Charges

Average Collection efficiency of wastewater related charges is 74% in Maharashtra. Out of 145 class C ULBs 101 ULBs do not levy any waste water charge. Malwan and Nandurbar are two C class MCls which have 100% efficiency in colleting the charges related to waste water. Interestingly more number of Class C MCls have collection efficiency more than 90% as compared to ULBs in other classes.

Key Issues:

- Most important issue to be addressed in terms of financial management is that more than 30% of the ULBs in Maharashtra do don't levy any kind of sewerage tax or charge.
- This may be due to the reason that there are only 31 ULBs in Maharashtra with partial sewerage network. In rest other ULBS, there is no underground network and hence most of them do not levy any kind of charge or tax on sewerage and sanitation.

- In case of ULBs which collect sewerage tax/charge, the collection efficiency depends up on the collection efficiency of property tax.
- Most of the ULBs in C class and NPs do not have separate departments for sanitation and waste water. In most of the cases the departments are clubbed under health department. Thus these ULBs do not maintain separate account of revenue income/expenditure made for wastewater, sanitation, and solid waste.

d. Efficiency in Service Operations

1. ***Extent of Reuse and recycle***
   Definition: Quantity of wastewater that is recycled or reused as a percentage of quantity of wastewater received at the treatment plant.
2. ***Efficiency in redressal of customer complaints***
   Definition: Total number of wastewater-related complaints redressed within time stipulated in service charter of the ULB, as a percentage of the total number of wastewater-related complaints received in that year

Extent of Reuse and Recycling

This indicator captures the quantity of wastewater that is reused after treatment for purposes like irrigation, gardening, etc. This is an important indicator as it helps to assess the efficient use of the available water resources.

Table 3.15-WW_Extent of Reuse and Recycle

Class	Percentage of ULBs with Sewerage Network	% of ULBs With STPs	% WW Reused and Recycled
State	11(31)	6(15)	41
MC	78(18)	39(9)	24
Municipalities	(13)	3(6)	71

One of the optional reforms under JNNURM to be undertaken by the local governments is formulating Bylaws for reuse of Wastewater. To cater to the increasing demand, the local governments must use the available resource judiciously. Reuse of wastewater will not only help in conserving the water resource but also saving on expenditure for treatment and disposal of the wastewater. In Maharashtra there are 12 ULBs which practice reuse of wastewater out of which 7 are Municipal Corporations.

There are only 5 MCls in Class A, B, C and NP which practice reuse and recycle of waste water, hence clubbed together as Municipalities. In Maharashtra, 41% waste water of the ULBs which practice reuse and recycle. Out of 21 ULBs which have STP, only 17 ULBs practice reuse and recycling of the waste water.

Wastewater from other ULBs which do not have treatment system goes either directly into natural water body or disposed on land without any treatment. Next section discuses about the mode of disposal of sewerage and sullage water in sewered and Un-sewered areas of the ULBs.

Promoting Reuse and Recycle of Wastewater-A Case of Nagpur Municipal Corporation

Nagpur's current water supply is 470 MLD out of which presently only 80MLD is collected. The city corporation under JNNURM has proposed 3 STPs under of 380MLD capacity. They have plan and subsequent demand for the reuse of wastewater. Maharashtra State Generation Co. (MahaGENCO) and Multi-modal International Hub and Airport at Nagpur (MIHAN) are two major sources of demand. They have proposed to reuse 150 MLD wastewater after required degree of treatment.

NMC has entered into an O & M contract with MahaGENCO for 30years. NMC is selling the waste water for MahaGENCO @ Rs.3.50/kl. This translates into annual income of Rs. 15 crore to the Corporation. All the O & M cost will be borne by MahaGENCO. This project will save 110 MLD of fresh water which is sufficient to 0.8 million residents of Nagpur city. This also opens up the possibility to swap the existing 140 MLD fresh water used in Power plant, which is sufficient to meet the demand of 1.03 million people.

Karad MCl has one of the first conventional sewerage systems in Maharashtra. The council claims to practice 100% reuse and recycle of the wastewater. All the water from the oxidation pond is used by the farmers for agriculture. There are 6 other ULBs which report more than 80% reuse and recycle of wastewater. However there is a huge untapped potential to be explored by the other cities for improving the service delivery by practicing reuse and recycle of wastewater.

Efficiency in Redressal of Customer Complaints

This indicator captures the number of complaints made by consumers that have been redressed by the ULB, as per service charter standards. It is an important indicator which directly assesses the consumer satisfaction level and can in turn help in improving the service delivery.

The state average for efficiency in redressal of customer complaints related is 89%. From the preliminary analysis carried out, it is evident that across all the sizes of ULBs the efficiency of customer complaint redressal is more than state average except for NPs where there is no sewerage network and the final mode of disposal adopted is open drains through septic tanks. 16 ULBs in Maharashtra have reported no complaints related to waste water.

Key Issues:

a) Based on the visits during data collection and subsequent analysis of the data it was observed that there is no proper system in place to ensure that all complaints that are received are registered.
b) Some of the ULBs in Maharashtra have multiple modes of receipt of complaints viz, in person, by letter, telephone, sms, email etc. However some of the complaints are redressed without being registered which are ultimately not reflected through the indicator.

e. Spatial Equity

1. ***Spatial variations in coverage of households with access to individual toilets***
   Definition: Coefficient of variation (defined as standard deviation divided by mean) of zonal values for "total households with individual toilets, as percentage of total households".
2. ***Spatial variations in coverage of household connections to sewerage network***
   Definition: Coefficient of variation (defined as standard deviation divided by mean) of zonal values for "total households connected to the sewerage network, as percentage of total households".

Spatial Variations in Coverage of Households with Access to Individual Toilets

This indicator captures the variations in coverage of toilets across wards within ULB limit. Spatial variation with a value '0' implies there are no variations in coverage across the wards in the city. The state average of coefficient of variation in coverage of individual household toilets in Maharashtra is 0.49. In case of MCs, Amravati is the only ULB which keeps records of individual toilets at ward/zone level. The coefficient of variation for Amravati is 0.3.

It is interesting to observe that 72 MCls have reported the indicator for spatial variation in coverage of individual household toilets. This means, more number of MCls (majority from C class) maintain ward/zone wise records of individual household toilets

Spatial Variations in Coverage of Household Connections to Sewerage Network

This indicator captures the variations in coverage of sewerage connections across wards within a city. Spatial variation with a value '0' implies there are no variations in coverage across the wards in ULB limit.

As discussed in earlier sections, that there are only 28 ULBs which have sewerage network, this indicator is applicable to those ULBs only. Out of these 28 ULBs only 3 maintain ward wise information of individual sewerage connections. These are Aurangabad, Lonavla and Sangamner.

Key Issues

a) It evident from the analysis that most of the ULBs do not maintain records at ward level.

3.2.2.2 Context Information Based Assessment

In this section analysis of context information is carried out based on the information collected in the checklist. KPIs stand alone are not able to give actual situation at the grass root level. In this case using context information together with the KPIs helps in assessing the real situation.

Context based analysis is divided in to three parts a) Network, b) Mode of disposal, and c) type of treatment.

a) Sewerage Network

Table 3.16-WW_Status of Sewerage Network

Class	No of ULBs with Underground Sewerage Network	% of ULBs with Underground Sewerage Network	% Area covered By Underground Sewerage Network
State	31	13	63
MC	17	74	41
A	4	27	47
B	5	8	74
C	5	3	23
NP	0	0	0

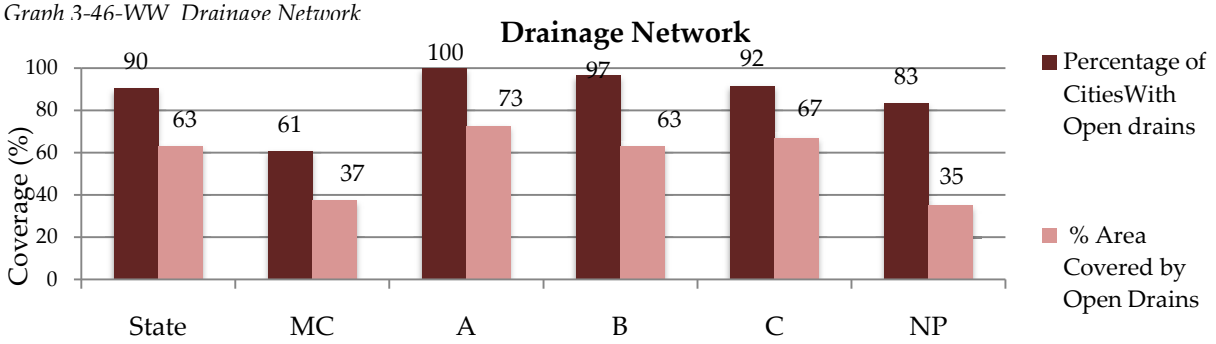
b) Drainage Network

Table 3.17-WW_Status of Drainage Network (Figures in parenthesis indicate no of ULBs)

Class	Percentage of ULBs With Open drains	% Area Covered by Open Drains
State	90(223)	63
MC	61(14)	37
A	100(15)	73
B	97(57)	63
C	92(132)	67
NP	83(5)	35

90% of the ULBs in Maharashtra have open drainage system for carrying and collecting the sullage water. Out of these 90 percent ULBs 55% (136) ULBs have only open drainage

Graph 3-46-WW_Drainage Network



system, and remaining have combination of underground sewerage system and closed drainage system.

One more important observation from analysis is that there are 13 ULBs, (majority from Class B and C) which do not have any kind of network to collect sullage or sewage.

Average area covered by open drains is 63% at state level. In case of NPs and MCs, the average area covered by the drainage network is well below the state average. It is also important to know that none of these NPs have underground sewerage system. Interestingly, there are 33 ULBs which have physical area covered by open drainage network as 100%.

The conventional sewerage system has worked very well in only those countries that can afford to install and operate them properly. In a developing country like India, where large numbers of people do not have sufficient access to sanitation facilities it is clear that the conventional approach to sanitation is likely to take more time to meet the sanitation needs of the hour.

c) Mode of Disposal

"Safe disposal of 100% waste, human excreta from all sanitation facilities including toilets has to be undertaken." This is one of the goals of the National Urban Sanitation policy. There are disposal standards mentioned in CPHEEO which needs to be followed.

Table 3.18- WW_ Mode of Disposal of Sullage

Class	% Of ULBs which have Mode of Disposal of Sullage is Open dump	% of ULBs Having Water Body as Mode of Disposal
State	41	36
MC	13	48
A	40	27
B	47	39
C	44	34
NP	33	33

In a conventional sewerage system, final disposal of treated effluent can be done in a water body like lake, river, estuary, ocean etc or can be disposed on land also. If the final disposal is to be done in a water body, the degree and type of treatment required depends upon the type of water body and its self cleansing capacity.

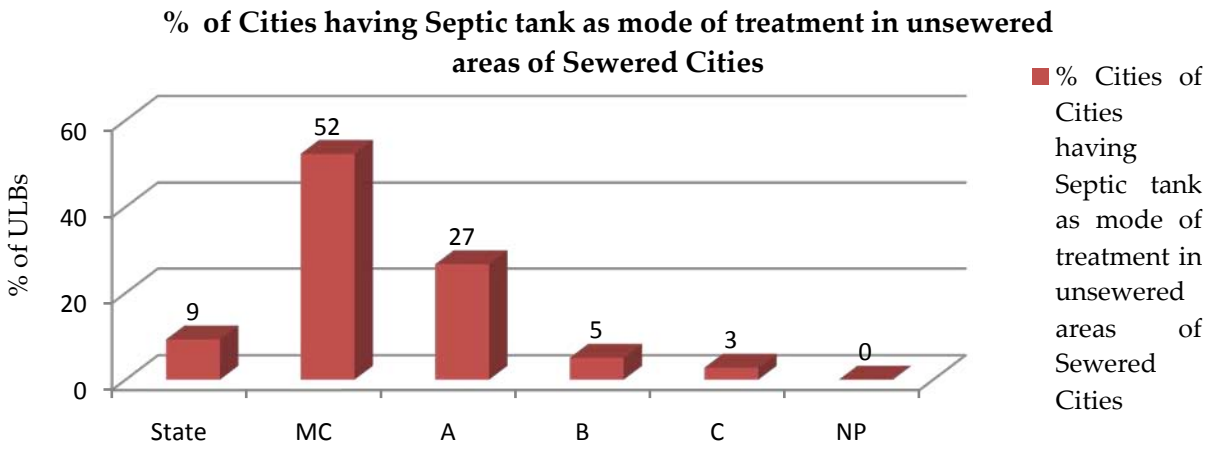
As discussed in earlier sections, there are only 31 ULBs in Maharashtra with partial sewerage network, out of which only 15 have secondary treatment facility. As seen from above table that most of the municipal councils use mode of disposal as open dump (i.e. on land) 48% of MCs use water body for disposal of untreated waste water. In ULBs where

there is no any kind of network the sullage and grey water is disposed on land mass without any treatment.

d) Type of Treatment in Unsewered Areas

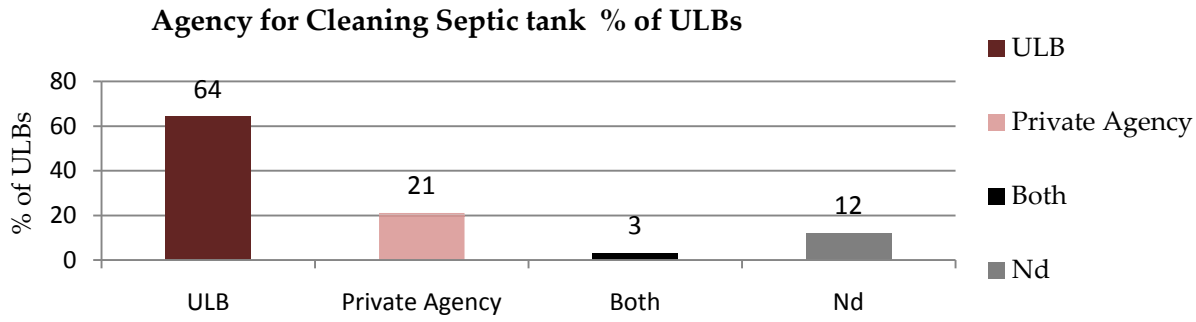
f. Treatment of waste water in Unsewered Areas of Sewered ULBs

Graph 3-47-WW_Mode of Treatment in Non Sewered Areas



There is no ULB in Maharashtra with 100% coverage of individual sewerage connection. 52% of the Municipal corporations use septic tank for the treatment of grey water followed by soak pit in areas which are unsewered. Cities which do not have any network also treat the grey water using septic tank. Septage is disposed in open drains as well as soak-pits.

e) Agency for Cleaning Septic Tank Waste



Graph 3-48-WW_Agency for Cleaning Septic Tanks

In 64% of the urban local bodies, ULBs themselves do the cleaning of septic tank waste. In remaining 21% ULBs the septic tank waste is cleaned by private agencies.

3.2.3 Division Wise Thematic Assessment

3.2.3.1 Performance Indicator Based Assessment

a. Access and Coverage

Table 3.19-WW_ Access and Coverage_ Divisionwise (Figures in parenthesis are number of ULBs)

Division	Coverage of Toilets at Household Level (%)	Coverage of Toilets (Individual + Community) (%)	Coverage of Sewerage Connections at Household Level. (%)	Coverage of Waste water Network Services. (Residential + Non residential) (%)
Kokan (33)	65	83	31	37
Pune (47)	58	88	49	46
Nashik (41)	48	72	41	44
Amravati (41)	59	77	nd/na	na/nd
Aurangabad (55)	53	61	36	33
Nagpur (31)	59	82	44	46
State (248)	**56**	**77**	**40**	**41**

There are 6 divisions in Maharashtra. This analysis is carried out to understand the relation between the Divisions and some of the Key Performance Indicators.

In terms of coverage of toilets at HH level, almost all the divisions are performing at same level, highest being Kokan division. Coverage of toilets (individual + community) is highest in Pune division. Aurangabad division has reported the lowest value of coverage of toilets (individual + community) i.e. 61%. In terms of sewerage connections at HH level, ULBs in Pune division are better performing as compared other divisions. Out of 41 ULBs in Amravati division, 39 ULBs do not have underground sewerage network. ULBs in Pune and Nagpur Division have reported 46% coverage of waste water network services.

b. Coverage in Slums

Table 3.20-WW_ Coverage in Slums_ Divisionwise

Division	Coverage of Toilets in 'Slum Settlements'	Coverage of Individual Sewerage Connections in Slums
Kokan (33)	1	1
Pune (47)	6	1
Nashik (41)	4	0
Amravati (41)	17	1
Aurangabad (55)	15	0
Nagpur (31)	15	30
State (248)	10	2

Table 32 represents the averages of coverage of individual toilets in slums and individual sewerage connections in slums. Averages for coverage of individual toilet connections in slums for divisions like Kokan, Nasik, and Pune are alarming and need immediate attention.

In case of individual sewerage network coverage, the situation in slums is more serious in all the divisions. Nagpur division shows sewerage network coverage of 30%. This is because except Nagpur Municipal Corporation, none of the ULBs have underground sewerage network in place.

c. Efficiency in Service Delivery

Table 3.21-WW _Efficiency in Service Delivery_ Divisionwise

Division	No of ULBs with Underground Sewerage Network	Collection Efficiency of Waste Water Network (%)	Adequacy of Sewerage Treatment Capacity (%)	Extent of Reuse and Recycling of Waste Water (%)
Kokan (33)	9	34	20	17
Pune (47)	12	40	52	62
Nashik (41)	5	100	60	60
Amravati (41)	2	na/nd	na/nd	na/nd
Aurangabad (55)	2	73	48	82
Nagpur (31)	1	19	23	0
State (248)	**31**	**41**	**37**	**43**

Out of the 31 ULBs which have partial sewerage network, 12 ULBs are from Pune division and 9 from Kokan.

Nagpur division has only 1 ULB with sewerage network for which the collection efficiency and sewage treatment capacity is very low compared to ULBs of other divisions. Nashik and Aurangabad divisions have better collection efficiency and comparatively higher Sewage treatment capacity. It is important to note here that adequacy of sewerage treatment capacity for Kokan division is only 20% which is the lowest amongst all the divisions.

Reuse and recycle of waste water is an area that needs urgent attention as there is dearth of initiatives in ULBs in Nagpur and Kokan division. Extent of reuse and recycling is highest for Aurangabad division. This needs to be qualified with the fact that there are only 2 ULBs with the network and Nanded MC practices 82% reuse and Recycle of waste water. As discussed in Class wise analysis, Karad which is part of Pune division practices 100% reuse of waste water by supplying it to farmers after sufficient secondary treatment, which is then used for irrigation.

d. Financial Management

Table 3.22-WW _Financial Management_ Divisionwise

Division	Extent of Cost Recovery in Waste Water Management	Efficiency in Collection of Sewerage Related Charges
Kokan (33)	15	61
Pune (47)	17	77
Nashik (41)	19	79
Amravati (41)	4	72
Aurangabad (55)	5	64
Nagpur (31)	13	96
State (248)	13	74

Amravati and Aurangabad divisions have shown lowest extent of cost recovery of operation and maintenance charges in waste water management. This may be because of the reason that out of 54 ULBs in Aurangabad division 23 ULBs have Zero o & m cost recovery and 28 have no recorded data on finance. Nanded and Latur are the only two ULBs which reported the indicator. ULBs in Nashik, Pune and Kokan division are performing relatively better compared to other divisions. Nashik, Pune and Kokan divisions have average extent of cost recovery in waste water management greater than state average of 13%.

3.2.3.2 Context Information Based Assessment

e. Network Coverage

Table 3.23-WW_Context Information Based Wastewater Network Coverage

Division	% of ULBs with Sewerage Network	% of Area Covered with Sewerage Network	% of ULBs With Open Drains	% Area Covered by Open Drains
Kokan (33)	27(9)	35	82	61
Pune (47)	26(12)	45	91	59
Nashik (41)	12(5)	47	95	52
Amravati (41)	5(2)	1	85	64
Aurangabad (55)	4(2)	24	93	65
Nagpur (31)	3(1)	69	94	81
State (248)	13(31)	40	90	63

There are very few ULBs in Maharashtra which have underground partial sewerage network as said in earlier sections. Majority of these ULBs are in Pune and Kokan divisions. Urgent action is needed for ULBs in other divisions for improvement on this Front.

Area covered by underground sewerage network is only 1% in case of Amravati division, this is because only 1 ULB out 41 ULBs in the division the network, only 2% area of which is covered by the sewerage network. In case of Nagpur division which is showing highest coverage of network, Nagpur MC is the only ULB which has coverage of 69%, rest other ULBs in the Division do not have network.

3.2.4 Observations and Conclusions

Based on the analysis carried out under this project for the first round, following observations are made

1. Coverage of toilets at HH level is only 56% but the coverage of toilets (individual + community) is 77% which is much higher than individual toilets.
2. One of the key observations is that, most of the ULBs do not maintain the records of number of HH with access to individual toilets.
3. There are only 31 ULBs in the state out of 248 which have partial underground sewerage network. There is not a single ULB in the state with 100% coverage of underground sewerage network connection.
4. Out of the 31 ULBs which have sewerage network, only 15 ULBs have secondary treatment capacity. MCs like, Greater-Mumbai, Kalyan-Dombivli, Ulhasnagar, and Bhiwandi have only primary treatment capacity.
5. Most important issue to be addressed in terms of financial management is that more than 30% of the ULBs in Maharashtra do don't levy any kind of sewerage tax or charge.
6. Most of the MCLs do not maintain segregated budget heads for Waste Water and Sanitation.

3.3 Solid Waste Management

Effective management of solid waste has become a major challenge facing city managers in order to make their cities clean and livable. Appropriate solid waste management of a city is crucial for public health and aesthetic surroundings.

The following state level scenario gives an understanding of the solid waste management services and the values of key performance indicators at the state level. The state level status of SWM sector in terms of availability of data and applicability of performance indicators along with their average values at state level can be described as follows:

3.3.1 State Level Scenario

Table 3.24- SWM_State Level Scenario

	KEY PERFORMANCE INDICATORS	Total Cities	Mean Count	Nd	>Floor	<Ceiling	Na	Avg	Unit
1	House hold level coverage of SWM services	248	245	3	0	0	0	63	%
2	Efficiency of collection of MSW	248	242	6	0	0	0	95	%
3	Extent of segregation of MSW	248	246	2	0	0	0	13	%
4	Extent of MSW recovered	248	92	2	0	0	154	40	%
5	Extent of cost recovery (O&M) in SWM services	248	156	92	0	0	0	5.0	%
6	Spatial variations in HH level coverage of SWM services	248	53	192	0	3	0	0.3	Ratio
7	HH level coverage of SWM services in 'slum settlements'	248	170	29	0	0	49	51	%
8	Extent of scientific disposal of MSW	248	11	3	0	0	234	61	%
9	Efficiency in redressal of customer complaints	248	222	21	0	0	5	96	%
10	Efficiency in collection of SWM related charges	248	13	137	0	0	98	72	%

Table No. 3.26 indicates the status with respect to the KPIs for the Solid Waste Management sector. The Table also emphasizes on the number of ULBs that have reported no data and the number of ULBs for which certain KPIs do not prove applicable for certain reasons. Significant facts to be noticed from the Table are

1. House hold level coverage of SWM services in the state is 63%.
2. Even though the collection efficiency of MSW is high, the extent of treatment of waste is low as only 49 ULBs have provision of a treatment plant in the city.
3. Only 84 ULBs in the state practice segregation of MSW.
4. 192 ULBs have reported no data for spatial variations in HH level coverage of SWM services, which indicates that these ULBs do not maintain ward-wise data for SWM services.

5. Only 11 ULBs in the state practice scientific disposal of solid waste.
6. 92 ULBs have not reported data for Cost recovery in O & M in SWM services.

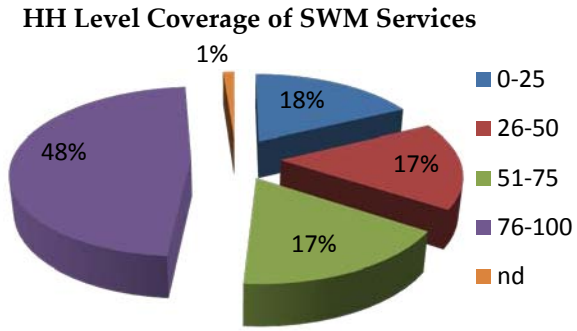
Table 3.25- SWM_ Maximum and Minimum Values of KPIs- State Level

	KPI	Avg	Max	ULB's	Min	ULB's
1	Household level coverage of SWM services	63	100	36 ULBs	0	21 ULBs
2	Efficiency of collection of MSW	95	100	179 ULBs	18	Panvel (A)
3	Extent of segregation of MSW	13	100	20 ULBs	0	162 ULBs
4	Extent of MSW recovered	40	100	19 ULBs	1	2 ULBs
5	Extent of cost recovery (O&M) in SWM services	5.0	97	Kolhapur (MC)	0	100 ULBs
6	Spatial variations in HH level coverage of SWM services	0.3	0.95	Kandhar (C)	0	7 ULBs
7	HH level coverage of SWM services in 'slum settlements'	51	100	60 ULBs	0	62 ULBs
8	Extent of scientific disposal of MSW	61	100	4 ULBs	0	Katol (C)
9	Efficiency in redressal of customer complaints	96	100	179 ULBs	0	Bhokar (C), Morshi (C)
10	Efficiency in collection of SWM related charges	72	91	Ulhasnagar (MC)	35	Nashik (MC)

State level Maximum and Minimum Values of KPIs (Table no. 3.27)

- 36 ULBs have reported 100 for the indicator of household level coverage of SWM services, out of which 27 belong to the C class.
- 20 ULBs have reported 100% segregation of MSW, out of which 10 belong to C class.
- 49 ULBs in the state practice treatment of waste.
- Out of the 11 ULBs that have provision of scientific land fill sites 5 cities have reported 100% scientific disposal.
- 179 ULBs have reported 100% efficiency in redressal of customer complaints out of which 14 belong to MCs.

Chart 3-7- SWM_HH Coverage of SWM Services_ Ranges



Access and Coverage

The indicator on household level coverage of SWM services captures the door-to-door collection of municipal solid waste (MSW). This is relevant as it forms a major part in the quantum of waste that can be treated, and scientifically disposed.

Average household level coverage of MSWM network in the State is 63%. According to ULBs reported, 48 ULBs in the state of

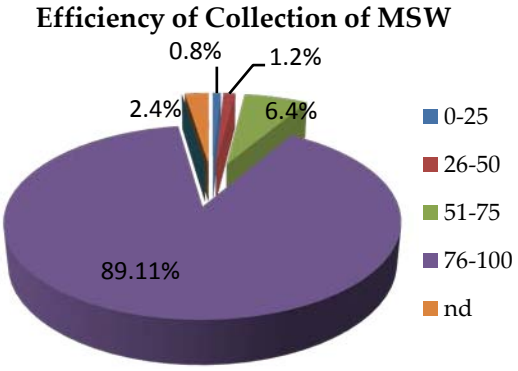
Maharashtra (19.35 % of the total 248 ULBs) have house hold coverage of SWM services more than 90% which is fairly a good beginning for these ULBs.

The chart 4 indicates the range of values for the above indicator. The coverage of SWM services for 118 ULBs (48%) fall in the range of 76-100%, out of which 74 ULBs belong to C Class. 10 out of 23 MCs have reported value of coverage of SWM services more than 75%. The figure needs to be verified in true perspective of the doorstep collection defined above. As such, the ULBs which have reported household coverage less than 50% (36% of the total 248 ULBs) need immediate attention to reach the level of 90%.

Service Level and Quality

Service level and quality aspect of SWM caters to three indicators namely efficiency of collection of MSW, extent of segregation and extent of processing and recycling of solid waste.

Chart 3-8- SWM_ Efficiency in Collection of MSW_ Ranges

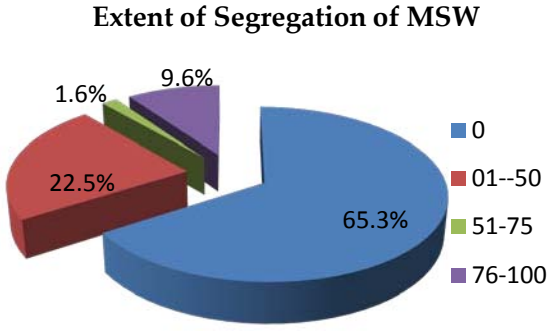


Efficiency of Collection of MSW-

Efficiency of collection of MSW indicator captures the total quantum of waste that is collected at the treatment and/or disposal sites. This is relevant as it forms a major part in the quantum of waste that can be treated /disposed. The term "Collection Efficiency" measures the quantity of MSW collected as stipulated under the system against the quantity generated by all the generators of MSW daily, in terms of %. The gap is the backlog remained to be collected on that day.

Extent of collection efficiency of MSW as reported by the ULBs in the state is 95%. In the entire state, 19 MCs out of 23 have reported collection efficiency of MSW more than 75% and only 15 ULBs (6% of the total 248 ULBs) have collection efficiency below 70%. Out of the 15 ULBs is two ULBs each of MCs, A class and B class and nine of C class ULBs. These ULBs have to urgently upgrade their operational efficiency.

Chart 3-9-SWM _Extent of Segregation of MSW_ Ranges



Extent of Segregation of MSW-

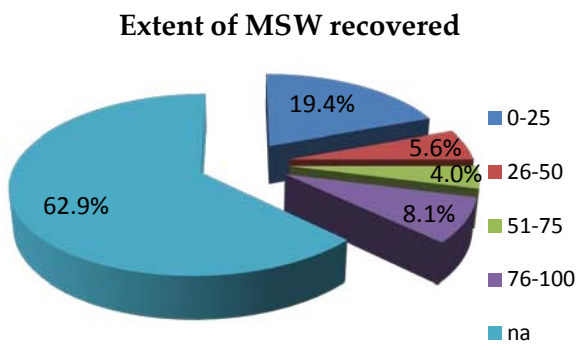
Extent of segregation of MSW indicator captures the segregation of waste, typically as dry and wet waste, but ideally as biodegradable and non-biodegradable waste. Segregated waste enables increased efficiencies in treatment, recycling and scientific disposal of waste.

Extent of segregation in the state is only 13% as only 84 ULBs out of 248 (33%) practice segregation of solid waste at door to door level. Out of the 84 ULBs that practice segregation of MSW, 29 ULBs in the state have extent of segregation more than 50%.

In the state there are 20 ULBs which are better performing in terms of segregation of waste as extent of segregation reported in these ULBs is high (100%). Extent of segregation reported by certain Key ULBs which mention 100% segregation appears to be very much on higher side than the normal trend in Maharashtra.

Extent of MSW Recovered-

Chart 3-10-SWM _Extent of MSW Recovered_ Ranges



Extent of MSW recovered indicator captures the quantity of waste that is recycled or processed at the treatment plant and quantity taken away by recyclers at intermediate points. The processing refers to treatment of Biodegradable and / or Recyclable waste with the use of one of the stipulated technologies and channelizing the recyclable for recycling.

According to the ULBs reporting data 92 ULBs; 16 Corporation, 6 A class, 25 B class and 45 C class out of 248 ULBs (21%) have facilities for recovery of MSW. But the extent of solid waste recovered by these 92 ULBs is registering 40% average.

30 ULBs (12%) in the state have reported recovery of MSW to the extent of more than 50 %. This indicates that even though the collection efficiency of ULBs is high the extent of recovery of waste in the state is very low. In the state, 19 ULBs have reported 100% MSW recovered; 2 MCs, 1 A class, 5 B class, and 11 C class ULBs.

Financial Management

Financial management aspect captures two indicators namely cost recovery in operation and maintenance of solid waste management services and the efficiency in collection of solid waste charges.

Extent of cost recovery (O&M) in SWM services indicator captures the revenues (taxes, user charges, fees) recovered by the ULB against the expenses incurred. This denotes the cost control measures, if any, that need to be considered by the ULB, and also a critical factor in tariff charges. Average cost recovery for operation and maintenance in solid waste management in the state for reported ULBs is only 5%.

Efficiency in collection of SWM-related charges indicator captures the extent of collection of revenues billed by the ULB. In the state 98 ULBs out of 248 do not levy any charges related to solid waste management and 137 ULBs have no recorded data for collection of solid waste charges. Efficiency of collection of solid waste charges for the 13 ULBs that levy charges in the state is 72% and the average collection period for solid waste charges in the state is 320.

Efficiency in Service Operations

This aspect captures the extent of scientific disposal of solid waste and the efficiency of redressal of customer complaints.

The extent of scientific disposal of solid waste captures the quantum of waste that is disposed in scientific engineered landfills. This is an important indicator as it assesses the amount of waste that is safely disposed as against waste that is disposed in open dumps. The extent of scientific disposal in the state for reported ULBs is 66% for the 11 ULBs that have the provision of scientific landfill sites in working condition and 208 ULBs in the state dispose the waste in open dumps which indicates that disposal takes place mainly in open dumps.

The average efficiency of redressal of complaints in the state is 96%; the maximum number of complaints reported in the solid waste management sector is in the collection of solid waste category. 22 ULBs in the state have no recorded data for the SWM related complaints received and redressed annually.

Equity

The Equity aspect captures the spatial variation in household level coverage in solid waste management services and the coverage of SWM network in slum settlements. The state level average value of spatial variation in house hold level coverage of SWM services is 0.3. This is also because 192 ULBs out of 248 do not maintain ward wise data of house hold level coverage of SWM services.

The average household level coverage of SWM services in slum settlements is only 50%. In the state 48 ULBs out of 248 (19%) have reported to be devoid of slums. Only 85 ULBs have house hold level coverage in slum settlements more than 50% and 65 ULBs out of the remaining 202 have no house hold level coverage of SWM services in slum settlements.

3.3.2 Class wise Thematic Assessment

3.3.2.1 Performance Indicator Based Assessment

a. Access and Coverage

Key Performance Indicators:

1. Household level coverage of SWM services

Definition: Total number of households with door-to-door collection of MSW to the total number of households in the city.

The household level coverage here means doorstep collection services of biodegradable and recyclable waste to the generators plots/ premises for all generators of MSW residential as well as commercial, institutional and others.

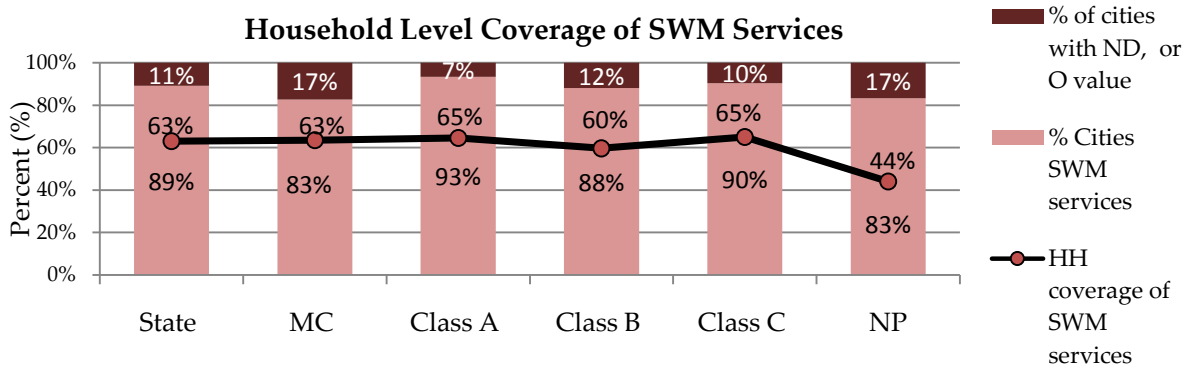
The above indicator of house hold level coverage of SWM services does not cover data on collection from community bins placed on roads. It also appears that the coverage is street to street coverage and not door to door as desired.

Household Level Coverage of SWM Services

Table 3.26-SWM_Household Level Coverage of SWM Services

Categories	Household level coverage of SWM services
State (248)	63
MC (23)	63
Class A (15)	65
Class B (59)	59
Class C (145)	65
NP(6)	44

Graph 3-49- SWM_ Household Level Coverage of SWM Services



In Maharashtra the state average value for household level coverage of SWM services is 63%. In the state 36 ULBs out of 248 have 100% household level coverage of SWM services, out of which 27 ULBs belong to the C Class. Out of 23 MCs only Solapur MC has 100% household level coverage. 17 ULBs in the state do not have door to door household level

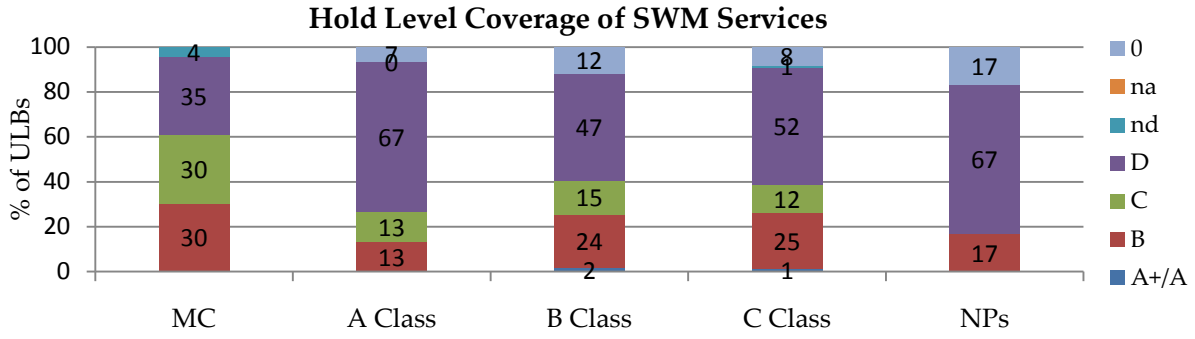
coverage of SWM services. Among these ULBs, for example in ULBs like Paranda, Naldurg and Ner-navabpur waste is collected on the street either in bins or on open plots and then taken away by individual sweepers, carts or tractors.

Graph 3-46 clearly shows that the coverage of SWM services is highest in A class with the extent of collection of solid waste in A class being 65%.

In order to give 100% door step service it is important to identify plots, property/ premises abutting public roads. The door step service of collection of segregated bio degradable and recyclable waste should be given to every premises/plot/ property abutting public roads.

Reliability Analysis _Household Level Coverage of SWM Services

Graph 3-50- SWM_Reliability _Household Level Coverage of SWM Services



1. The Graph 3-50 on reliability analysis of the indicator on house hold level coverage of SWM services shows that most of the ULBs have reported B, C and D reliability. As discussed above the ULBs like Vasai Virar (MC), Jalna (A class), 7 ULBs of B class and 15 ULBs of C class have reported higher coverage of SWM services (100%) but have reported low reliability which is D.
2. Only 3 ULBs Shirpur (B class), Panhala and Ramtek (C class) have reported reliability A as these ULBs have computerised systems to maintain records of primary collection.
3. Out of 50 ULBs that have reported higher values for the above indicator (higher than 95%) only 17 ULBs in the state have reported B reliability. The reasons for low reliability scales are that most of the ULBs maintain only manual records of primary collection. When compared class wise more no. of MCs have reported B and C reliability.

b. <u>Service Level and Quality</u>

Key Performance Indicators

1. Efficiency of collection of municipal solid waste

<u>Definition:</u> Quantum of waste that is collected at the treatment/disposal sites to the total quantity of waste that is generated in the city.

2. ***Extent of segregation of municipal solid waste***
   Definition: Quantity of segregated waste received at treatment/disposal sites to the total waste collected by the service providers.
3. ***Extent of processing and recycling of solid waste***
   Definition: Quantum of waste that is recycled or processed to the total waste that is collected by the service providers.

Efficiency of Collection of MSW

Table 3.27- SWM_ Efficiency of Collection of MSW

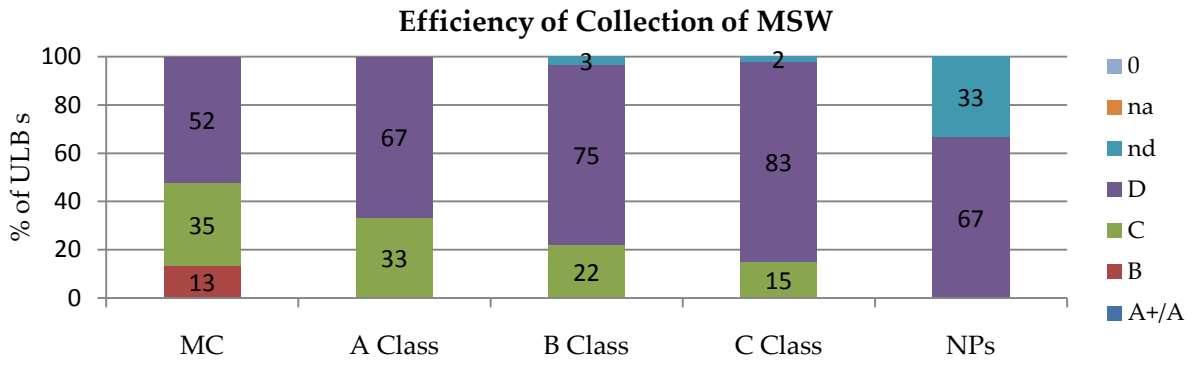
Categories	Efficiency of Collection of MSW
State (248)	95
MC (23)	91
Class A (15)	90
Class B (59)	96
Class C (145)	95
NP(6)	100

Table 3.29 shows that the average collection efficiency of MSW is reported highest in class B (96%) after the NP (100%). Out of the reporting ULBs in the state 179 ULBs have 100% collection efficiency of MSW. 11 MCs out of 23 are performing well in terms of collection of solid waste and have reported 100% collection efficiency.

Yavatmal Municipal Council is using SHG as a tool of Community participation for solid waste collection. Yavatmal also has compliance of MSW rule. (Automated machine 'bobcat' is being used for lifting waste from collection points into trucks.)

Reliability Analysis _ Efficiency in Collection of MSW

Graph 3-51- SWM _Reliability _Efficiency in Collection of MSW



1. The Graph 3-51 indicates that most of the ULBs in the state have reported C and D reliabilities for the above indicator. For the above indicator of efficiency in collection

of MSW all the ULBs in the state except for 3 MCs (Kolhapur, Nashik and Pimpri Chinchwad) have reported only C and D reliabilities.

2. The reason for low reliability scale is mainly because in most of the ULBs the generation of waste is not estimated through sample surveys or spot surveys but is done mainly by per capita waste generation. Automated systems are not adopted for operations at processing/disposal site and manual records are not maintained for the same.
3. Class wise comparison of reliability scales indicates that 13% (3 nos.) of the MC's have reported B reliability. In A, B and C class more no. of ULBs has reported D reliability. 4 out of 6 NPs have reported D reliability.

Extent of Segregation of MSW

The data value is the percentage of the waste collected at source or from community bins and received at the treatment plant or dumping site or SLF site in a segregated manner to the total quantity of waste collected.

Table 3.28- SWM _Extent of Segregation of MSW & % of ULBs in which Segregation Takes Place

Categories	% Extent of Segregation of MSW	% of ULBs in which Segregation Takes Place
State (248)	13	34
MC (23)	10	57
Class A (15)	17	40
Class B (59)	19	39
Class C (145)	10	28
NP(6)	32	33

In the State the extent of segregation is low many of the ULBs do not have the provision of house hold segregation of waste in two bins for bio-degradable and recyclable waste.

In the State only 84 ULBs out of 248 practice segregation of waste, out of which 13 are MCs and the extent of segregation of MSW in the state is only 13%. The average extent of segregation of solid waste is highest in B Class, as B Class has 23 MCls that practice segregation of waste.

35 ULBs in the state have households provided with two bins systems for bio degradable and recyclable waste. ULBs like Karad, Bhor, Biloli, Dhamangaon Railway and Khuldabad have more number of households having the two bins system.

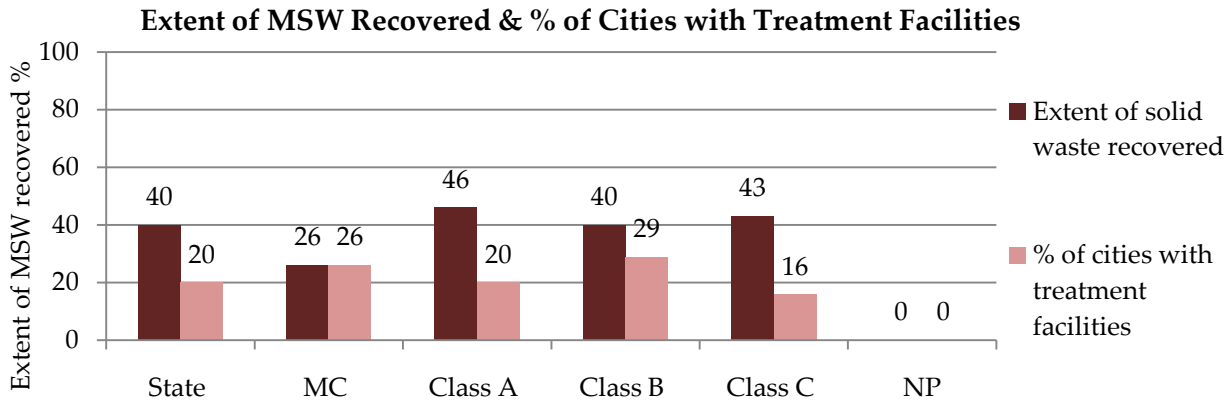
Reliability Analysis_ Extent of Segregation of MSW

1. In the state out of the 84 ULBs that practice segregation of waste as discussed above only 2 MCs, Nagpur and Pune have reported A and A+ reliabilities respectively for the above indicator.

2. 7 ULBs in the state have reported B reliability for the above indicator among
3. The ULBs that have reported 100% segregation have lower scales of reliabilities
4. The reason for lower reliabilities is that most of the ULBs do not have the provision for a weighbridge to measure the municipal solid waste that is collected.

Extent of Recovery of MSW & % of Cities with Treatment Plant Facilities

Graph 3-52-SWM_% of ULBs with Treatment Facilities and Extent of MSW Processed and Recycled



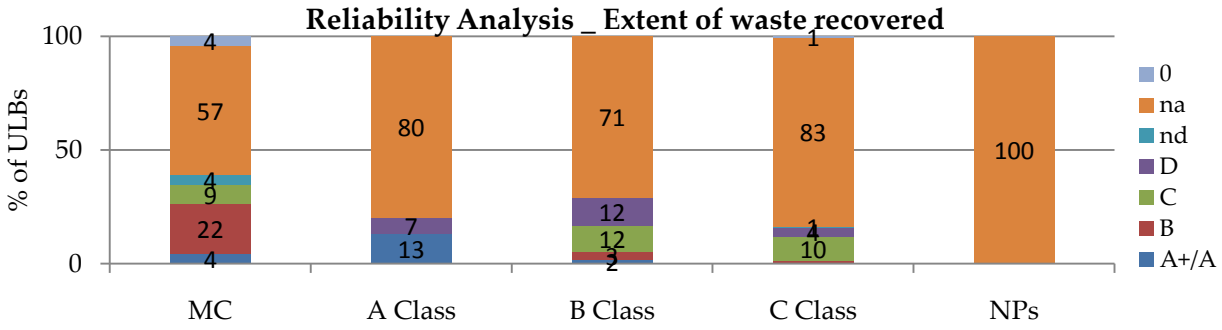
Treatment considered here is of 6 types composting, vermi composting, community level composting, RDF (Refuse derived fuel), and waste converted to energy and others.
In the State 55 ULBs out of 248 have reported to have facilities for recovery of solid waste, either processed at treatment plant or taken away by recyclers at intermediate points for recycling. In the state only 49 ULBs have treatment plant in place for recycling and processing of solid waste.

Out of 23 MCs 6 MCs have provision of processing and recycling of MSW at treatment plant. Among C class ULBs 23 ULBs practice treatment of solid waste and the average extent of MSW recovered is 43% which is higher than the state average (40%).

Jalgaon Municipal Corporation practices reuse of waste by private contractor, preparation of plastic granules, civil brick, fuel palate, methane gas.

Reliability Analysis _ Extent of Waste Recovered

Graph 3-53 –SWM_Reliability_Extent of Solid Waste Recovered



1. The Graph 3-53 shows that out of the ULBs in the state which practice treatment of waste only 4 ULBs have reported A reliability (Nagpur, Ichalkaringi, Latur and Chalisgaon). These ULBs have automated systems adopted for operations at processing facilities and quantity of waste collected is measured at the weighbridge.
2. Nagpur MC has reported 100% extent of solid waste processed and recycled with A reliability.
3. The other ULBs in the state that have reported 100% for the above indicator have reported lower reliability scales (B, C and D).
4. In the state 9 ULBs have reported B reliability, 24 ULBs have reported C reliability and 14 ULBs have reported D reliability.

c. Financial Management

Key Performance Indicators

1. ***Extent of cost recovery (O&M) in SWM services***

   Definition: Percentage of total operating revenues from SWM-related charges to total operating expenses on SWM.

2. ***Efficiency in collection of SWM-related charges***

   Definition: Percentage of current year revenues collected from SWM-related taxes and charges as a percentage of total billed amounts (for SWM)

Extent of Cost Recovery in SWM

Table 3.29- SWM _Cost Recovery in O& M in SWM Services

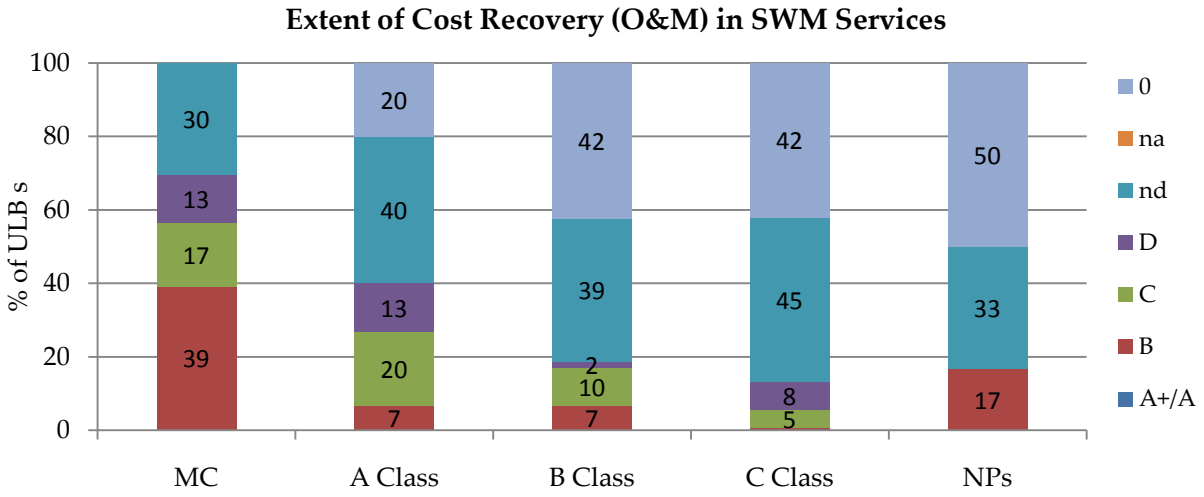
Categories	% Extent of cost Recovery in (O&M)in SWM services	Unit cost of transportation of solid waste
State (248)	5.0	1561
MC (23)	20.8	1724
Class A (15)	5.6	1721
Class B (59)	1.9	1467
Class C (145)	3.4	1561
NP(6)	0.4	468

The average extent of cost recovery for operation and maintenance of solid waste management in the state is 5%.

In the state 92 ULBs out of 248 do not have records for revenue income and expenditure for the SWM sector. When compared class wise the average extent of cost recovery is highest in MCs as recorded data is available for 15 MCs out of 23. Only 5 ULBs have value of cost recovery in operation and maintenance of SWM more than 40% which includes 3 MCs of Dhule, Kolhapur and Pune.

Reliability Analysis_ Extent of Cost Recovery (O&M) in SWM Services

Graph 3-54- SWM-Reliability _ Extent of Cost Recovery in SWM Services



1. In the state out of the ULBs that have reported data for the above indicator have reported B, C and D reliabilities.
2. Out of the ULBs reporting data, 16 ULBs in the state have reported B reliability and 20 ULBs have reported C reliability.
3. The reason for the ULBs to have reported data on lower reliability scales is majorly that the ULBs do not practice accrual based double entry accounting system moreover many ULBs have budget heads related to SWM only partially segregated.

Efficiency in Collection of SWM Charges

Table 3.30- SWM _Efficiency in Collection of SWM Charges

Categories	Efficiency in collection of SWM charges	% of ULBs that are Na , Nd or blank for charges for solid waste	Average Revenue per HH	Collection period for SWM charges	Billed arrears to total billed demand
State (248)	72	64	26	320	28
MC (23)	67	30	147	170	39
Class A (15)	70	47	51	473	32
Class B (59)	na	81	123	812	39
Class C (145)	85	64	10	268	8
NP(6)	na	83	6	na	na

The present cost of O & M collected by ULBs in Maharashtra is 5% on an average it works out to be Rs 26 per HH but the sample observations indicate that the total cost of MSWM including street sweeping works out to be Rs 60 to 100/month per family (of 5 members).

In the State out of 248 ULBs data is available only for 13 ULBs for charges related to SWM services out of which 7 ULBs are MCs, 3 ULBs belong to class A and 3 ULBs belong to class C. Among the ULBs which levy solid waste related charges the collection efficiency is 72%, highest average being in class C followed by class A and MCs. In the state 98 ULBs do not levy any charges related to SWM services.

137 ULBs have no recorded data for the charges related to solid waste management sector. Collection efficiency of SWM charges is highest in the city of Malwan in C class followed by Kolhapur MC.

The average revenue collected per house hold for SWM is highest in B Class followed by MCs.

d. Efficiency in Service Operations

Key Performance Indicators

1. ***Extent of scientific disposal of municipal solid waste***

   Definition: Quantum of waste that is disposed in scientific/compliant landfills to the total quantum of waste disposed in compliant and open disposal sites.

2. ***Efficiency in redressal of customer complaints***

   Definition: Total number of SWM related complaints redressed within time stipulated in the service charter of the ULB, as a percentage of the total number of SWM-related complaints received in that year.

Extent of Scientific Disposal of MSW

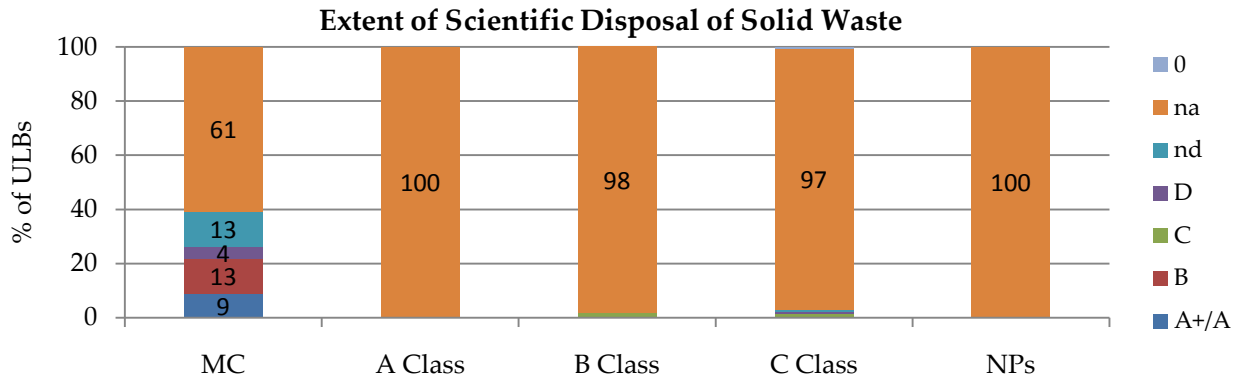
Table 3.31-SWM_Extent of Scientific Disposal of MSW

Categories	% Extent of scientific disposal
State (248)	66
MC (23)	79
Class A (15)	na
Class B (59)	11
Class C (145)	67
NP(6)	na

Average extent of scientific disposal of solid waste in the state is 66% for the 11 ULBs that have provision of scientific landfill sites in the city. Only few MCs have scientific landfill sites. Among the B Class MCls only one MCl of Chopda has the provision of scientific landfill and the extent of scientific disposal of MSW in Chopda is 11%. Division wise comparison indicates that out of 11 ULBs that have scientific landfill sites, 3 belong to the Kokan Division (Navi Mumbai, Karjat and Rajapur). No city belonging to A Class has the provision of scientific landfill sites.

Reliability Analysis _ Extent of Scientific Disposal of Solid Waste

Graph 3-55-SWM- Reliability _Extent of Scientific Disposal of Solid Waste



1. The ULBs that have reported data for the above indicator has reported B, C and D reliabilities only.
2. Only 2 MCs have reported A+ reliability (Navi Mumbai and Pune), 3 ULBs have reported B and C reliabilities each and 2 ULBs have reported D reliability.
3. Navi Mumbai MC has reported 100% scientific disposal of MSW with A+ reliability as Navi Mumbai has automated systems linked to GIS database that is used for monitoring SWM operations.
4. The reason for the ULBs reporting low reliability scales is that they do not have automated systems for SWM operations or they do not maintain manual records for the monitoring of SWM operations at disposal site.

Redressal of Customer Complaints

Efficiency in redressal of customer complaints indicator captures the number of complaints made by consumers that have been resolved by the ULB, as per service charter standards. It is an important indicator which directly assesses the consumer satisfaction level.

Table 3.32- SWM_ Redressal of Customer Complaints

Categories	% Efficiency in Redressal of Customer Complaints	Total Complaints in Solid Waste per 1000 HH	Complaints Related to Collection per 1000 HHs/year	Complaints Related to Sweeping per 1000 HHs/year	Complaints Related to Dumpsites, etc per 1000 HHs/yr
State (248)	97	36	12	9	5
MC (23)	95	7	3	1	1
Class A (15)	99	17	12	3	1
Class B (59)	97	33	5	20	3
Class C (145)	97	42	14	12	7
NP(6)	98	28	9	9	3

In the State Complaint Redressal is 97% which does not vary across the classes. Complaints related to SWM are categorised as complaints related to collection, complaints related to overflowing bins, complaints related to odour at dumping site, complaints related to infrequent sweeping and other complaints. Complaints related to collection of solid waste recorded are more compared to complaints related to sweeping or complaints related to dumping sites per 1000 HH/yr.

Complaints in MSWM should be recorded and redressed on daily basis. The annual analysis above has to be done in future on daily basis. The beneficiaries usually do not give complaints in SWM and sometimes habitual trouble makers give complaints despite the services given in time. The complaints recorded should be validated by re inspection and redressed within the next 12 hours.

Pimpri Chinchwad MC has promoted registration of complaints by citizens through Complaint Redressal system enabled by sms and emails.

e. Equity

Key Performance Indicators

1. ***Spatial variations in household level coverage of SWM services***

Definition: Coefficient of variation (defined as standard deviation divided by mean) of zonal values for "total households with door-to-door collection of MSW, as % of total households"

2. ***Household level coverage of SWM services in 'slum settlements'***

Definition: Total households in slum settlements serviced by door-to-door collection of MSW as a percentage of total number of households in slums.

Spatial Variations in Household Level Coverage of SWM Services

In the state spatial variation (wards wise) in the household level coverage in SWM services is 0.3. The value for class wise average is highest in the MCs which is 0.5. 192 MCls have not reported data for spatial variations as they do not maintain ward wise coverage data.

SWM Services in Slum Settlements

% of Slum Population to the Total Population

Table 3.33- SWM_% Slum Population

Categories	Average Population Density	% of slum population to the total population
State	6970	17
MC	17245	20
Class A	10499	28
Class B	7068	20
Class C	5284	15
NP	2680	6

The percentage of slum population to the total population is reported highest in the city of Ballarpur followed by Hinganghat, Latur, Chandurbazar and Greater Mumbai MC. Among the classes class A has reported highest slum population to the total population. There are 42 ULBs in the state that have the slum population more than 25% of the ULBs total population. These ULBs are problematic in terms of efficiency in SWM service operations.

Household Level Coverage of SWM Services in 'Slum Settlements'

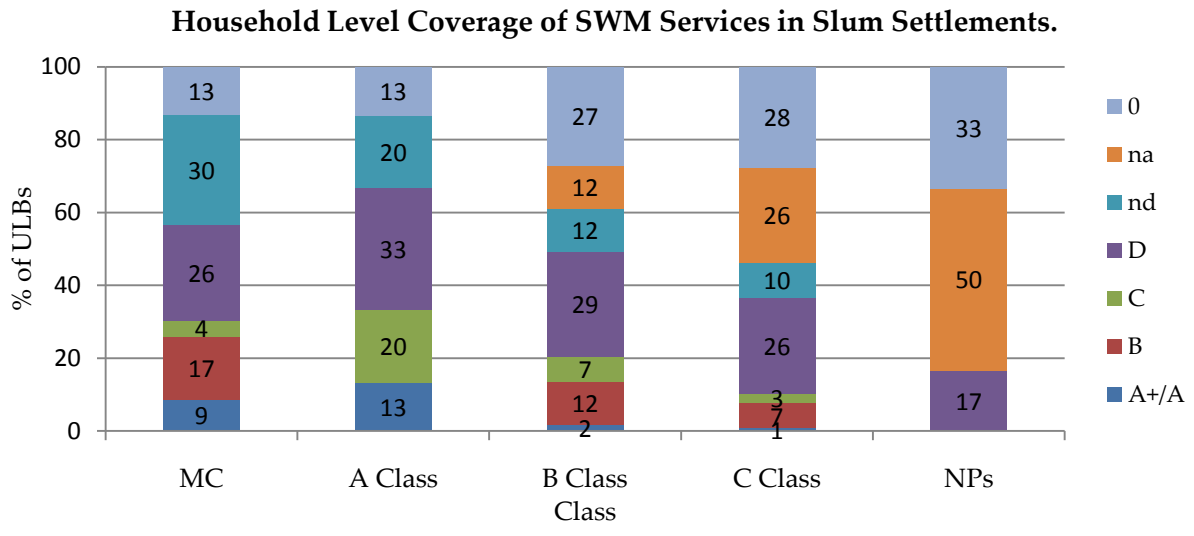
Table 3.34- SWM _Household Level Coverage -Services in Slum Settlements

Categories	HH Level Coverage of SWM Services in 'Slum Settlements'
State (248)	50
MC (23)	60
Class A (15)	55
Class B (59)	48
Class C (145)	48
NP(6)	30

The household level coverage in slum settlements is 50% in the state. The value is highest in MCs and lowest in NPs. In the state 49 ULBs out of 248 have reported not to have slums within their municipal limits. 65 ULBs out of the remaining 202 ULBs have no house hold level coverage of SWM services in slum settlements, out of which 44 belong to the Class C. MCs of Akola, Amravati and Jalgaon have no house hold level coverage of SWM in 'slum settlements'.

Reliability Analysis_ Household Level Coverage of SWM Services in Slum Settlements.

Graph 3-56-SWM_Reliability_Household Level Coverage of SWM Services in Slum Settlements



1. In the state only MCs of Nagpur and Pune, have reported A+ Reliability for the above indicator as households and services are estimated on the basis of computerised records.
2. MCls of Achalpur, Ichalkaranji, Parali-Vaijnath and Karmala have reported A Reliability.
3. In the state the ULBs have reported low reliabilities as they do not maintain computerised records and households and services are not estimated on recent surveys.

Sangamner (B Class) has 100% household level coverage of SWM services and 100% household level coverage of SWM services in 'slum settlements'.

3.3.2.2 Context Information Based Assessment

a. <u>MSW Generation</u>

Table 3.35-Population Density per sq. km. Area

Population Density per sq km - Classwise

Categories	Population Density per sq. km. (Avg)
State	11426
MC	32848
Class A	10499
Class B	7068
Class C	10494
NP	2680

Table 3.37 shows the average population densities in each class. It indicates that the MCs have higher population density per sq.km of area with the highest density in Ulhasnagar MC followed by Bhiwandi MC and Greater Mumbai MC.

SWM services for the ULBs are having population densities higher than 15000 would be difficult to manage. There are 18 ULBs in the state that have their population density higher than 15000.

Ratio of Road Length to Total Area

Table 3.36- SWM _Ratio of Road Length to Area

Categories	Ratio of Road Length to Total Area (Avg)
MC	11
Class A	11
Class B	8
Class C	6
NP	4

The general norm indicates that the ratio of road length to total area should be greater than 5 for the city to have good transportation facilities to cater to the needs of good SWM services

In the state there are 103 ULBs that have the ratio of road length to the total area of the city less than 5 which would prove problematic for SWM services.

Quantity of MSW Generated

Table 3.37- SWM _Quantity of MSW Generated

Categories	Quantity of MSW Generated in TPD
MC	19028
A	929
B	1125
C	903
NP	38

Table 3.39shows the total quantity of waste generated classwise. The quantity of waste generated in a city is an estimated value on the basis of sample survey, spot survey, per capita waste generated or the value quoted by the ULB. In the state 83 ULBs have reported values of waste generated on the basis of estimated per capita waste generation. 71 ULBs have estimated rate of waste generation (gms/capita/day) between 250-500 TPD.
Classwise data on total waste generated, processed and disposed in tabular form is given below.

Table 3.38-SWM_Waste Generated, Processed and Disposed

Categories	Quantity of MSW Generated in TPD	Quantity of MSW Treated in TPD	Total Installed Capacity of Treatment Plant in TPD	Quantity of MSW Disposed in SLF Site in TPD	Quantity of MSW Disposed off in Dumping Ground in TPD
MC	19028	1764	2072	1292	10015
A	929	106	352	0	663
B	1125	153	5136	2	891
C	903	80	476	6	712
NP	38	0	0	0	24

b. MSW Collection

Table 3.39- SWM _Waste Collected (TPD)

	MSW Collected
Categories	**Avg. Waste Collected (TPD)**
State Avg	40
MC Avg	360
Class A Avg	57

Categories	Avg. Waste Collected (TPD)
Class B Avg	18
Class C Avg	6
NP Avg	6

Karad (B Class), Baramati (B Class), Ichalkaranji (A Class), Solapur Municipal Corporation and Pimpri Chinchwad Municipal Corporation have undertaken provision for treatment of bio medical waste treatment plant on BOT contract basis.

The highest amount of waste treated out of waste collected is maximum in MCs followed by Class A. In class C as only 23 ULBs have treatment facilities hence the amount of waste treated out of waste collected is less compared to other classes.

Table 3.40-SWM_No of Sweepers per km. of Road Length

No of Sweepers per km of Road Length Swept

Categories	Total Sweepers per km of Road Length Swept
State (248)	2
MC (23)	3
Class A (15)	1
Class B (59)	3
Class C (145)	2
NP(6)	5

In the state the average no. of sweepers deployed in a city is 83 and the average no. of sweepers per km of road length swept ranges from 1 to 5. Only 8 ULBs have the provision of sweeping by mechanical means out of which 6 ULBs belong to the class of MCs.

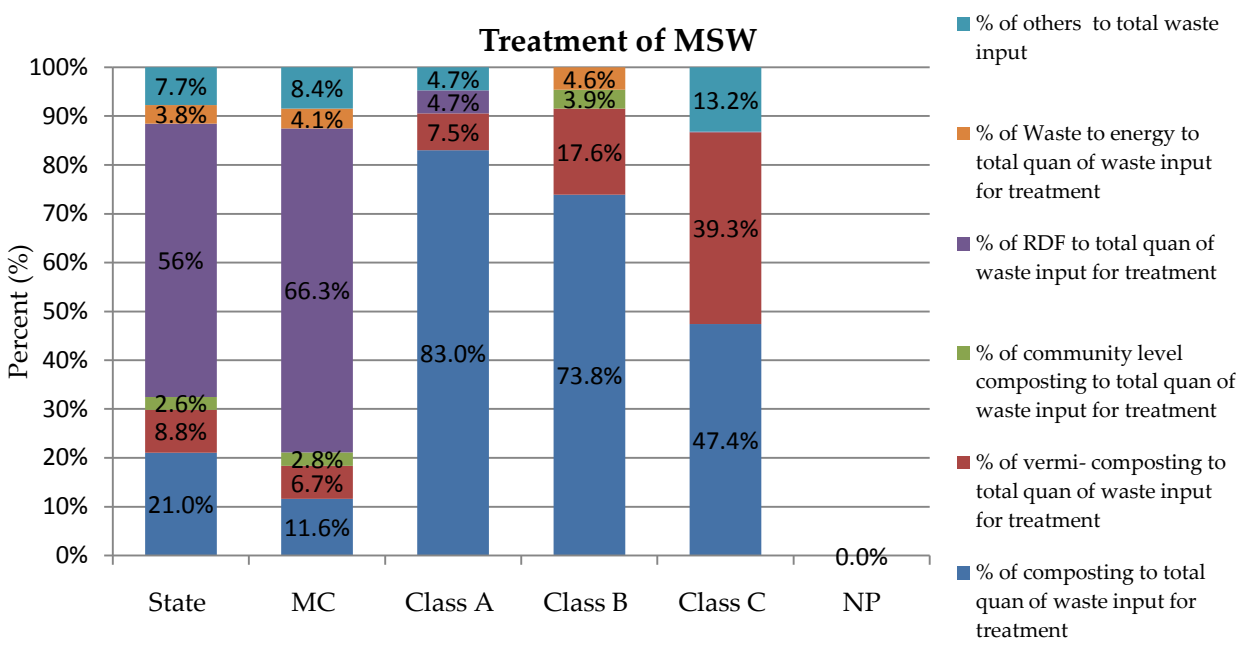
38 ULBs in the State have sweepers per km of roads length more than 3, which indicates that more number of people are employed and the manpower can be shifted to door to door collection services. On an average street sweeping accounts to 40-45% of the total cost in SWM services.

c. MSW Treatment

Type of Treatment

Treatment considered here is of 6 types composting, vermi composting, community level composting, RDF (Refuse derived fuel), waste converted to energy and others as discussed earlier. The graph 3-54 indicates the amount of waste treated under each category.

Graph 3-57-SWM_Type of Treatment



In the state 56% of the waste that is treated is done through RDF as maximum amount of waste (67%) in MC (only in Pune and Nagpur) is treated through RDF, followed by composting which is 21%. 24 ULBs in the state practice composting out of which 10 belong to the B Class.

Table 3.41- SWM_ Type of Treatment _No of ULBs

Categories	No of ULBs with Waste is Composted	No of ULBs with Waste is Vermi Composted	No of ULBs with Community Level Composting	No of ULBs with Provision of RDF	No of ULBs with Provision of Waste Converted to Energy	No of Cities with Provision of Other Facilities
State (248)	25	24	2	5	4	7
MC (23)	4	2	1	2	2	1
Class A (15)	2	1	0	1	0	1
Class B (59)	9	8	1	0	0	0
Class C (145)	10	13	0	2	2	5
NP(6)	0	0	0	0	0	0

In the state 25 ULBs out of 248 practice composting, out of which 9 belong to the Class B and 10 to Class C. Some ULBs have more than one treatment facility. Pune MCs practices composting, vermi composting and RDF and Nagpur MCs practices composting and RDF. In class C solid waste is mainly treated through composting and vermin-composting.

Wardha Municipal Council (A Class) has encouraged community participation for collection of solid waste

Community level composting and waste to energy is a rare practice in the state. Only 4 ULBs in the state have the provision of treatment where waste is converted to energy.

Pune Municipal Corporation practices RDF (Refuse derived fuel). There is involvement of waste picker's entrepreneurship for waste collection.

Capacity Utilization of Treatment Facilities

Table 3.42-SWM _Capacity Utilisation of Treatment Plant

Categories	% ULBs in which Treatment Takes Place	% of Waste Input to Total Treatment Capacity
State (248)	20	26
MC (23)	26	85
Class A (15)	20	30
Class B (59)	29	3
Class C (145)	16	17
NP(6)	0	na

In the State only 20% (49) ULBs have treatment facility where only 26% of the installed capacity is utilized. In MCs the installed capacity of treatment plant is utilized the most (85%).

Table 3.43- SWM_% Treatment to Installed Capacity

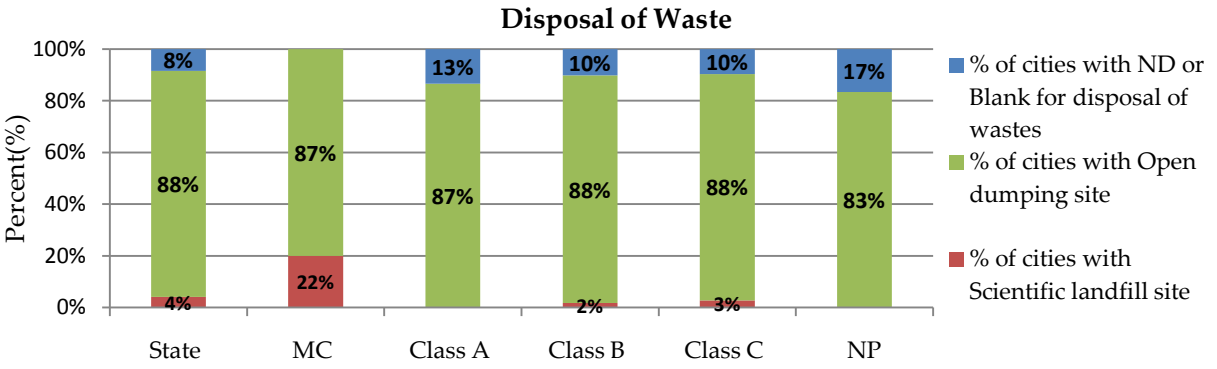
Categories	% of Composting to Installed Capacity	% of Vermi-Composting to Installed Capacity	% of Community Level Composting to Installed Capacity	% of RDF to Installed Capacity	% of Waste to Energy to Installed Capacity	% of Others to Installed Capacity
State (248)	39.7	52.8	100	93.1	85.1	91.4
MC (23)	58.2	75	100	94.4	88	100
Class A (15)	29.3	66.7	na	25	_	25
Class B (59)	80.7	40.8	100	_	63.6	na
Class C (145)	11.8	26.9	na	37.5	_	69
NP(6)	na	na	na	na	na	na

In the state only installed capacity of community level composting is completely utilized. Capacity of composting is the most underutilized. In B Class where 10 ULBs practice composting only 74% of the installed capacity is utilized.

d. MSW Disposal

Waste Transported to Dumping Site

Graph 3-58- SWM_ Disposal of waste



In the state 208 ULBs out of 248 ULBs dispose waste in open dumping sites. At the state level 50% of waste is transported to dumping site

The graph 3-57 indicates that maximum amount of waste is transported to open dumping sites. Amount of waste that is disposed in scientific landfill sites is maximum in MCs followed by C class.

Distance of Open Dumps from the City in km.

Table 3.44- SWM _Distance of Open Dumps from the City

Categories	Distance of open dumps from city (km)
State	3.58
MC Avg.	7.47
Class A	4.46
Class B	3.55
Class C	3.11
NP	2.40

Another important factor to observe would be the average distance of the open dumping ground from the city limits. In the state the average distance of the dumping ground from the city is 3.5 kms maximum average being in the MCs which is 4 kms. Among the MCs there are 4 MCs that have their dumping grounds more than 10 kms away from the city.

3.3.3 Divisionwise Thematic Assessment

The following analysis is done to understand the performance of the ULBs in the solid waste management sector with respect to the division they fall under.

3.3.3.1 Performance Indicator Based Assessment

a. Access and Coverage

Table 3.45-SWM _Access and Coverage_ Divisionwise

Division	Household Level Coverage of SWM Services	HH Level Coverage of SWM Services in 'Slum Settlements'
Kokan (33)	64	73
Pune (47)	74	42
Nashik (41)	60	57
Amravati (41)	55	52
Aurangabad (55)	57	37
Nagpur (31)	69	49
State (248)	63	50

In the State, the Household level coverage of SWM services is highest in the division of Pune (74%) followed by Nagpur (69%). Divisions of Kokan, Nagpur and Pune have the values higher than state average which is 63%. In Pune division only the MCl of Maindargi belonging to Class C that lacks SWM coverage whereas in Nagpur division only 3 ULBs namely Gondia, Ballarpur and Sindi belonging to A, B and C Class respectively out of 31 MCls that fall under Nagpur division have reported to be devoid of SWM coverage.

b. Service Level and Quality

Efficiency in Collection of MSW

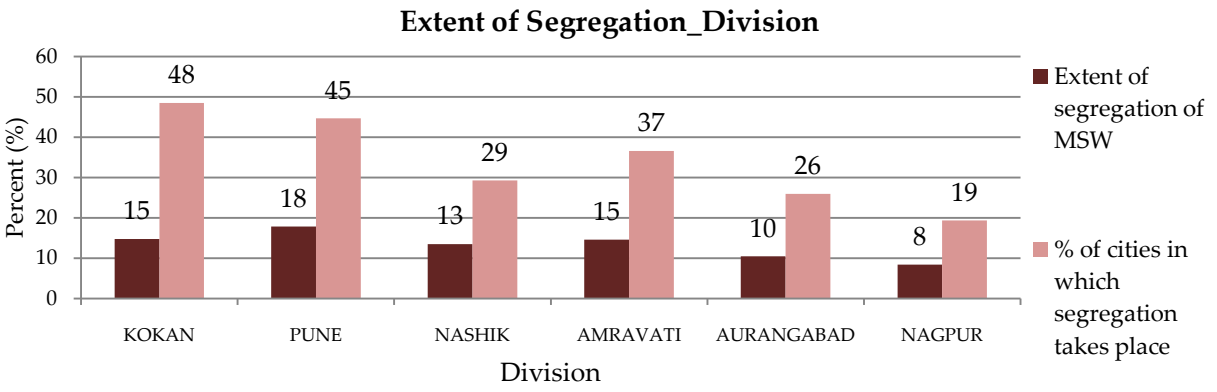
Table 3.46- SWM _Efficiency in Collection MSW_ Divisionwise

Division	Efficiency in Collection of MSW
Kokan (33)	93
Pune (47)	94
Nashik (41)	97
Amravati (41)	96
Aurangabad (55)	95
Nagpur (31)	93
State (248)	95

In the state the average collection efficiency of solid waste is 95%. Division wise comparison indicates that Amravati division has the highest collection efficiency of solid waste followed by Aurangabad division. The collection efficiency values do not vary much across the divisions.

Extent of Segregation of MSW

Graph 3-59-SWM_ Extent of Segregation of MSW



Extent of segregation is highest in the Kokan division but has only 16 ULBs out of 33 ULBs that fall under Kokan division practice segregation of solid waste; whereas Pune division has more number of ULBs practicing segregation of solid waste (21 ULBs in Pune Division). 5 MCs fall under Pune division out of which 4 MCs (Pune, Pimpri Chinchwad, Kolhapur and Sangli) practice segregation of waste. Amravati and Aurangabad divisions have 15 and 14 ULB each that practice segregation of waste till treatment plant.

Treatment of Municipal Solid Waste

Table 3.47- SWM _ MSW Recovered_ Divisionwise

Categories	Extent of MSW Recovered	% of ULBs with Treatment Facilities
Kokan (33)	19	24
Pune (47)	39	32
Nashik (41)	49	24
Amravati (41)	31	5
Aurangabad (55)	51	15
Nagpur (31)	41	19
State (248)	40	20

As discussed earlier 55 (15%) ULBs in the state have provision of recovery of solid waste in the state. In the state the extent of solid waste recovered is highest in the Nashik division. In Nagpur Division 11 ULBs out of 41 practice processing and recycling of solid waste and the ULB of Ballarpur (B class) and Kalmeshwar (C class) in the Nagpur division has 100% extent of solid waste recovered, with maximum amount of waste being composted. Pune division has 47 ULBs out of which 28 ULBs practice treatment of solid waste which is highest in the State.

c. Financial Management

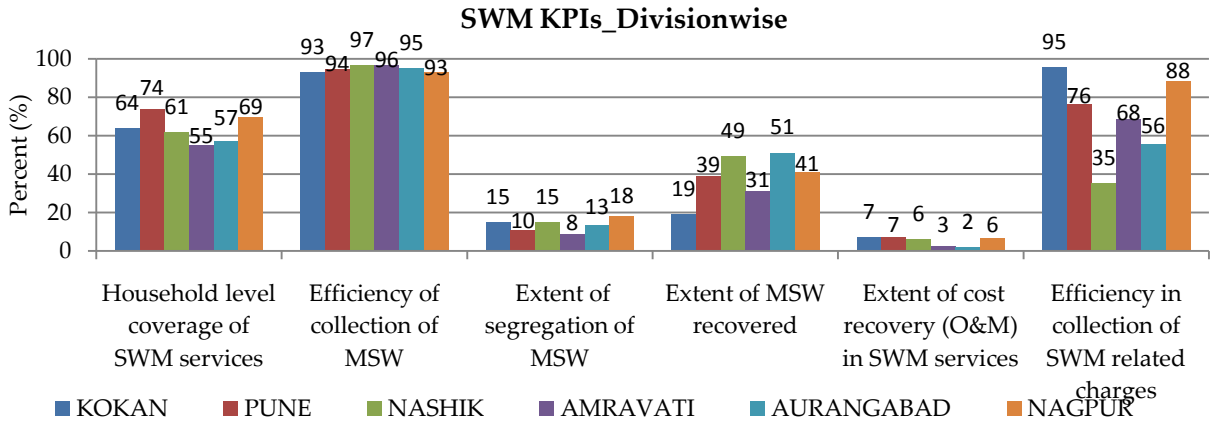
Extent of Cost Recovery (O&M) in SWM Services and Efficiency in Collection of SWM Related Charges.

Table 3.48-SWM_ Financial Management_ Divisionwise

Categories	Extent of cost recovery (O&M) in SWM services	Efficiency in collection of SWM related charges
Kokan (33)	7.0	95.4
Pune (47)	7.0	76.5
Nashik (41)	6.2	35.1
Amravati (41)	2.8	68.5
Aurangabad (55)	1.6	55.6
Nagpur (31)	5.7	88.0
State (248)	5.0	72.0

The state average for cost recovery in operation and maintenance of SWM services is only 5%. In the state Kokan division has the highest cost recovery of operation and maintenance in SWM services. Pune division has the maximum number of ULBs that levy charges and have relevant data regarding the same, 4 ULBs out of 13 that levy charges fall under the Pune division.

Graph 3-60-SWM KPIs _Division wise



3.3.4 Observations and Conclusions:

1. In the state the coverage of SWM services is high which is indicated from the fact that 88% of the ULBs in the state have access to SWM services.
2. Efficiency in collection of MSW in the state is high, but though the collection efficiency is high in the ULBs all the waste that is collected does not get treated as the ULBs do not have sufficient facilities for treatment (processing and recycling) of MSW, also the waste that is collected majorly goes to open dumping sites due to lack of provision of scientific land fill sites
3. Most of the cities do not levy any SWM related charges.

3.4 Comparative Assessment across Three Sectors

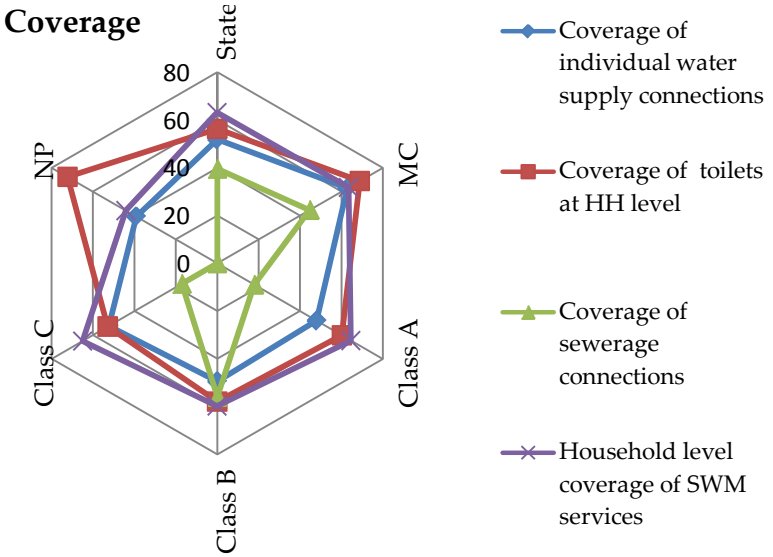
The following comparative assessment across the 3 sectors gives a better and holistic understanding of the performance of the state in terms of its urban services.

3.4.1 Class wise Thematic Assessment

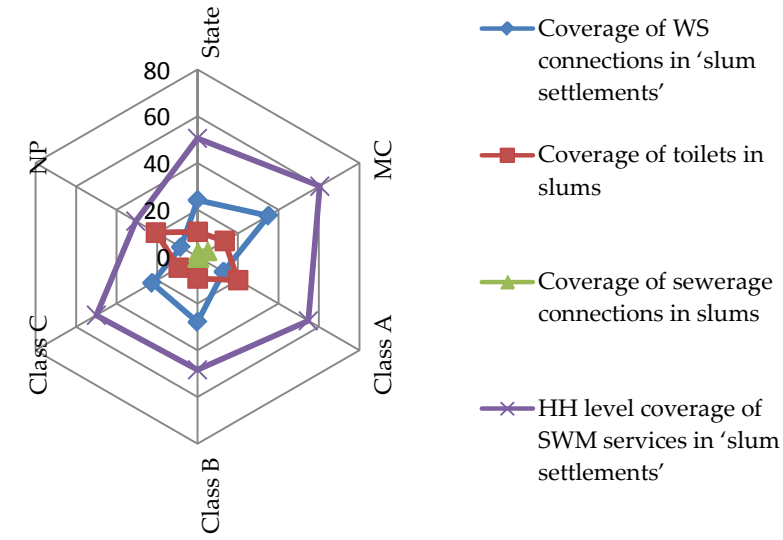
3.4.1.1 Performance Indicator Based Assessment

a. Access and Coverage

Graph 3-61 Comparative_ Coverage



Graph 3-62 Comparative_ Coverage in Slums



The coverage of individual sewerage connections shows variation among the classes unlike the coverage of water supply and solid waste management.

It would be worthwhile to note that in B class the averages for the coverage indicators across all the 3 sectors does not show much variation, but there are only 4 ULBs in B class reporting data for coverage of sewerage connections. Only 186 ULBs in the state out of 248 have reported data for all the above 4 indicators.

MC of Pimpri-Chinchwad and Nashik have reported higher values for coverage in all the 3 sectors (above 85%). Among the A Class MCls Chandrapur has reported good coverage in terms of WS, WW and SWM services.

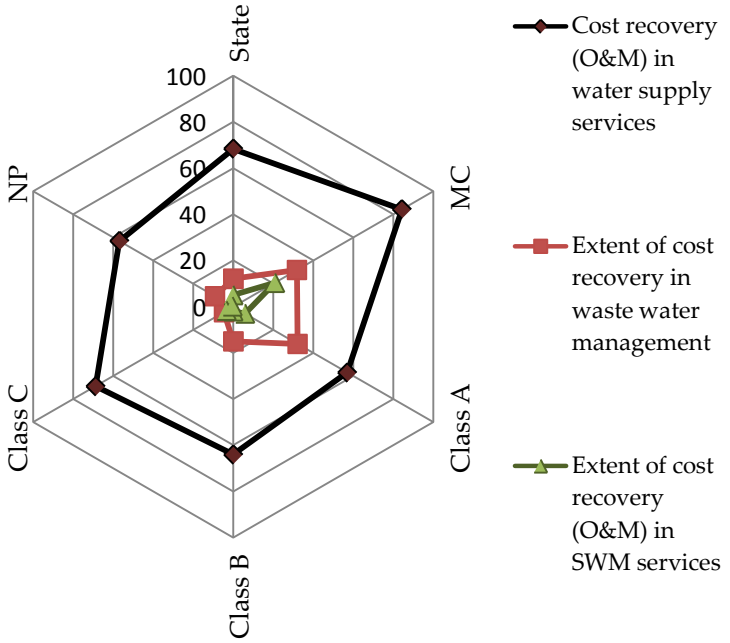
As stated earlier, 49 ULBs in the state have reported that they do not have slums within their municipal limits. Among the MCls that have reported to have slums within their municipal

limits, Dondai-Warwade and Shirpur MCl (B class) and Manwat MCl (C class) has reported higher values for the indicator in all the 3 sectors.

b. Financial Management

Graph 3-63 Comparative_ Cost Recovery

Cost Recovery in O & M Services



Graph 3-63 clearly indicates that WS has higher cost recovery compared to WW and SWM.

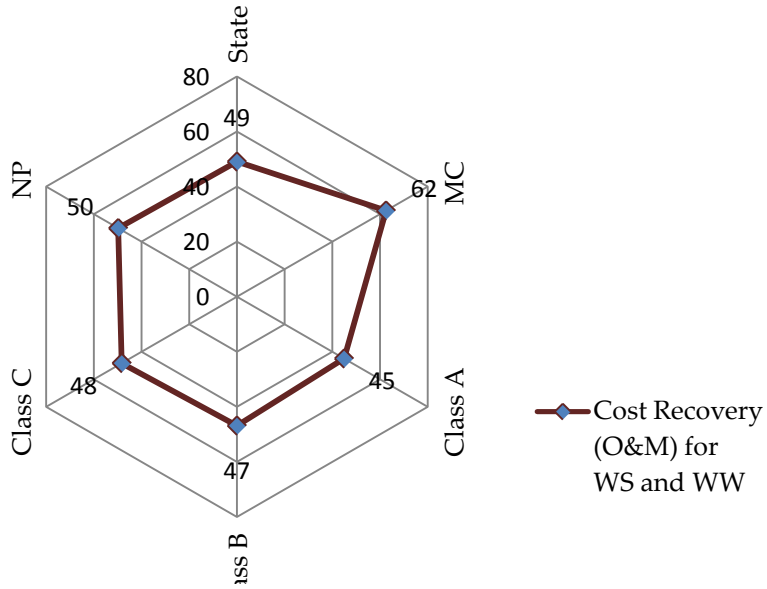
Achalpur, Beed and Latur (A class) have reported comparatively higher values for Cost recovery across all the 3 sectors. In C class Katol MCl has reported reasonably higher values for cost recovery in all the 3 sectors.

13 MCs out of 23 have reported cost recovery in all 3 sectors. 22, 89 and 98 ULBs have not reported data for cost recovery in Water supply, Waste water and SWM respectively.

17 ULBs in the state have not reported any data for cost recovery in WS & WW services. Among MCs Greater Mumbai, Pune, Mira-Bhayander and Sangli have reported higher values for the above indicator.

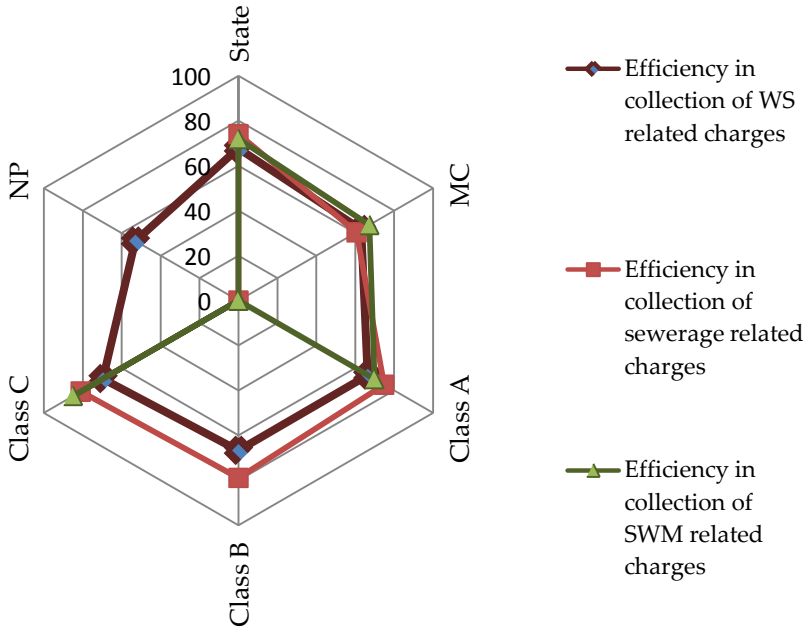
Graph 3-64 Comparative_ Cost Recovery in WS & WW

Cost Recovery (O&M) for water supply and waste water



Graph 3-65Comparative_ Efficiency in Collection of Charges

Efficiency in Collection of Charges



Efficiency in collection of charges does not show much variation across the sectors in all the classes.

In A class Achalpur and Latur MCls have reported higher values for the above indicator across the 3 sectors where as in C class Katol and Malwan MCls have reported higher values across the sectors. The average values of the indicators for efficiency in collection of charges for WS and WW is 67% and 79% in B Class whereas for SWM, all the ULBs in B class have reported is either no data or they do not levy charges.

Comparison across the sectors also indicates that 25, 90 and 137 ULBs have not reported data for collection efficiency of charges in WS, WW and SWM respectively.

Comparative assessment across the sectors facilitated to identify names of the ULBs performing better or poor under respective themes, which provides a baseline for generation of ISIPs and PIPs for selected ULBs.

3.4.2 Staff and Management

The following Acts are applicable to the MCs and Municipal Councils:

1. Bombay MC Act 1888
2. The Nagpur Corporation Act 1948
3. Bombay Provincial Corporation Act 1949
4. Maharashtra Municipal Councils, Nagar Panchayats and Industrial Township Act 1965

Current position of Establishment in MCs and Nagar Parishads in Maharashtra State is as follows:

	Staff in Corporation	Staff in Nagar Parishads
1. Sanctioned staff	84905	29203
2. Staff filled	72423	28321
3. Contracted Staff	1458	1001
4. Daily wage	1131	2134
5. Total filled staff	75012	31536

3.4.2.1 Status of Constitution of Post/Filling of Posts in MCs of Maharashtra

The MCs which have permissions to constitute positions for the required vacancies in their establishments follow the prescribed guidelines related to various aspects, such as, designation, salary, term for which the related position is constituted etc. As per the existing regulations, the related MCs have to take permission of the state government after constituting positions in their establishments. It is mandatory, for the Corporations, to form bye-laws for constitution of positions and related bye-laws. These bye-laws need have state government's approval to come into existence. These positions are filled through advertisements in newspapers as per the prescribed guidelines. The salary of the administrative positions in MCs is at par to the salary of the State Government employees.

MCs get permission to constitute positions only if the expenditure limit on the establishment of the municipality is 50% of the total expenditure. But after analysis of expenditure on establishment of the MCs in the state it is higher than the 50% expenditure limit. Specials efforts are expected from the MCs to cut down the expenditure on the establishment as every given year such costs are increasing especially in water supply, sanitation.

3.4.2.2 Status of Constitution of Post/Filling of Post in Municipal Councils of Maharashtra

A, B and C Class Municipal Councils, Industrial Cities and Nagar Panchayats can make decisions on constituting establishment positions. For constituting these positions the state government has set expenditure limits which is as follows:

CLASS	Expenditure Limit on Establishment (of total expenditure)
A class Municipal Council	50%
B class Municipal Council	55%
C class Municipal Council	60%
Nagar Panchayat	60%

As per the existing regulations, the municipal councils have to take permission of the Director, Directorate of Municipal Administration for constituting positions in their establishments. The employees of the municipal councils are governed by the service rules governing the state government employees.

3.4.2.3 Dearness Allowance on Establishment Expenditure

The MCs do not receive grant for dearness allowance from the state government, except newly formed D class MCs which receive grant of 50% of total dearness allowance upto 5 years. The municipal councils receive grants on dearness allowance in the form given below.

1. A class councils 80%
2. B class councils 85%
3. C class councils and Nagar Panchayats 90%

Pension schemes for the retired employees of MCs and councils and rules governing them have been implemented throughout the state. The corporations and councils have to bear all the costs of the retired employees' pension scheme. There are rules to employ relatives of the workers who retire or take voluntary retirement, in the corporations and councils which lead to increase in establishment expenditure.

There are directives from state government to the MCs and municipal councils for not employing daily waged labour which in turn leads to increase in number of contractual labour force. This includes security guards, employees in health departments, engineers and technical staff etc. which is indirect expenditure on establishment.

The state government should have a policy to reduce the expenditure on establishment in MCs and councils. The following suggestions could be noteworthy:

1. Take steps to reduce sanctioned staff.
2. Planning to abolish positions to be vacant in the next 5 years.
3. Wherever possible privatise the services in MCs and councils.
4. Financial planning to reduce establishment expenditure.
5. Pull up on costs where ever required.

3.4.3 Consumer Grievance Redressal

Government of Maharashtra as well as the Directorate of Municipal Administration have issued notices in the year 1997-98, to the MCs and Councils in the state, to publish Citizens Charter in their respective jurisdiction. A Citizens' Charter represents the commitment of the Organisation towards standard, quality and time frame of service delivery, grievance redress mechanism, transparency and accountability. By accepting the Citizens Charter the MCs and MCls would guarantee services to the taxpaying citizens and which in turn would help to improve the service delivery.

The following points were highlighted after analyzing the PAS data:

3.4.3.1 **Water Supply**

	Total Complaints in Water Supply /1000 Connections per Year	Complaints for Pipe Breaks and Leakages /1000 Connections per Year	Complaints for Low Pressure /1000 Connections per Year	Complaints for Water Quality /1000 Connections per Year	Total Staff (Regular & Contract) /1000 Connections
Corporations (except Kolhapur, Nashik, Pimpri Chinchwad)	1059	246.2	382.1	3.1	117.05
Municipal Councils (225)	24225	5664.8	7631.6	149.9	1110.95

3.4.3.2 **Waste Water**

	Total Complaints in Waste Water /1000 Connections	Complaints for Sewerage blocks /1000 Connections	Complaints for Damaged & Overflowing Manholes/1000 Connections	Complaints for Leakage & Overflowing Lines/1000 Connections
Corporations (except Kolhapur, Nashik, Pimpri Chinchwad)	348.18	145.29	54.76	17.42
Municipal Councils (225)	6739	3341	1953	842

3.4.3.3 **Solid Waste Management**

	Total Complaints in Solid Waste /1000 H.H.	Complaints Related to Collection /1000 H.H. per Year	Complaints Related to Sweeping/1000 H.H. per Year	Complaints Related to Dumpsites etc. /1000 H.H. per Year
M. Corporations (except Akola, Greater Mumbai, Kolhapur, Nanded, Nashik, Pune, Pimpri Chinchwad, Solapur)	266.9	49.1	30.8	4.54
Municipal Councils	7407.1	2119.9	1700.2	895.46

While closely looking at these issues it is noted that there is no system in place either in the corporations or the councils to verify the given data. The Citizens Charter has not been publicized nor there is there any mechanism to check if the components of Citizens Charter is followed and implemented in any corporation or council.

Given the condition following suggestions are made for successful implementation of the Citizens Charter:

1. To Form Legislative Provisions for Citizens Charter

   Formation of bye-laws and rules for effective implementation of services provided to the citizens and the time frame published in the Citizens Charter for taking action on the complaints and suggestions received from the citizens to be taken note of. If the actions are not taken according to the provisions of the bye-laws and rules, the responsibility of the related officer etc. be clearly determined.

2. If the government makes it mandatory to the department heads of the municipal departments to make a detailed monthly report of the complaints received and the action taken on those complaints to the related committee in the municipality, this in turn will help in increasing the rate of successful and timely complaint redressal.
3. A department wise complaint register should be maintained and related guidelines is issued by the Government and also takes a timely review of the situation throughout the state for uniformity of maintenance of data related to complaints and keep check on the Corporations and Councils.

3.5 Observations and Conclusions

The following broad conclusions can be drawn from the above thematic analysis (State level and class wise) for the 3 sectors, namely Water supply, Sanitation and Solid waste management.

Indicators on coverage under WS indicate that in many ULBs in the state the avg. coverage of water network area is much more than avg. coverage of water supply connections, though the network is in place, the no. of connections is low because of perceived high charges which have also resulted into an increasing no. of illegal connections. Whereas in WW sector the coverage of individual toilets is 56%, and 28 ULBs have partial underground sewerage network, it is observed that many MCs as well as MCls do not maintain the records of no of HH in the city with access to individual toilets. 14% of the ULBs in the state have HH level of SWM services more than 90% which is a fairly good beginning for the ULBs. In the state the coverage of SWM services is high which is indicated from the fact that 88% of the ULBs in the state have access to SWM services whereas only 62% of the ULBs have coverage of SWM services in slum settlements and the extent of coverage is only 50%. Segregation of solid waste is not taking place efficiently in the ULBs as the sufficient initiatives are not taken. Citizen's awareness and participation can be strengthened in the right direction if right initiatives are taken by the ULBs. Centralised plans have not been completely successful though they have been more cost effective. Hence decentralised waste management systems should be encouraged.

Analysis of financial management under 3 sectors indicates that majority of the ULBs do not maintain separate accounting heads for each sector of water supply, sewerage, solid waste management and storm water drainage services, except for a few MCs who have separate budgets for water supply and sanitation services. Double entry accounting system, which is initiated by the GoM, is not practiced completely in most of the ULBs in the state. 35% of the ULBs in Maharashtra do not levy any sewerage tax or charge. 40% of the ULBs in Maharashtra do not levy any charges for SWM services. Most of the ULBs in C class and NPs do not have separate departments for sanitation and waste water and solid waste management. In most of the cases the departments are clubbed under health department.

Based on the data reported by the ULBs regarding sewage treatment it can be concluded that existing sewage treatment capacity is inadequate to treat the sewage generated. There are no ULBs in Maharashtra with full area covered by the network and hence they have treatment facility only for the waste which is collected and not for the total waste generated. Whereas in SWM services the efficiency in collection of MSW in the state is high, but though the collection efficiency is high in the ULBs all the waste that is collected does not get treated as the ULBs do not have facilities for treatment (processing and recycling). Analysis of

reported data for SWM treatment and disposal indicate that out of the ULBs that practice treatment of solid waste most of ULBs practice composting (apart from MC's where RDF is practiced). Community level composting and waste to energy is a rare practice in the state. The waste that is collected goes majorly into open dumping sites as more number of ULBs has provision of open dumps than scientific landfill sites. Very few ULBs in the state have provision of scientifically engineered land fill sites.

Recommendations on the same could be formulated keeping in mind the above observations and conclusions.

3.6 Futuristic

A few action points to be undertaken in the second year of PAS have been emerged as a result of extensive study based on the data and experiences during the first round of Performance Measurement under PAS, which include:

1. **Validation of data** of selected 20 ULBs by visiting the ULBs in person –
   Selection of ULBs will be equal across all classes and divisions, dependant on the current status of available data quantity and quality. List of 20 ULBs has been approved by the GoM.
2. Capacity building of ULBs to understand Service Level Benchmarking and importance of data management for achieving the same.
3. Mainstreaming PAS- Keeping in mind **13th Finance Commission** requirements
4. Roll out of PAS in upcoming year- Handholding for **'self assessment'** by ULBs.
5. Generation of '**Performance Improvement Plans' (PIPs)** and '**Information System Improvement Plans' (ISIPs)** in selected ULBs- Reliability assessment results into a need for improvement in system of data maintenance and flow at various levels of ULBs in the state.
6. Explore ideas for ward-wise MIS that could be developed at ULB level. 23 Municipal Corporations could be selected on priority.
7. **Documentation of Good Practices** emerged from the first round of data assessment and experiences of the experts. A list of 12 GPs to be documented is prepared to be documented in second year of PAS.
8. Explore possibilities for support to interested ULBs for **Universalizing access to UWSS**- (Interested ULB- Kalyan Dombivali Municipal Corporation)
9. **'Access to basic services to urban poor'** is on priority for GoM. Detailed approach for this requires to be developed further. Study could be initiated with settlement level social mapping.
10. **Standardization and computerization of formats** in an offline module, web designing etc. with the help of TCS- Once implemented there could be continuous data flow across various agencies of GoM.

4 SECTION IV: EQUITY & INCLUSION IN ACCESS TO BASIC SERVICES

Equity Issues in UWSS:

Addressing equity issues is among topmost priorities of GoI and GoM amply reflected through 'Inclusive Growth' as the core theme for the current Five Year Plan (2007-2012). Government of India is committed to reducing by half the number of people living in slums and poverty by 2011 and to achievement of the Millennium Development Goals (MDGs). Poverty reduction and urban development that benefits all is also a key goal under JnNURM. A manifestation of the GoI's commitment to equity is the 7 point charter defined by MoHUPA, GoI under JnNURM programme. Improving access of the excluded and urban poor to the basic services of UWSS is an important constituent of the 7 point charter. The National Urban Sanitation Policy (NUSP) is a crucial vehicle for improving sanitation status in the country.

Box 1: MoHUPA, GoI Priorities

- 'Inclusive Growth' under 11th Five Year Plan (2007-2012)
- 'Slum Free Cities' under Rajiv Awas Yojna, Year 2009
- Access to basic services, shelter, social security and security of tenure under BSUP/ IHSDP under JnNURM, Year 2005-2012

Box 2: National Urban Sanitation Policy, GoI

- 'Open Defecation Free' cities
- Safe collection and disposal of MSW
- Safe management of municipal wastewater and storm water drainage
- Recycle and reuse of treated waste water for non potable applications
- Eliminate practice of manual scavenging
- Basic services to the poor and systems for sustaining them

Box 3. BMGFs' Approach on Water, Sanitation & Hygiene & AIILSG PAS Project's Equity Ethos

- The vision of success of the PAS project - "A sustainable statewide UWSS performance assessment system that is used for improving access to the poor and un-served and achieves financial sustainability" reinstates the commitment towards equity issues.
- The slogan "All lives have equal value" on BMGF website itself flags out the passion of the organization towards equity for bringing about a change in lives of the poor, deprived and the vulnerable.
- PAS at AIILSG, Mumbai finds great synergy with its pro-equity organizational ethos and BMGF focus on equity issues through approach and various projects across the globe.
- Water, sanitation, and hygiene are all critical to reducing the burden of water-borne diseases: Poor children are the worst sufferers. Safe, sustainable approaches to sanitation can help save the lives of children who die from diarrhea and create a world where the poor lead healthier, more productive and more dignified lives.
- End Open Defecation : It is the poor who lack access to toilet facilities. Many people lack affordable and sustainable access to safe water: Majority of them are slum dwellers and homeless.
- Help to develop tools and technology that will allow the urban poor enhance access to sustainable sanitation.

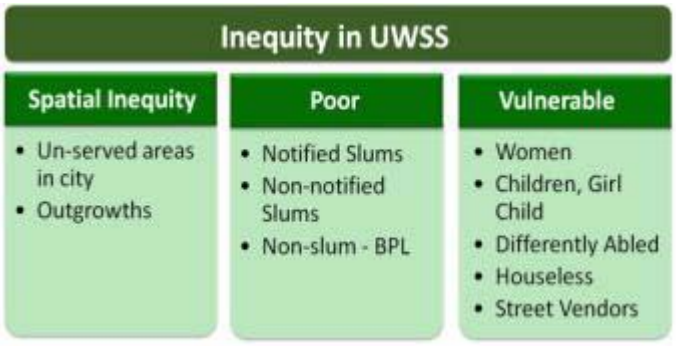
(Source: Adopted from http://www.gatesfoundation.org/topics/Pages/water-sanitation-hygiene.aspx accessed on July'10)

Moreover, equity and inclusion is a key concern for many international development agencies including the supporting agency of the PAS project – the Bill and Melinda Gates Foundation (BMGF). The slogan "All lives have equal value" on BMGF website itself flags out the passion of the organization towards equity for bringing about a change in lives of the poor, deprived and the vulnerable.

4.1 Overview

Understanding Inequity in UWSS and SWM…..

Many people lack affordable and sustainable access to safe water and hygienic sanitation facilities in urban areas. Majority of them are residing in slums and other un-served areas. The inequity in access to safe and sustainable water supply, sanitation and solid waste management services is addressed in the Performance Assessment System (PAS) project.



The adjoining diagram highlights the areas of inequity vis-à-vis spatial inequity, inequity towards poor, vulnerable and deprived population. The first round of performance measurement under Performance Assessment System (PAS) project reveals that the poor residing in slums including marginalized and vulnerable populations are the ones that miss the adequate access to basic services and are adversely impacted due to this. The comparative assessment of access to basic services in the city and in slums (as discussed in the subsequent sections of the report) further reinforces this fact. The performance level benchmarking as attempted for the project in round 1 address the issues of inequity in access to basic services, inequity in service delivery and inequity in service levels.

4.1.1 Proliferation of Slums and Inadequate Access to Basic Services

The increasing incidence of urban poverty is a major challenge of the present time in India. This coupled with proliferation of slums in and around urban areas/ cities is a result of rising out migration from rural areas along with lack of low cost housing where by city is unable to cater the housing needs of all, leading to negative impact on the overall quality of life. Due to inadequate affordable/ low cost/Economically Weaker Section (EWS) housing and rental housing, the poor are forced to live in informal settlements like slums, squatters which do not ensure access to basic services to them. This has adversely impacted the living conditions leading to deteriorating environment and quality of life and overall development especially for urban poor, women, children and deprived population.

As per the Census of India 2001, 4,25,78,150 population is residing in slums which is 15% of the total urban population in India. The total slum households are 82,87,787 amounting to 15% of total urban households in the country. Census 2001 figures reveal that the total slum population in the state of Maharashtra is 1,12,02,762 which is 27.25% of its total urban population. Also the total Slum HHs reported as per census 2001 are 22,33,360 (26. 5% in total urban HHs of state). These figures indicate the magnitude of the problem where by almost a large proportion of state's urban population is deprived of quality of life.

The issues of access to basic services to all, including the urban poor including those living below poverty line, slums and un-served, are complex and cannot be seen in isolation. These

issues are embedded with the issues of affordable housing, security of tenure, legal rights/ entitlement to receive the basic services in notified and non-notified slums and their affordability to avail those services. Also the need is for defining the universal holistic definition of slums that duly reflects the concern for non-notified slums too under the Census of India, National Sample Survey Organisation and relevant State Acts.

4.1.2 Importance of PAS for Highlighting Issues in Inequity in Access of Basic Services by Poor

Due to onset of reform based grant linked programmes like Jawarharlal Nehru National Urban Renewal Mission (JnNURM), Service Level Benchmarking (SLB) and National Urban Sanitation Policy (NUSP), there is a rising concern for need for reliable database, information and its assessment for identification of improvement areas to utilize funds in apt manner. Also the draft National Slum Policy (NSP), Urban Statistics for HR and Assessment (USHA) and Rajiv Awas Yojna (RAY) launched by Ministry of Housing and Urban Poverty Alleviation (MoHUPA), GoI focus on creating a strong database on slums and status of basic services in slum settlements. Thus in the purview of ongoing national policies and programmes, there is a strong emphasis on developing a comprehensive information system that can be used by the policy makers and decision makers at State and Urban Local Body (ULB) level for judicious allocation of funds and resources and pro-poor decision making. The PAS project synergies with the national programmes like SLB, Basic Services for Urban Poor (BSUP)/ Integrated Housing and Slum Development Programme (IHSDP) - JnNURM and focuses on developing a reliable database and information system which can be used for assessment of the existing situation, identification of improvement areas and formulating information system improvement plans (ISIPs) and performance improvement plans (PIPs).

The PAS check list attempts to collect data regarding slums and access of basic services in slums and out growths. The pilot study of 18 cities revealed lack of records and their updation by most of the ULBs. In absence of proper data records on slums, the PAS project envisages and focuses on developing **a database on access of basic services to urban poor** and ensuring its regular updation by ULBs through self assessment. This data base will help ULBs in **assessing demand for WSS services in slums and un-served areas and provide rational basis for developing PIPs for poor**. The PAS effort on access of Urban Water Supply and Sanitation (UWSS) and Solid Waste Management (SWM) services to poor thus created will provide an input to

a) Develop **city wide strategy for universal access** of Water Supply and Sanitation to poor and un-served.
b) **Develop PIPs for improving access to poor** backed by reliable and updated information
c) **Project proposal development for implementing PIPs** through National and State Government funding programmes.
d) To facilitate pro-poor decision making at local and state level.

Moreover, as many of the equity issues are qualitative in nature, 'data' has a limited connotation and thematic understanding of these issues going beyond data and numbers

becomes crucial. Thus this 'equity report', in addition to data, also puts forth a thematic perspective on equity aspects. Considering the qualitative facets of some equity issues coupled with the issue of lack of reliable and updated information and data, the PAS project attempts to capture other qualitative aspects through documentation of Good Practices (GPs) vis-à-vis equity and inclusion with respect to UWSS.

One of the significant learning from the phase of 'Performance Measurement' is need to strengthen the data/ information recording system and its regular updation at ULB level with respect to slums and other equity issues like gender concerns, homeless population, differently abled population etc. For example 49 ULBs reporting no existence of slums and 6 ULBs reporting no database on slums need further exploration. As the prudency of available data and the need for its validation from multi-stakeholder perspective is being pondered over by the PAS project team, this report enlarges the canvas to policy analysis and aptly amalgamates the available data in the report. In other words, in the anticipation of the JnNURM, USHA and RAY triggered processes generating more comprehensive equity related data, the current narration flags equity issues pertaining to UWSS, their policy implications and associated futuristics.

4.2 Configuring Equity and Inclusion

UN-Habitat defines Inclusive City as "A place where everyone, regardless of wealth, gender, age, race or religion, is enabled to participate productively and positively in opportunities that cities have to offer."

The Eleventh Five Year Plan Approach Paper states that a key element of the strategy for inclusive growth must be "to provide the mass of our people access to basic facilities such as health, education, clean drinking water etc, and that governments at different levels have to ensure the provision of these services".

JNNURM provides a new paradigm for inclusive city development and building inclusive urban communities based on a holistic approach.

4.2.1 Addressing Equity in UWSS under PAS:

PAS performance measurement framework puts thrust on using benchmark as a tool for efficient investment in the service delivery of UWSS especially to the poor and un-served. The project design also ensures that equity concerns are incorporated at all stages including performance measurement, performance monitoring - documentation of Good practices and demonstration of few projects for developing PIP for poor and their implementation on ground. The continued focus on equity in the PAS project aims to demonstrate the importance of continued measurement through self assessment for effective decision making. The PAS project synergizes its equity concerns with MoHUPA (BSUP and IHSDP, JNNURM) and MoUD (SLB) priorities and attempts to capture data and information on access of UWSS to the poor and un-served.

PAS Captures Data on Access of UWSS and SWM to the Urban Poor…

Equity concerns in the PAS project refer to the concerns of the urban poor vis-à-vis slums dwellers and population residing in outgrowths with respect to access of basic services and existing service levels in slums and out growths. It also raises concern over other facets of equity in service delivery which include spatial equity between various service zones (wards), service delivery equity and rationalization of tariff including affordability to pay. The Performance Measurement in round 1 captures data for service levels in un-served areas within a city e.g. slums (notified, non-notified), outgrowths, and also focuses on ward-wise spatial variations in service levels amongst the planned areas in the city.

In addition to these, the thrust is also on putting forth the concerns of deprivation of specific marginalized and vulnerable population (issues related to Gender, Differently Abled, Night Shelters for houseless and Public Toilets for street vendors, floating and migrant worker population) through thematic studies proposed in the next stages of the project.

Understanding Equity in UWSS and SWM…..

The PAS project widens the horizon of addressing equity issues in UWSS. The following section traces the broad contours of the equity issues and elaborates the current understanding of equity in UWSS and SWM as adopted for the project.

Access of WSS and SWM services to all including poor, un-served and across service zones in planned areas.

1. Equity in Access to Basic Services (Water Supply, Sanitation and Solid Waste Management)
2. Equity in Service Delivery and Service Levels
3. Equity in Service Charge
4. Equity in Right to Basic Services

Parameters for Assessing Equity in Access of Water Supply services

1. Equity in Access to Water Supply:
   a) Access (individual, shared, group, public, no access)
   b) Municipal piped supply, Municipal non piped supply
   c) Private supply by private contractors or By HHs themselves through private bore wells
   d) Illegal/ unauthorized water connections
2. Equity in Service Delivery and Service Levels:
   a) Variation in quantity of supply (lpcd)
   b) Variation in supply hours
   c) Variation in coverage
   d) Different pressure zones in distribution network
3. Equity in Service Charge:
   a) Equity in service charge and tariff (whether there is subsidy for poor?)
   b) Rationalisation of tariff (whether there are fixed charges based on connection size and type or volumetric charges based on volume of water used?)
4. Equity in Right to Basic Services:
   a) Issue of tenure for legalizing access of basic services in slums
   b) Right/ Entitlement to basic services in notified and non-notified slums
   c) Complaint redressal system (Whether the poor register their complaints? If yes whether ULB acts on them for both notified and non-notified slum dwellers?)

Parameters for Assessing Equity in Access of Sanitation Services

1. Equity in Access to Sanitation:
   a) Access to sanitation facilities (individual, shared, community toilets, public toilets, pay and use toilets, no access – open defecation)
   b) Individual connection to piped sewerage network or Individual connection to septic tanks
   c) Means of disposal of sewage - Piped sewerage network/ Open drains / Soak pits/ No connection to sewerage network
   d) Underground piped sewerage network/ piped on-ground/ underground combined sewerage and storm water drainage
2. Equity in Service Delivery and Service Levels:
   a) Number of seats in community toilets/ public toilets against GoI (e.g. NSDP) benchmarks for men and women and children
   b) Continuity of water supply in toilets

c) Maintained by ULB staff, community, private service provider – for community toilets/ public toilets

3. Equity in Service Charge:
   a) Whether there is free access, pay and use charge for community toilets, public toilets, toilets facilities by private service provider
4. Equity in Right to Basic Services:
   a) Issue of tenure for legalizing access of basic services in slums
   b) Right / Entitlement to basic services in notified and non-notified slums
   c) Complaint redressal system (Whether the poor register their complaints? If yes whether ULB acts on them for both notified and non-notified slum dwellers?)

Parameters for Assessing Equity in Access of Primary SWM (door to door collection)

1. Equity in Access to Primary SWM services:
   a) Access to door to door waste collection (Daily, alternate days, weekly)
   b) Provision for segregation of waste at source (e.g. providing separate bins for dry and wet waste)
   c) Provision of community bins – Y / N?
   d) Provision of street sweeping – Y/ N?
   e) Provision of community level composting?
2. Equity in Service Delivery and Service Levels:
   a) D to D collection (Daily, alternate days, twice a week, weekly)
3. Equity in Service Charge:
   a) Equity in service charge and tariff
4. Equity in Right to Basic Services:
   a) Issue of tenure for legalizing access of basic services in slums
   b) Right/ Entitlement to basic services in notified and non-notified slums
   c) Complaint redressal system (Whether the poor register their complaints? If yes whether ULB acts on them for both notified and non-notified slum dwellers?)

Embarking on the above, the Performance Measurement Framework (PMF) developed under PAS, focuses on data collection on service levels in slums and out growths for measuring equity in service delivery. The PMF gathers data and information on the following:

1. Data and information base on access of the basic services in slum settlements and out growths.
2. Information system and record keeping for slum settlements related data
3. Ongoing and completed projects or schemes related to basic services in slums. (e.g. BSUP/ IHSDP – JnNURM, MSNA, SGBA, State Finance Commission (SFC) grants in Maharashtra)
4. List of Non Governmental Organisations (NGOs) and Community Based Organisations (CBOs) functioning in slums in the ULBs
5. Good Practices and caselets vis-à-vis equity and inclusion (Community Managed Service Delivery, Processes at city level related to affordable services, coverage through individual water connections/ group water connections, Individual, shared or

community toilets, subsidy in tariffs, taxation structure for slum dwellers, Management Information System (MIS)/Database Management System (DBMS), etc.

Understanding Qualitative Aspects vis-à-vis Equity in UWSS and SWM…..

The major learning gained through the multi-stakeholder interactions is that the discussion of the equity issues should transcend beyond discussions on the slums. Treating issues of the slum dwellers, that too from the notified slums, as representation of the major set of 'equity' issues will be insufficient. In this purview the current data collection checklist which provides a good starting point, needs to be expanded and refined to capture the multifaceted inequity issues of the deprived populations. This realization led to defining a wider set of 'equity' domain for the project. Thus apart from the notified slums, a special focus for consideration will be non-notified slums too as the situation in non-notified slums tend to be more pathetic with respect to UWSS and SWM.

Moreover, the issue of inequity in service delivery in slums cannot be seen in isolation, as the related issues are more complex for women, children and the deprived population like homeless and differently abled. The concept "Inclusion" should be seen as a process of including the excluded as agents whose participation is essential in the very design of the development process, and not simply as welfare targets of development programmes (Planning Commission, 2007). Consideration has to be given to other sets of inequity issues vis-à-vis other deprived population. Thus major stress has to be also given on the gender issues, issues related to children and education (e.g. poor access and quality of UWSS influences retention of girls in the schools and thus their overall educational status), link between health and UWSS, etc. Furthermore, another area of queries can be considerations of other special category people such as homeless who largely depend on public toilets, and differently-abled who are a neglected lot when it comes to user-friendly/ barrier free designs for them. With the rising momentum on earmarking of budget for the poor and deprived (e.g. pro-poor budgeting, gender budgeting), the thematic studies will be of immense significance to highlight the issues and problems faced by them and allocation of budget towards them.

4.2.2 Defining Slums, Urban Poor and Un-served:

Embarking on the broad contours of inequity as discussed in the previous section and the inadequate access of basic services to poor (esp. slum dwellers) as revealed from the first round of performance measurement, the exclusion can be classified in the following categories:

1. Population residing in slum settlements:
    a. Notified Slums
    b. Non Notified Slums, Squatters
2. BPL Population
3. Population residing in outgrowths or peri-urban areas
4. Homeless Population
5. Considerations for vulnerable population
    a. Gender Concerns

b. Children
c. Concern for Differently Abled Population

With the purview of gaining more insight into the slums and other related aspects the existing definitions of slums as defined by GoI (under Census 2001, NSSO 58th round, 2002) and the respective state acts from time to time are referred. This study is an endeavor to understand the current provisions for identification and notification of slums under state acts. The following text narrates the above.

Slums Defined as per Census of India 2001

Three types of slum areas considered for demarcating the 'slum Enumeration Blocks' in Census 2001:

Notified Slum: All specified areas notified as slums by state / local government and UTs under any act including 'Slum Act'.

Recognized Slum: All areas recognized as slum by state / local or UT government, Housing Slum Boards, which may have not been formally notified as slum under any act.

Identified Slum: A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lack of proper sanitary and drinking water facilities.

Slums Defined as per Slum Areas (Improvement and Clearance) Act 1956 enacted in Delhi

Slum areas were first notified under Section 3 (1) under Slum Areas (Improvement and Clearance) Act 1956 enacted in Delhi. The act defines slums as 'Any area unfit for human habitation by reason of dilapidation, overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light or sanitation facilities, or any combination of above factors are detrimental to safety, health or morals'. The objectives of Slum Areas (Improvement and Clearance) Act 1956 are to facilitate identification and notification, declaration of slum improvement area, declaration of slum clearance areas, restriction on building, etc in slum areas. The act also delegates power to competent authority to order demolition of buildings unfit for human habitation, protection of tenants in such areas from eviction, to re-develop clearance area, to remove offensive or dangerous trades from slums area (Section 29). The competent authority may restrict erection of any building in a slum area except with the previous permission. Further the act also delegates power to central government to acquire land.

Slums Defined as per Maharashtra Slum Areas (Improvement, Clearance and Re Development) Act, 1971

Under the act a slum is loosely defined as a congested, unhygienic area or as buildings that are public hazards. Sec. 2 (ga) in Maharashtra Slum Areas (Improvement, Clearance and Redevelopment) Act, 1971 defines "Slum Area" as;

As per the provisions of sub-section (i) of section 4 to declare an area as slum area, it must satisfy the following conditions:

a. Any area is or may be a source of danger to the health, safety or convenience of the public of that area or of its neighborhood, by reason of the area having inadequate or no basic amenities, or being insanitary, squalid, overcrowded or otherwise;
b. The buildings in any area, used or intended to be used for human habitation are in any respect, unfit for human habitation; or – by reasons of dilapidation, overcrowding, faulty arrangement and design of such building, narrowness or faulty arrangement of streets, lack of ventilation, light or sanitation facilities or any combination of these factors, detrimental to the health, safety or convenience of the public of that area.
c. To decide whether the buildings are unfit for the purpose of human habitation, the following conditions should be fulfilled
d. Repairs, stability, freedom from damp, natural light and air, provision of water supply, provision for drainage and sanitary conveniences, facilities for the disposal of waste water.

Under the act the responsibility for provision of services and to implement projects under the act is delegated to ULBs. The act declares ULBs as the administrative authority which must declare a number of slums using the above definition. (http://mhupa.gov.in/W_new/Slum_Report_NBO.pdf)

Slums Defined by Draft National Slum Policy, 2001, MoHUPA, GoI:

In general, all under-serviced settlements, be they unauthorized occupation of land, congested inner-city built up areas, fringe area unauthorized developments, villages within urban areas and in the periphery, irrespective of tenure or ownership or land use shall be covered under the definition of a slum/informal settlement.

The criteria for defining a slum/informal settlement shall take into consideration economic and social parameters (including health indicators) as well as physical conditions. Each State/Union Territory shall lay down the norms/criteria for categorizing an area as underserviced and the local body of each town shall list all such areas as slums.

Draft National Slum Policy states that cities without slums should be the goal and objective of all urban planning for social and economic development.

Outgrowths Defined by Census of India 2001

Outgrowth include contiguous areas outside ULB limits like railway colonies, university campuses, port area, military camps etc. that may have come up near a statutory town or city but within the revenue limits of a village or villages contiguous to the town or city.

UN-Habitat defines slum as ' a group of individuals living under the same roof that lack one or more (in some cities, two or more) of the following conditions:

a. Security of tenure
b. Structural quality and
c. Durability of dwellings

d. Access of safe water
e. Access to sanitation facilities
f. Sufficient living area

4.2.3 Definition of Notified and Non Notified Slums

National Sample Survey Organization (NSSO) of India conducted a survey during the period of July-December 2002 on 'Condition of Urban Slums' as part of the 58th round. The study by NSSO covered Class I and Class II cities having population more than 50,000 at all India level. At the all-India level, a total of 692 slums (360 notified slums and 332 non-notified slums) were covered in the 2002 survey. As part of the survey in 2002, information on the civic facilities of the slums was collected. Data was collected for the entire slum from knowledgeable person(s). NSSO had conducted two such surveys in 1976-77 and January-June 1993 prior to July-December 2002. The following text presents the definitions of the notified and non-notified slums as adopted and refined by the NSSO time to time.

Box 4: NSSO Survey Salient Findings

According to NSSO, the total numbers of urban slums have gone down from 56311 in 1993 to 51688 in 2002. 36% of urban slums were "declared slums" in 1993 while 50.6% of urban slums have been declared as "notified slums" by 2002. 43.92% of households living in slums were found to be living in declared slums in 1993 while in 2002 65.1% of households living in slums were in notified slums. The total numbers of households living in slums have increased from 5.93 million in 1993 to 8.23 million in 2002. http://mhupa.gov.in/ministry/housing/11thplanChapter-VIII.pdf

Slums Defined under the National Sample Survey Organization survey in 1976-77:

The NSSO, for the purpose of survey in 1976-77 defined slum as declared and undeclared sums.
The **declared slums** were areas which have been formally declared as slum by the respective municipalities, corporations, local bodies or the development authorities.
The **undeclared slums** were defined as an aerial unit having twenty five or more katcha structures of temporary nature, or inhabitated by persons with practically no private latrine and inadequate public latrine and water.

Slums Defined under National Sample Survey Organization (58th Round), 2002

"A compact settlement with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions. Such an area, for the purpose of this survey, was considered as **"non-notified slum" if at least 20 households lived in that area.** Areas

Box 5: NSSO 58th Survey Salient Findings

The NSS surveys in 2002 have also found that 35% of slums exist on private land while the 63% of slums are on public land at All India level. It is estimated that every seventh person living in the urban areas is a slum dweller. The bulk of the urban poor are concentrated in the urban slums or are squatters.
http://mhupa.gov.in/ministry/housing/11thplanChapter-VIII.pdf

notified as slums by the respective municipalities, corporations, local bodies or development authorities are treated as **"notified slums".**

Notified Slums in the Context of Maharashtra:

Legally notified slums are those which have been designated as slums under the Maharashtra Slums Area (Improvement, Clearance and Redevelopment) Act, 1971. Also as per the resolution passed by the Government of Maharashtra, slum dwellers that have lived in the city prior to 1995 are recognized as legitimate dwellers, who are entitled to resettlement if evicted for development projects or for other reasons.

Caselet 1: Issuance of Photo-Pass in Pune Municipal Corporation (PMC)

In an effort to recognise slum dwellers identity in order to provide slum improvement scheme to real beneficiaries, PMC has started the Photo Pass scheme where photo passes are issued to slum dwellers as identification proofs. In order to get a photo pass, a slum dweller should be residing in a particular area since 1.1.1995. The slum dweller has to pay fee of Rs. 200 (residential usage), Rs. 80 (commercial usage) and Rs. 600 (residential and commercial usage) for the Pass. (CDP of Pune, 2005)

Slum Notification Process in Maharashtra:

Slums are identified and notified sometimes by governments own actions, but many a times through active lobbying by communities, landlords or developers. For e.g. a request letter regarding notifying the slum is sent from the citizens staying in slums at times with support of respective elected representatives. A proposal of notifying the slum is prepared by the concerned department say Slum Eradication and Rehabilitation Department which is submitted to Housing Department, Government of Maharashtra. The proposal includes the documents like request letter sent by citizens, health report, no objection certificate from land owner, map of the area and other essential documents. Slums are declared and notified by the Housing Department, Government of Maharashtra based on the approval and report containing surveyed data of respective cities received from additional collector.

Caselet 2: Slum Notification/ Declaration in Pimpri-Chinchwad Municipal Corporation (PCMC)

Total Urban Population: 13,90,280	Total HHs: 2,00,670
Total Slum Population: 1,47,810	Total Slum HHs: 35,282
Total BPL Population: 89,044	Total BPL HHs: 17,644

The total slum population of PCMC is 1,47,810 which accounts for 10.6% of the total population in the city. PCMC has total 71 numbers of slum settlements in its jurisdiction, of which 36 are notified slums and rest 35 are non-notified slums. Although the notified slums are 36 the basic services are provided in 26 non notified slums too, which is highly appreciable.

There is a separate Slum Eradication and Rehabilitation Department in PCMC which undertakes following functions and activities for notification of slums:

- Initiate the process of declaration of slums in Municipal Area.
- Survey of slums using Cadastral survey.
- Information collection from each hut/ HH.
- Service tax recovery from slum holders
- Transfer fee collection and issuing photopass to eligible slum holders.

- ❖ Issuing No Objection Certificate (N.O.C.) for the electricity and water supply connection to slum holders.
- ❖ Implementation of Government schemes for slums (Slum Up-gradation and Rehabilitation Project). E.g. BSUP under JnNURM
- ❖ Providing Accident Insurance Policy for eligible slum dweller.

For Slum Notification process it is not needed to submit any documents by the slum dwellers. But after notification for issuing photo pass they are required to submit the proof of residence indicating that they are residing at the same place prior to 01.01.1995. After notification of private slums and in case of slums on government or semi-government land, all slum dwellers are entitled to get photo passes. As per Govt. Letter Dated 16/7/94 the slums on lands belonging to Govt. & Semi Govt. agencies need not be declared (CDP of PCMC, 2005). They are directly entitled to get access to basic services. The government and semi-government land indicated land under the ownership of Central Government, State Government, Pimpri-Chinchwad New Town Development Authority (PCNTDA), Municipal Corporation and Maharashtra Industrial Development Corporation (MIDC). In the state of Maharashtra, slums on private land are notified so as to avoid the unwanted litigations in providing the public utility services in slums located on private land. Thus slums on private land are generally notified which enables entry of government agencies for providing basic services to slum dwellers. (As narrated by ULB official, PCMC)

- ❖ There is no comprehensive universal definition of slums in census, NSSO and state acts. State laws provide for the a procedure to 'notify' or 'recognise' slums but the stipulation the number of households in the definition of slums, which is a part if the Census and NSSO definitions, is absent in the definitions adopted by State laws which do not place a qualification on the number of households for the purpose of identifying a slum.
- ❖ The first round of performance measurement lead to area for further analysis e.g. whether the provisions of notification with respect to notifications of slums are being followed.
- ❖ Lack of security of tenure is one of the most important parameter resulting in poor living conditions as it deprives slum dwellers to entitlements like access of basic services. Inclusion of tenureal aspects in the present framework such as State Slum Acts, Census 2001 and NSSO requires urgent attention and adequate addressal by the policy makers.

4.2.3.1 Categories of Slums

As per definitions of slums (under Census of India 2001, NSSO 58th Round, 2002) as discussed in earlier section slums are either

a) Notified or declared
b) Non-notified slums or not declared

The non notified slums also include informal settlements, squatters etc.

Box 6: Highlights from the NSSO survey 58th round, 2002

- ❖ The study by NSSO covers Class I and Class II cities having population more than 50,000 at all India level.
- ❖ Estimated total number of slums: 51,688
- ❖ % of people living in slums in Urban areas: 14 (One in Seven)
- ❖ % of notified slums: 51
- ❖ State with the highest number of slums: Maharashtra (32%)
- ❖ 65% of slums are built on public land, owned mostly by urban local bodies, state government, etc.

http://www.iussp.org/Activities/wgc-urb/chandrasekhar.pdf

Total Slum Settlements

The first round of performance measurement under the PAS project reveals that there are total 6694 slums settlements in the state, where 4249 (63%) are notified slums and 3168 (47%) slums are on public land. The class wise distribution of slum settlements depicts that maximum number of slums (4779) are in the Municipal Corporations, followed by 'B' class Municipal Councils. Similarly majority of slums that are notified (3364) and slums on public land (2003) are in the Municipal Corporations followed by 'B' class Municipal Councils.

Categorization of slums: State level	*Number*	*% of total slum*
Total No. of Slum Settlements	*6694*	*100*
Total No. of Notified Slums	*4249*	*63.5*
Total No. of Slums on Public Land	*3168*	*47.3*

Table 4.1-Equity- Categorisation of Slum Settlements_State Level

***(Note:** As per PAS Performance Measurement Round 1 data, of 248 ULBs 49 ULBs do not report slums and 193 ULBs furnished detailed information on slums enabling further analysis. Rest 6, all 'C' classes Municipal Councils do not have information on slums.)*

Notified and Non- Notified Slums

Categorisation of slums: Class-wise Scenario												
	MC	*%*	*A*	*%*	*B*	*%*	*C*	*%*	*NP*	*%*	*Total*	*%*
Total No. of Slums Settlements	*4779*	*100*	*580*	*100*	*732*	*100*	*592*	*100*	*11*	*100*	*6694*	*100*
Total No. of Notified Slums	*3364*	*70.4*	*396*	*68.3*	*403*	*55.1*	*86*	*14.5*	*0*	*0*	*4249*	*63.4*
Total No. of Slums on public land	*2003*	*41.9*	*248*	*42.8*	*512*	*69.9*	*394*	*66.6*	*11*	*100*	*3168*	*47.5*

Table 4.2- Equity-Categorisation of Slum Settlements_Class-wise Scenario

The following table presents the maximum and minimum number of slum settlements as found in different class and size of ULBs. The maximum number of slums are found in Municipal Corporations, followed by A class MCl, B class MCl, C class MCl and Nagar Panchayats, which reinforces the fact that proliferation of slums is more in the large cities and towns owing to high rate of in migration from rural areas/ hinterland and lack of affordable housing to cater the housing needs.

Maximum and minimum number of slum settlements in ULBs				
Class	*No. of Slums*	*Total number of slum settlements in the ULB*	*Of total slums, Number of notified slums in the ULB*	*Number of slum settlements on public land*
Municipal Corporation	*Maximum*	*1959*	*1822*	*1035*
	Minimum	*19*	*0*	*3*
A Municipal Council	*Maximum*	*80*	*58*	*43*
	Minimum	*15*	*0*	*0*
B Municipal Council	*Maximum*	*43*	*43*	*43*
	Minimum	*2*	*0*	*0*
C Municipal Council	*Maximum*	*23*	*13*	*14*
	Minimum	*1*	*0*	*0*
Nagar Panchayat	*Maximum*	*6*	*0*	*6*
	Minimum	*1*	*0*	*1*

Table 4.3- Equity-Maximum and minimum number of slum settlements in ULBs_ Class-wise Scenario

The overall scenario of the slum settlements in all the ULBs of Maharashtra illustrates that, Greater Mumbai has the highest number of Slum settlements, which is 1959 in number and has 1822 (93%) notified slums and 1035 slums are on public land whereas minimum slums are reported in Rahuri (C MCl), Roha (C MCl), Saswad (C MCl) and Malkapur Nagar Panchayat which have only one slum settlement in their municipal jurisdiction. The state level average (248 ULBs) for slum settlements is 34.

In Municipal Corporations, the highest numbers of slum settlements are reported in Greater Mumbai, and the lowest number is in Vasai-Virar, i.e. 19. The average number of slum settlements in 23 Municipal Corporations is 208. Similarly, in A Class Municipal Councils, the maximum number of slum settlements is found in Chandrapur (80) and minimum in Wardha (15), leading to an average of 39 slum settlements in 15 'A' MCls. Accordingly, in B Class Municipal Councils, Hinganghat (43) has highest number of slum settlements and Tumsar (2) has lowest number of slum settlements. The average number of slum settlement in this class is observed to be 14. Sailu (C Municipal Council) has the highest number of slums, i.e. 23 and the minimum number of slum is 1 in 3 ULBs under this category and the average slum settlement is 6. Nernavabpur Nagar Panchayat has 6 slum settlements, which is observed highest among all Nagar Panchayats and the lowest is 1 in Malkapur Nagar Panchayat. The average slum settlement is 4 under this category.

Box 7: Recommendation under JnNURM (BSUP/ IHSDP)
Notification of slums for upgrading and provision of services – Slums, not currently notified, must be enlisted by the urban local body through a formal process so that these become eligible for provision of basic services. Since the process of granting land tenure will take time, notification of slums can help to include currently excluded/non-notified settlements for provision of services.

Slum Land Ownership Pattern in ULBs

Designated slum areas include settlements with varying range of ownership of land and legality. The slums can be located

throughout the city on either:
-- Private Land
-- State Government Lands
-- Municipal Lands
-- Central Government Lands

Following is an illustration about this from PCMC:

Ownership of Slum Land in PCMC						
	PCNTDA	*MIDC*	*PCMC*	*Government*	*Private*	*Total Slums*
Number	*8*	*16*	*6*	*16*	*25*	*71*
%	*11.26*	*22.53*	*8.45*	*22.53*	*35.21*	*100*

Table 4.4- Equity-Ownership of Slum Land in PCMC

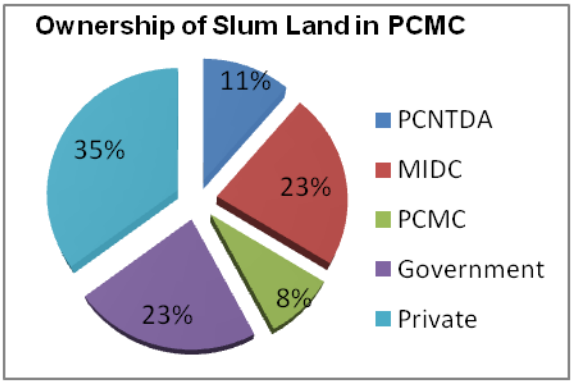


Chart 4-1- Equity_ Ownership of slum land in PCMC

The varied ownership pattern of land occupied by slums in a ULB is evident from the example of PCMC presented in the table above. The figures indicate that 65% of slums in PCMC are on public land. While the MIDC account for 22% of slums located on public land but more than 40% of slums are located on municipal land where title deeds rest with the Municipal Corporation.

4.2.3.2 Salient Findings on Notified and Non-notified Slums ….

a) Of total slums 47% slums are on public land and 63% slums are notified slums. But there is no information about whether all slums on public land are notified or of total notified slums how many are on public land and how many are on private land.
b) Class wise distribution of slums depicts that M.Corps have maximum (4779) number of slums of which maximum (70%) are notified slums. This is followed by A MCls and B MCls where 68% and 55% slums are notified.
c) The proliferation of slums is more in the larger cities i.e. Municipal Corporations and "A' class Municipal Councils but they are also more proactive in notifying slums. In spite of that the magnitude of problem vis-à-vis slums in larger cities is more complex. Small and medium towns/ cities have comparatively less number of slums and majority of them are on public land.
d) The slum land ownership pattern is more diverse in large cities (M. Corp. and A MCl) where high proportion of slums is also found on private lands.

4.2.4 Addressing Aspects Related to Tenability of Slums and Security of Tenure

Classification of Land Status/Tenability:

As per Draft National Slum Policy, 2001, the land status of all listed slums/informal settlements should be classified by the ULB as either Tenable or Untenable in order to determine whether or not regular planned service provision will be undertaken on an in-situ or resettlement basis. All listed slums/informal settlements should be considered as Tenable unless the site falls strictly within the definition of Un-tenability as expressed below:

a) **Definition of Untenable Slums/Informal Settlements:** A site shall not be declared as Untenable unless existence of human habitation on such sites entails undue risk to the safety or health or life of the residents themselves or where habitation on such sites is considered contrary to "public interest".
b) **Definition of Tenable Slums/Informal Settlements:** All listed settlements that do not fall strictly within the category identified above under untenable situations shall be considered 'Tenable', and thus eligible for in-situ upgrading (subject to the settlement of ownership disputes on private land).

Providing Land Tenure to Slum Dwellers:

JnNURM (BSUP/ IHSDP), 2005 recommends that in order to build "slum free" cities and for sustainable poverty reduction, local governments must provide security of tenure to slums. This implies granting entitlement to residents to inhabitate public land. Land tenure can also be of a more permanent nature, in the form of 'patta' or legal ownership of land, which allows people to legally build and own houses on the site. With patta/secure land tenure the urban poor begin to make investments in house.

Caselet 3: Secure Land Tenure to Slum Residents

Many city/state governments have been providing various forms of secure land tenure to slum residents as follows:

- Madhya Pradesh (MP) has granted under a legislative provision (MP Patta Adhiniyam) to all slum dwellers residing in cities prior to a certain date.
- The Andhra Pradesh government has issued pattas guidelines to extend basic services to non-notified slum areas at levels equal to notified settlements/ rest of the city.
- Chandigarh has offered a one-time scheme for slum housing and has granted a house to poor beneficiaries with valid proof of residence.
- Delhi state has followed a policy of resettlement and has provided poor families with housing/land.
- Mumbai has experimented with near site resettlement with multi-level housing

Tenure Options: Tenure arrangements and security in slums vary considerably. Most vulnerable are the pavement dwellers and those residing in non-notified slums and squatters arisen after 1995. For example the 'Slum Redevelopment Scheme' covers slums on state government land but excludes those on central government land which therefore would not be entitled to tenure security. Slums with photo passes perceive some security but slums that are not notified are most vulnerable. *(CDP of Mumbai, 2005)*

A "photo pass" is official certification of a slum dweller's eligibility to be resettled if the land on which the hut is situated is needed by the government for a public purpose. As per Government policy, slum dwellers prior to 1.1.95 are to be provided with security of tenure. As a part of this scheme photo passes and patta are given to slum dwellers. *(JnNURM Quarterly Report on implementation of Reforms by Nanded-Waghela Municipal Corporation)*

Criteria for Categorising an Area as Slum:

Draft National Slum Policy, 2001 states that each State/Union Territory shall lay down the norms/criteria for categorising an area as underserviced and the local body of each town shall list all such areas as slums. Following are the recommendations in the policy:

a) **Comprehensive Listing of Slums/Informal Settlements:** For the purpose of providing basic urban services, all under-serviced settlements characterized by poor physical and socio-economic conditions, irrespective of land tenure status and ownership should be identified and demarcated from regular planned neighborhoods inhabited by better off residents. Once identified, these settlements should be listed by the urban local body.
b) **Registration of Slum Dwellers**: All people residing in such listed settlements should then be registered with the ULB in order to prevent ineligible beneficiaries being included in development programmes and schemes just before the initiation of improvement works or the issue of tenural rights.
c) **Identity Card:** A suitable identity card shall be issued to all households in listed slums. The identity card may contain a few details such as household name, address, details of family members etc.
d) **Basic Service Eligibility:** Once settlements have been listed in the above manner all registered residents will be automatically eligible to receive basic minimum services/ amenities from the urban local bodies (ULB) pending any more permanent measures taken to upgrade, rehabilitate or resettle the community.
e) **De-listing:** The urban local bodies should de-list those settlements which have been provided with a sustainable level of basic services and where socio-economic indicators have reached defined acceptable norms.
f) **Other Entitlements:** All urban poor, regardless of their land tenure status, shall be entitled to any other special assistance or welfare schemes that are operative within the urban area and/or the State and which are not geographically or spatially determined but targeted to specific poverty groups. These may include schemes for economic support, credit, pensions, insurance etc and services.

Draft National Slum Policy also stipulates that at the time of granting tenure of land, formation of a residents association/ society is a pre-requisite. The urban local body will in turn recognize this association.

- The Security of Tenure empowers and enables entitlement of formal access to the basic services. The security of tenancy encourages slum residents to make investments in housing and basic infrastructure like water supply/ toilet connection while at the same time they enjoy better living conditions which also contributes to better health of residents.
- The issue of tenure needs an urgent attention in the definitions of the slum in the Maharashtra Slums Area (Improvement, Clearance and Redevelopment) Act. The absence of affordable and legal housing forces urban poor to squat on public lands. Lack of land tenure also gets in the way of local governments providing legal services to such settlements at levels similar to those provided to the rest of the city. But over time some of these settlements get listed/ notified by the local governments and become eligible to receive services.
- Providing affordable housing with tenure to poor housholds will make them less vulnerable and more secure. Secure tenure (*patta*) encourages urban poor families to invest and upgrade their housing. It also encourages them to connect and pay for municipal services inside their homes, i.e., metered water connections, toilets with sewerage, metered power supply, etc. This will also mean significant reductions in ULB's O&M costs for common and free services such as community toilets and community stand-posts. Over time the slum dwellers can be fully integrated into the city and be included in the property tax net, adding to city revenues.

4.3 Findings Based on Data and Information Recorded by ULBs on Slums

The PAS project attempts to capture the basic information regarding slums and access to basic services in slums. The findings from the first round of performance measurement revealed that there is inadequate data and information available for slum settlements and service levels in slums across all class and size of ULBs. Also regular updation of the available information on slums by the ULBs is essential. This brings focus on the primary need for developing a database and information system on slum settlements (their location, status, demographics) and for access of basic services to the slum dwellers and the poor, by the ULBs. The database thus created will be an important input for developing Performance Improvement Plans (PIPs) and developing City Wide Strategy for Universal Access of WSS to Poor and Un-Served thereby improving equity in service delivery for UWSS. Inter-alia to the above the updated information on status of services will influence poor sensitive decision making and internal earmarking of funds for the poor in the ULB budget.

4.3.1 Data Availability in ULBs for Slums Settlements

The Slum Census 2001 provides data on demographic (Slum Population/ HHs, Ward wise distribution of slums) and economic data (Main & Marginal workers) on slums but don't provide any data regarding service levels in slums. Slum Census 2001 provides state wise and city wise information about slum population/ HH etc. Also the data on notified and non notified slums and service levels in notified and non notified slums covered under NSSO 58th round, 2002 is for class I and Class II cities having population more than 50,000 at all India level. The methodology employed in PAS for collecting slum data/ information is by incorporating a special section on slum settlements and outgrowths in the Performance Measurement Framework for measuring both - access and level of basic services.

The forays through the first round of Performance Measurement under PAS reveal that data and information system on slum settlements, out-growths and status of access of basic service and service levels is not properly maintained and regularly updated by the respective ULBs. E.g. there are instances of no records on slums in 6 ULBs and reporting no slums by 49 ULBs in their jurisdiction, which needs more exploration.

ULBs and Information on Slums

ULBs and Information on Slums: State level	*Number*	*% of total ULBs*
ULBs having information on slums	*193*	*77.8*
ULBs reporting no slums	*49*	*19.8*
ULBs having no information on slums	*6*	*2.4*
Total ULBs	*248*	*100.0*

Table 4.5- Equity- ULBs and Information on Slums_State level

Of total 248 ULBs, 49 (19.8%) ULBs report no slum and 6 (2.4%) don't have information on slums that can enable further analysis.

Class-wise Categorization of ULBs Reporting 'No Slums' or 'No Information on Slums'

Class-wise Categorization of ULBs reporting 'No Slums' or 'No Information on Slums'				
Class	*No Slum reported*	*% of total ULBs*	*No Data on Slum*	*% of total ULBs*
Municipal Corporation	*0*	*0*	*0*	*0*
A Municipal Council	*0*	*0*	*0*	*0*
B Municipal Council	*7*	*2.8*	*0*	*0*
C Municipal Council	*39*	*15.7*	*6*	*2.4*
Nagar Panchayat	*3*	*1.2*	*0*	*0*
Total	*49*	*19.8*	*6*	*2.4*

Table 4.6- Equity-ULBs with 'No slums' & 'No information on slums'

In reference to the above table, 49 (20%) ULBs don't report any slums in their municipal jurisdiction, of which 39 (16%) ULBs fall under C Municipal Council, followed by 7 (3%) in B Municipal Council and 3 (1%) in Nagar Panchayat. Regarding the ULBs having no information on slums, all 6 (2%) ULBs fall under 'C 'class Municipal Council.

ULBs with Information on Slums on Notification

ULBs with information on notification of slums	*Number*	*% of total ULBs*
ULBs reporting Notified Slums	*79*	*31.9*
ULBs reporting zero Notified Slums	*97*	*39.1*
ULBs reporting no data on notified slums	*17*	*6.9*
Total ULBs having information on slums	*193*	*77.8*

Table 4.7- Equity-ULBs with information on notification of slums

Of total 193 (78%) ULBs having information on slums, 79 (32%) ULBs maintain data for notified slums, whereas 97 (39%) ULBs don't have notified slums and 17 (7%) ULBs don't furnish the data regarding notified slums.

ULBs with Information on Slums on Public Land

ULBs with information on slums on public land	*Number*	*% of total ULBs*
ULBs reporting slums on public land	*170*	*68.5*
ULBs reporting zero (0) slums on public land	*16*	*6.5*
ULBs reporting no data on slums on public land	*7*	*2.8*

Table 4.8- Equity-ULBs with information on slums on public land

Of total 193 ULBs having information on slums, 170 ULBs report slums on public land in the municipal jurisdiction and 16 ULBs report no slum on public land.

- In Thane (210), Navi Mumbai (48), B Municipal Councils- Bhandara (31), Hinganghat (43), Karanja (19), Malkapur Buldhana (16) and C Municipal Councils such as Tuljapur (6) all slum settlements are both notified and on public lands.
- In Beed (A MCl), all 20 slum settlements are notified of which none of them are on public land. Aurangabad has all 53 slums notified of which 30 are on public land and Gondia (A MCl) has all 58 notified having only 2 on public land. In Anjangaonsurji (B MCl), all 24 slum settlements are notified having 9 on public lands. Baramati (B MCl), all 13 slums are

notified having 7 on public lands. Similarly, In Akola (MC), all the 81slum settlements are on public land of which 78 are notified.

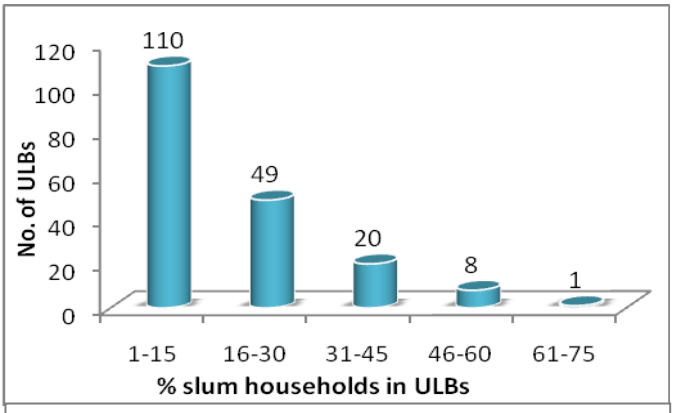
- An interesting fact observed in Wardha (A MCl) is that there are total of 15 slum settlements where 12 are notified and same numbers of slums are on public lands. The same is observed in Yavatmal, where out of total 25 slums, 20 slums are notified and equal numbers of slums are on public lands.
- Slums in 'C' MCls such as Katol (18), Navapur (6), Pandharkavda (6), Purna(20), Rahta(6), Sonpeth (10) none of the slum settlements are either notified or on public lands. In Ahmednagar (MC), there are total 22 slum settlements where 1 slum settlement is notified and 3 slum settlements are on public land.
- In Kalyan Dombivli, there are total 74 slum settlements, where none of those are notified, though all of them are on public lands. The same case is with A MCls e.g. Ichalkarinji and Satara (21), B MCls Arvi (14), Washim (16), where all slum settlements are non-notified though are on public land. 'C' MCls such as Akkalkot (8), Ashta (12), Dharangaon (8), Dharmabad (6), Erandol(14), Gadhinglaj (6), Karmala (6), Manglurpir (12), Matheran Giristhan (8), Morshi (8), Parola (6), Sawner (6), Shirur (11), Vaijapur (6) and Nernavabpur Nagarpanchayat (6) have no notified slums though all are on public land.

Slum Population and Slum Households

Total Slum Population and Slum Households	*Number*	*% of Total Urban Population*
Total Population in slums	*13,960,491*	*27.5*
Total no. of HHs in slums settlements	*2,757,432*	*27.4*
Total no of BPL families	*1,298,149*	*12.9*

Table 4.9- Equity-Slum Population and Slum HHs_State Level

27.8% population (13,957,668) of total urban population of Maharashtra (as reported by 248 ULBs) and 25.7% HHs (2,767,574) of total urban HHs of Maharashtra resides in 6694 slum pockets. There are 6694 slums in 193 ULBs that have information on slums. 12% (1,297,813) HHs/ families of total urban HHs in Maharashtra are Below Poverty Line (BPL). Not all slum dwellers are BPL but they don't have access to WSS.

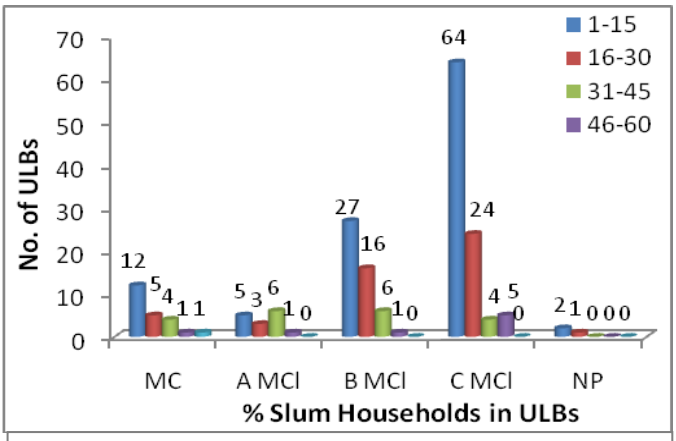


Graph 4-1- Equity_ Slum HHs_ State Level Ranges

State Level % of Slum Households in ULBs

Of total ULBs of Maharashtra, 110 (44%) ULBs are reporting 1-15% slum households, followed by 49 (20%) ULBS reporting 16-30% and 20 (8%) ULBs reporting 31-45% slum households in their respective ULBs.

Out of total 110 (44%) ULBs reporting 1-15%, 64 ULBs fall under the category of 'C' class Municipal Councils, which is 59% of total ULBs reporting 1-15% slum households and 27 'B' class Municipal Councils which covers almost ¼ of the total



Graph 4-2- Equity_ Slum HHs_Class-wise Ranges

ULBs reporting 0-15% slum households. It can be said that more than 80% proportion in this category is covered by 'C' and 'B' class MCls.

Class-wise % Slum Households in ULBs

It can also be observed that, 24 (50%) of total ULBs reporting 16-30% slum households fall under C class municipal council and 16 (32%) ULBs belong to B class municipal councils.

As regard to the ULBs reporting 31-45% slum households, there is no major variation in between the classes.

Out of total 9 ULBs reporting more than 45% slum households, 5 falls under C class municipal councils and no Nagar Panchayats are reporting this range of slum households. One thing needed to be clearly mentioned in this is that, no ULB of C class municipal councils report more than 60% of slum households.

ULBs with Information on Below Poverty Line Households

ULBs with Information on Below Poverty Line Households	*Number*	*% of total*
ULBs reporting slums but no data on BPL families	*11*	*4.4*
ULBs reporting no Information system on slums & on BPL families	*4*	*1.6*
ULBs reporting no slums & no data on BPL families	*20*	*8.1*
ULBs reporting data on slum and on BPL families	*182*	*73.4*
ULBs reporting no slum but having data on BPL families	*29*	*11.7*
ULBs reporting no data on slums but having data on BPL families	*2*	*0.8*
Total No. of ULBs	*248*	*100.0*

Table 4.10- Equity-ULBs with information on BPL HHs_State Level

It is observed that total 35 ULBs could not provide data on BPL families, of which 11 ULBs report slum but no data on BPL families, 4 ULBS have no information system on both slums and BPL families and 20 ULBs don't report slum and have no data on BPL families. However, 182 ULBs are reporting both slums and BPL families, 29 ULBs don't report slum but provide data on BPL families and 2 ULBs have no data on slums but provide data on BPL families. In conclusion, it can be said that, BPL population need not be restricted to slum settlements.

Current Processes at ULBs for Slum Data Records

The performance measurement efforts in the first round shed light on the current processes at ULB level for data recording. The data collection experience in all size and class of ULBs revealed that there are no centralized data records at a single node. The data is found to be disaggregated across different departments and in different records in a ULB. In case of larger ULBs, data for ward level and Household (HH) level was mainly available at ward level or zonal level offices. Different departments in ULB record and maintain different information and data regarding slums. The reason is lack of proper Management Information System at ULB level. This also highlights the need for one single comprehensive database and information system for slums. Further-more, elaborate study is needed to understand in detail the processes involved in recording slum settlements related data. The table below provides a generic scenario of data availability and slum records in a Municipal Corporation.

Record Keeping in ULB Department	*Data Records*
Slum Eradication and Rehabilitation Department	*No. of slums, ward wise location of slums, total slum HHs, total slum population, Slum Socio-economic survey, Slum Rehabilitation Schemes, Service Fee Record etc*
Water Supply Department (Ward-wise)	*Information regarding water connections in slums, Stand post etc., Group Water connection, individual water connection*
Slum Engineering Department	*Toilets, Gutters, Samaj Mandir (Community Halls), Roads*
Electricity Department	*Street Lights*
Health Department	*Health Records*
Table 4.11- Equity- Record Keeping in ULB Department	

4.3.1.1 Salient Findings and Inferences from First Round of Performance Measurement on Data/ Information System on Slums ….

a) Data Records on Slums

- Reporting of no slums by 20% (49) ULBs and no information system on slums by 2% (6) ULBs needs urgent attention. Of these 39 (16%) of ULBs reporting no slums fall under 'C' MCl followed by 7 (3%) in B Municipal Council and 3 (1%) in Nagar Panchayat.
- All 6 (2%) ULBs reporting no information system on slums fall under C MCls. Concrete actions are required for ground reality check for assessing prudency of data as furnished by ULBs.
- Of total 193 (78%) ULBs having information on slums, 79 (32%) ULBs maintain data for notified slums, whereas 97 (39%) ULBs don't have notified slums (i.e. zero notified slums) and 17 (7%) ULBs don't furnish the data regarding notified slums. Of these 17 ULBs that don't maintain data regarding notified and non notified slums 10

ULBs fall under C MCls. Also of the 97 ULBs that report zero notified slums, 70 are from C MCls and 21 ULBs are from B MCls.

- Of total 193 ULBs having information on slums, 170 ULBs report slums on public land in the municipal jurisdiction and 16 ULBs report no slum on public land. Of these 16 ULBs that report no slums on public land 13 ULBs are from C MCls.

b) Record Keeping and Information system on slums:

- Of 193 ULBs having sufficient data on slums, 18% (44) ULBs furnished settlement level data based on the records as maintained by them, 20% (51) ULBs furnished data based on recent survey of all slums, 11% (29) ULBs report data based on past surveys undertaken more than 5 years ago and 27% (66) ULBs furnish data based on estimations.
- Of total 193 ULBs furnishing information on slums 188 ULBs maintain records for updation of data on slums, 5% (12) ULBs update slum data annually, 32% (78) ULBs update data occasionally once in 3-5 years, 37% (91) ULBs report no updation of slum data and 3% (7) ULBs don't report data on the same. There is a strong need for carrying out slum census and regular slum surveys in all ULBs for periodic updation of data on slum settlements.
- Of 193 ULBs having information on slums 36% (90) ULBs maintain and update data on slums either annually or occasionally. Furthermore, 4% (9) ULBs maintain computerized data (majority of them are M Corps.) and 69% (171) ULBs maintain manual records. More efforts are needed for maintaining and updating proper data records, either manual or computerized in many ULBS.

Box 8 : Findings and Observations from first round of Performance Measurement

In many ULBs:

- ❖ No proper data records: No proper data records, either manual or computerized, are maintained and updated in many ULBS, leading to lots of estimations.
- ❖ No separate records maintained for WSS with respect to Properties and Households.
- ❖ Different spatial divisions used for recording data for different sectors.
- ❖ Household-wise records & Ward-wise records not maintained consistently.

c) <u>Data Records on Basic Services in Slums</u>

- In many ULBs there is improvised or no database on slum settlements and especially on services in slums. Of 193 ULBs analysed, 73% (182) ULBs furnish data on basic services in slum settlements. 20% (51) ULBs furnished data on basic services in slum settlements based on records as maintained by them, 16% (41) ULBs furnished data based on recent survey of all slums, 7% (19) ULBs report data based on past surveys undertaken more than 5 years ago and 28% (71) ULBs furnish data based on estimations.
- These factors further aggravate in case of non-notified slums that are still worse off. Dedicated efforts are required to record and update data for non-notified slum settlements and access of basic services in them.

- In many ULBs no separate records maintained for settlement details and HH level details with respect to slums. Of 193 ULBs analysed, 20% (49) ULBs maintain records for settlement level details and 14% (36) ULBs maintain records for HH level details. In addition to that 13% (33) ULBs maintain records for both settlement level and HH level details. Concerted efforts across departments are necessary for collating and consolidating data from different departments to develop consistent and comprehensive database in slum settlements.
- Due to lack of proper maintenance of slum records the data provided is based on estimates thus diminishing reliability of data. Also facilitative on field exploration is needed to enable prudency of data as furnished by the ULBs.

4.3.1.2 Identification of Areas of Improvement and Interventions Needed…..

a. There is a strong need for comprehensive database and information system on slums both on notified and non-notified slums. More emphasis needs to be given on regular updation and computerized records for both slum settlement and HH level details. The database thus developed will provide a premise for creating a shelf of projects for slum improvement and formulating PIPs for poor to improve access to basic services and equitable service levels and service delivery. It will also be a crucial input for pro-poor decision making and allocation of budget for poor and leveraging grants from centrally sponsored schemes.

More dedicated efforts will need to be put forth for collecting data in notified and non-notified slum settlements and service levels in slums. To attain the same the explorations are in progress at AIILSG, Mumbai. The few suggestions from the initial deliberations with the project partners are: carrying out representative slum surveys, converging slum information from different programmes – USHA, SLB, SGBA and MSNA. Also multi-stakeholder involvement including facilitation from elected representatives, existing CBOs, NGOs can be leveraged to accelerate the process and gaining greater insight into grass root realities.

Box 9 : Urban Statistics for HR and Assessments (USHA)

The Central Sector Scheme of "Urban Statistics for HR and Assessments (USHA)" aims at the development and maintenance of a national database, MIS and knowledge repository relating to urban poverty, slums, livelihoods, housing, construction and other urbanization-related statistics. It seeks to specially support the effective implementation of Jawaharlal Nehru National Urban Renewal Mission – Basic Services to the Urban Poor (BSUP) and Integrated Housing & Slum Development Programme (IHSDP) by undertaking Slum/ City/ State poverty profiling and mapping.

The process mapping of slum notification process in the ULBs, understanding the notification procedure for slums on private lands and central government lands will be of significant value. In addition to that more insight is needed on the notification process pertaining to the slums on public land (State Government land, ULB land, Public Undertaking Body).

b. Also there is a realization that data alone does not provide holistic picture of ULB functioning, there is a need for focused endeavor to carry out process mapping of key processes that affects ULB's WSS performance. This is to be followed by holding discussions with a wider group within a ULB and other stakeholders for re-engineering current processes at the ULB level to improve internal accountability mechanisms within the ULB. *An illustration is of the process mapping for existing taxation structure in the UWSS sector. The process mapping may encompass key aspects such as, is sanitation tax based on % of total property tax, water charges based on size of connection or based on % of property tax? Are there separate tax/ service charges levied for SWM services, waste water, sewerage connections except one time connection fee etc? Is there a door to door collection of taxes/ charges? Are penalty charges levied for defaults in payment etc?*

The important learning emerged from this is a need for standardization of processes at ULB level in UWSS sector for information collection, recording and their periodic updation. It is also crucial to introduce MIS and e-governance in the ULBs for proper maintenance of data records. The JnNURM framework for reforms provides a ready framework for ULBs to adopt this.

4.3.2 Reliability of Data Recorded by ULBs for Slum Settlements

PAS undertakes reliability assessments of data on access of WSS to all including poor…

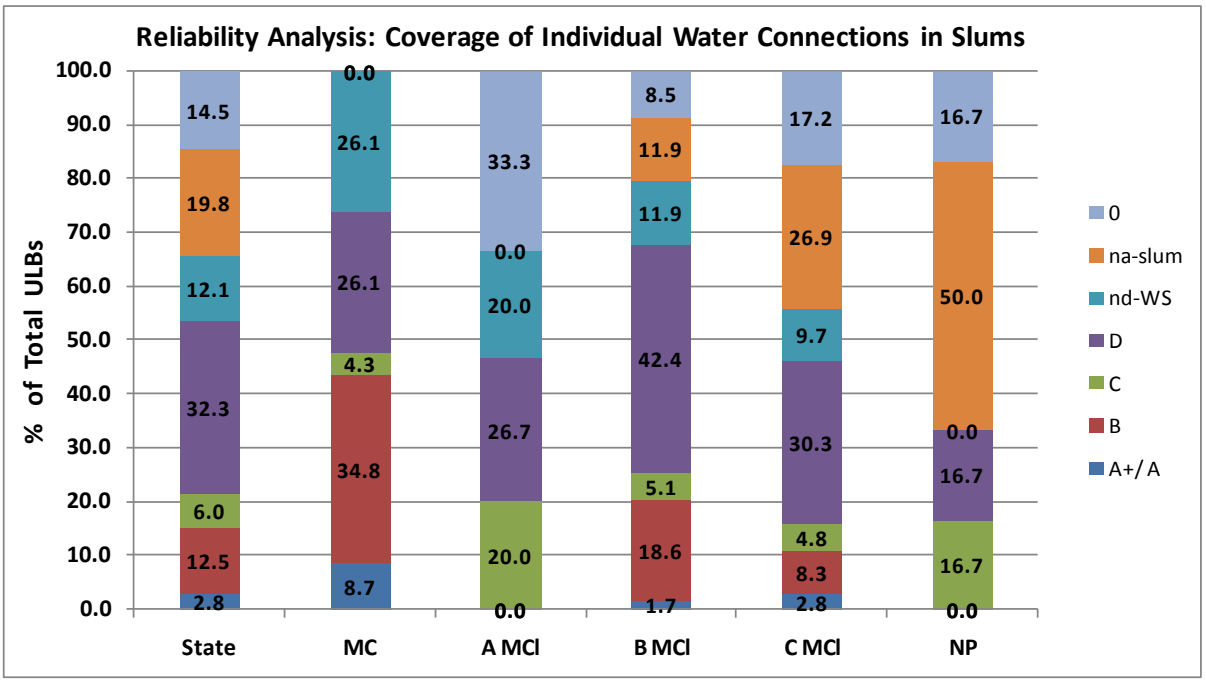
The PAS project in addition to capturing data and information on WSS also assesses the quality and adequacy of the data available and furnished by the ULBs. This has enabled the project team to understand the processes adopted by the ULBs for maintaining data records and information system. The analysis of key performance indicators on reliability scale has reaffirmed the need for implementing strong database management systems for more accurate, consolidated, consistent and updated data across departments. Also administrative reforms by promoting use of technology like MIS, E-Governance is strongly recommended. The reliability scales defined for the project with respect to slums are reproduced below:

Reliability bands	*Number of households in slums and services*
A+	*Computerized records; household level connection details maintained*
A	*Manual records; household level connection details maintained*
B	*Recent surveys; households and connection details maintained*
C	*Past surveys; households and connection details maintained*
D	*No records; as reported by ULB*

As regard to reliability of the information of basic services in slum areas, category 'A+' is granted to the ULBs maintaining computerized records and maintaining household and connection level details. 'A' category is granted to the ULBs maintaining manual records and household and connection level details. 'B' category is granted to the ULBs having recent surveys conducted for slum level details and 'C' is granted on the basis of past surveys conducted and household and connection level details maintained. ULBs not maintaining records and providing data based on estimations are categorized as 'D'.

The section below presents the snapshot of reliability analysis for the key performance indicators with respect to access of basic services in slums.

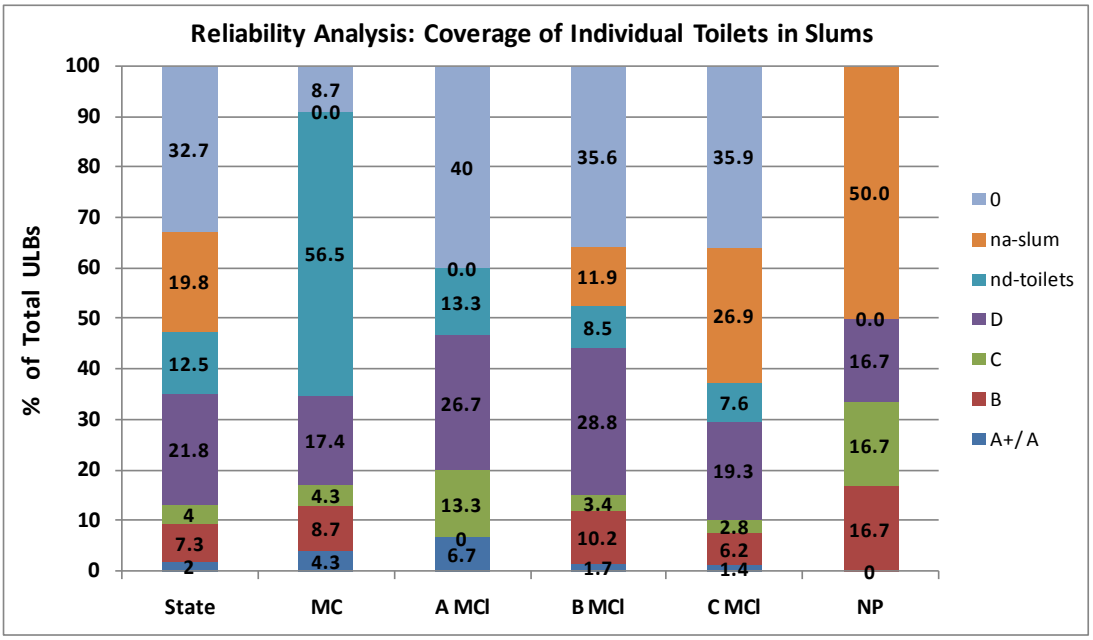
Reliability analysis on coverage of WS connections in slum settlements



Graph 4-3- Equity_ Reliability_ Coverage of individual water connections

At state level of total 248 ULBs, only 3% (7) ULBs that maintain computerized or manual records and maintain household and water supply connection level details. 32% (79) ULBs fall under the category of 'D' which means ULB's don't have records on service levels in slums and information/ data is furnished is estimated by the relevant ULB officials based on experience and their knowledge. In Municipal Corporations, equal proportion on ULBs, i.e. 26% fall under the category of 'B' and 'D'. This indicates that in ¼ (26%) MCs household level connection details are maintained and recent surveys are conducted but another ¼ (26%) of the ULBs have no records on service levels in slums. In 'A' MCls majority of the ULBs fall under the category 'C', and 'D' which shows that in 20% ULBs' past surveys are done and households and connection details are maintained and 27% ULBs have furnished data based on estimation. As regard to 'B' MCls, almost 40% have no records maintained and fall under 'D' category. Similar is observed in 'C' MCls wherein 30% ULBs fares 'D'.

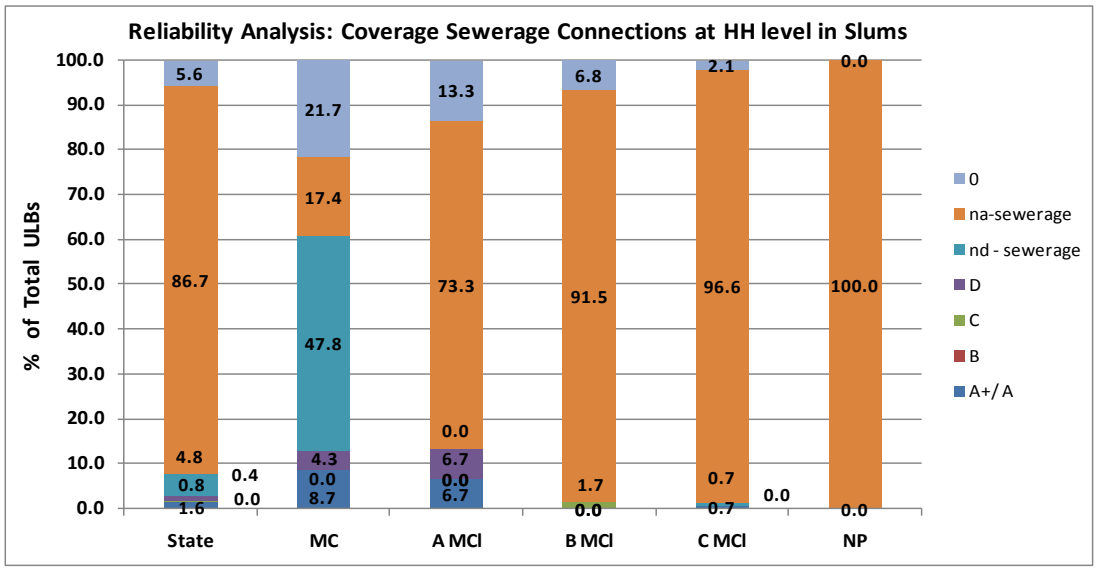
Reliability analysis on coverage of toilets in slum settlements



Graph 4-4- Equity_ Reliability_ Coverage of individual toilets

At state level of total 248 ULBs, 2% (5) ULBs are maintaining computerized and household level details for individual toilets in slums. One 'A' MCl is performing relatively better by scoring 'A' on reliability scale whereas rest of the 'A' MCls fare either 'C' or 'D'. Majority of Municipal Corporations, 'B' and 'C' MCls fare 'D' on reliability scale reporting data based on estimation by knowledgeable ULB personnel as no records maintained on toilets in slums. As regard to Nagar Panchayats, equal proportion of ULBs is falling under 'B', 'C' and 'D' category.

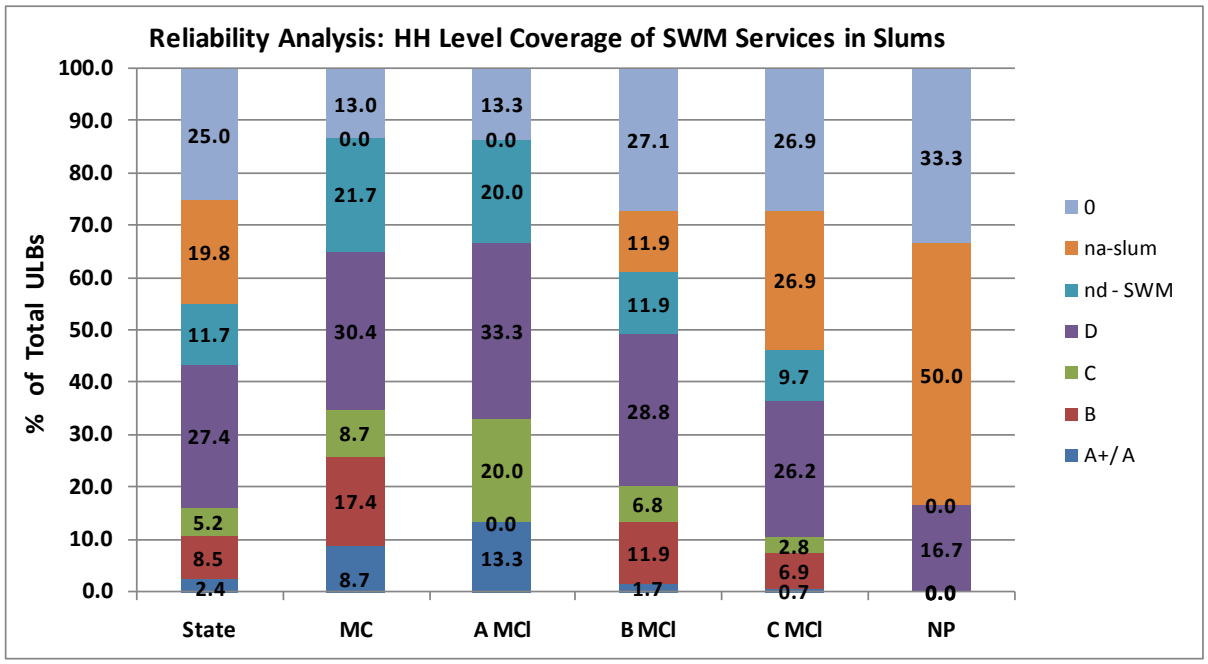
Reliability analysis on coverage of sewerage connections in slum settlements



Graph 4-5- Equity_ Reliability_ Coverage of sewerage connections

At state level of total 248 ULBs, almost 2% (4) ULBs fare 'A' on reliability scale thereby maintaining computerized records and household and connection level details of sewer connections in slum settlements. Across the classes, almost all ULBs reporting coverage fall under 'A' category, which indicates that the ULBs having piped sewerage network coverage in slums maintain computerized or manual records.

Reliability analysis on HH level coverage of SWM services in slum settlements



Graph 4-6- Equity_ Reliability_ Coverage of SWM services

The reliability assessment of HH level coverage of solid waste management services in slum settlements reveals that 2.4% (6) ULBs fall under 'A' category maintaining computerized, household level details of HHs served through door to door waste collection in slums. 27% (68) ULBs fall under 'D' category having no record on solid waste management services in slum settlements. Majority of the ULBs across the classes are falling under 'D' category and very few ULBs are fare 'A' on reliability scale.

It can be concluded that the reliability of the data furnished on the coverage of basic services in slum settlements is poor, as majority of the ULBs falls under the 'C' and 'D' category. It is observed that there are 7 ULBs having computerized and updated information system and data records on water supply in slum settlements, 5 ULBs for toilet services in slums, 4 ULBs for sewerage connections in slums and 6 ULBs for solid waste management services in slum settlements. Across the classes, Nagpur Municipal Corporation is the only Municipal Corporation performing better in maintaining computerised or manual records pertaining to all four basic services in slums. Karad 'B' Municipal Council, Karmala 'C' Municipal Council, Paranda 'C' Municipal Council and Pathari 'C' Municipal Council are some of the illustrations amongst Municipal Councils performing relatively better in maintaining records on more than one service.

Management Information System (MIS) in Shirpur Warwade Municipal Council

Caselet 4: Management Information System (MIS) in Shirpur Warwade Municipal Council (SWMCl)

Shirpur Warwade Municipal Council has designed and implemented a Management Information System in 2003 to take concrete measures to expand and improve the basic services in the city. The MIS system is being used by the departments of Property Tax, Water Tax, Health, Construction, General Administration and Department of Human Resource. The MIS is composed of three subsystems - Database Management System (DBMS), Document Management System (DMS) and Complaint Redressal System (CRS). Currently, the system is also linked with the website and will be integrated with the upcoming Geographical Information System (GIS). DBMS maintains the central database related to properties, construction work, water supply (connections by type and size), complaints received and redressed, etc. All documents and reports prepared across various departments are maintained on the server, and can be retrieved as and when required under DMS. And CRS provides information about complaints received and redressed, which can be updated simultaneously by various departments across SWMCl. The annual hardware up-gradation and maintenance costs amount to Rs.50,000/-. As a positive impact of MIS, it has increased efficiency in service delivery and effectiveness in documentation practice across all departments. Tax recovery became faster due to timely generation of demand records in shorter duration. Currently property tax collection of SWMCl stands at 95 to 99 % within stipulated time. CRS installed as a part of MIS has reduced response time of complaint redressal from within 48 hours to within 24 hours. It is also adequately in compliance with the norms under Citizens' Charter. In addition to that due to use of MIS in decision making the reforms required for development programmes is also possible.

The adjoining caselet of Shirpur 'B' MCl is one of the illustrations for Management Information Systems that ULBs can adopt to perform better in both providing basic civic infrastructures to citizens including slum settlements and also to keep continuous monitoring, data record keeping and grievance redressal system. It is not that ULBs are failing to implement MIS on basic services; there are numerous ULBs that are performing well in the city level Management Information System of the basic services (as depicted in table 16). However when it comes to slums, the issue needs greater emphasis by many ULBs. The illustration of Shirpur Warwade Municipal Council narrated in the section below brings to fore deficiency in maintaining data records on

basic services in slum settlements.

The table below depicts the reliability assessment of key performance indicators in water supply, sanitation and waste water and solid waste management. It also assesses the reliability for coverage of basic services in slum settlements.

Reliability Analysis of Shirpur Warwade Municipal Council

Water Supply Indicators & Reliability		*Sanitation and Waste Water Indicators & Reliability*		*Solid Waste Management Indicators & Reliability*	
Coverage of water supply connections	*A*	*Coverage of individual toilets*	*A*	*Household level coverage of SWM services*	*C*
Per capita supply	*A*	*Coverage of individual sewerage connections*	*na*	*Efficiency of collection of municipal solid waste*	*D*
Continuity of water supply	*C*	*Collection efficiency of waste water network*	*na*	*Extent of segregation of municipal solid waste*	*0*
Quality of water supplied	*D*	*Sewage treatment capacity*	*na*	*Extent of municipal solid waste processed and recycled*	*na*
Cost recovery: O&M	*B*	*Extent of cost recovery in waste water management*	*0*	*Extent of cost recovery (O&M) in SWM services*	*0*
Spatial variations in water supply coverage	*nd*	*Spatial variations in coverage of individual toilets*	*nd*	*Spatial variations in HH level coverage of SWM services*	*C*
Spatial variations in per capita supply of water	*D*	*Spatial variations in coverage of sewerage connections*	*na*	*HH level coverage of SWM services in 'slum settlements'*	*D*
Coverage of WS connections in slums	*D*	*Coverage of toilets in slums*	*0*	*Extent of scientific disposal of municipal solid waste*	*na*
Extent of NRW to total water supplied	*D*	*Coverage of sewerage connections in slums*	*na*	*Efficiency in redressal of customer complaints*	*C*
Efficiency in redressal of customer complaints	*A*	*Quality of waste water treatment*	*na*	*Percentage of recruited staff to sanctioned staff*	*A+*
Recruited staff to sanctioned (%)	*A+*	*Extent of reuse and recycling of waste water*	*na*	*Efficiency in collection of SWM related charges*	*na*
Extent of functional metering of water connections	*na*	*Efficiency in redressal of customer complaints*	*nd*		
Electricity expenditure as a share of water production	*A*	*Percentage of recruited staff to sanctioned staff*	*A+*		

Water Supply Indicators & Reliability		Sanitation and Waste Water Indicators & Reliability		Solid Waste Management Indicators & Reliability	
Collection efficiency for water charges	*A+*	*Efficiency in collection of sewerage related charges*	*na*		

Table 4.12- Equity- Reliability Analysis of Shirpur Warwade Municipal Council

It is evident that due to Management Information System (MIS) functioning in Shirpur across departments viz. water supply (connections, type and size), toilets (number), complaint redressal, property tax, user charge and staff related details, the reliability of data is high. (Reliability band code for the said information is 'A').

It is essential to computerize the relevant operations and introduce systems to aid in systematic implementation of various schemes and programmes. It is also essential to increase efficiency throughout administration and systems for responding proactively to the problems in services. It is evident that Shirpur is performing very well in data record system, maintaining records of complaints and taking action on it, preparing and updating reports across departments.

Box 10: Key functions of MIS, Shirpur

- Water Supply: Maintaining Information on Water Distribution Source, Water Connections - type and size
- Tax: Property tax, Water tax and cost recovery
- Administration: Total staff, Payroll, Pension, Provident Fund Maintenance
- Complaint Redressal
- Generating Reports
- Feeding Data to GIS and Website
- Facilitating Decision-Making

But many significant efforts are needed to incorporate ward level details (spatial variation), coverage of basic services in slum settlements and details for solid waste management in the existing Management Information System.

The above illustration of Shirpur brings to fore that though some ULBs have installed MIS coupled with GIS, the data recording and information system and its updation for slum settlements is weak and needs to be strengthened up which will be core input for pro poor decisions making and pro poor budget allocation.

4.3.2.1 Salient Findings and Inferences from the First Round of Performance Measurement on Data Reliability on 'Access of Basic Services in Slums'

a) At state level almost 2% (6) ULBs fare 'A' on reliability scale which means that they maintain computerized records and maintain household and connection level details for water supply connections, toilets, HH level sewerage connection and coverage of SWM services in slum settlements.

b) At state level, 32% (79) ULBs fare 'D' for coverage of WS connections in slum settlements. 22% (55) ULBs fall under the category of 'D' for coverage of toilets in slum settlements. 1% (2) ULBs fare 'D' on reliability scale on coverage of HH connections to

sewerage network in slum settlements. 67% (27) ULBs fare 'D' on HH level coverage of SWM services in slum settlements. The score 'D' means ULB's don't maintain records on service levels in slums and thus data furnished is based on estimations made by knowledgeable ULB officials.

c) In 86% (215) ULBs there is no piped sewerage network in slums. 5% (12) ULBs could furnish data on sewerage connections in slum settlements. Majority of these are Municipal Corporations.

d) Majority of Municipal Corporations fare 'B' and 'D' on reliability scale indicating that recent surveys are conducted and household level connection details are maintained in many cases. While in A MCls majority of the ULBs fall under the category 'C', and 'D' whereas in B and C MCls maximum ULBs fare 'D' followed by 'B' and 'C' on reliability scale. Maximum Nagar Panchayats score 'C' and 'D'. From the reliability assessment it can be concluded that majority of the ULBs across classes fare 'C' and 'D' on maintaining data on service levels in slum settlements. But M. Corps and B class Municipal Councils are performing relatively better than 'A' and 'C' class Municipal Councils in maintaining and updating data records.

4.3.2.2 Identification of Areas of Improvement and Interventions Needed…..

a) **<u>Need for Information System Improvement Plans</u>:** More emphasis needs to be given at ULB level for regular updation of data and maintaining computerized records for both notified and non notified slum settlements. Also to understand micro-level scenario it is essential to maintain records of HH and connection level details. For the purpose the pre-requisite is to understand current processes at ULB level to record data on slum settlements and reengineering of processes to formulate sound information system.

Box 11: Generic Findings with respect to data availability and reliability on 'Access of Basic Services in Slums'

- Overall reliability of data: Majority of the data collected stands/ fares average on reliability scale ranging between 'C' to 'D'.
- Constraints in data management system and inconsistency in records observed in several ULBs.
- Sources and records of data and information not available leading to poor reliability of the data.
- Low reliability of data due to errors in estimations in cases where records maintained at ULBs were inadequate.
- Missing links of information: Ward wise data with respect to population, residential properties, water connections, HHs with access to individual toilets etc is mostly not available. If available based on estimation by ULBs.
- Data gaps and limitations in spatial analysis due to data gaps and lack of availability of ward wise and Household level data.

b) Enhancing Reliability of Data: Special efforts are required during data collection to enhance reliability of data. For example, reporting of no slums, no segregated data on community toilets and public toilets and no differentiation between notified & non notified slums. Thus, data enumerators have to be conscious about reality check and data auditing.

c) Promote Use of Technology: The Information Communication

Technology (ICT), Management Information System (MIS) and e-Governance are not only tools for bringing about transparency and accountability, but also go a long way in improving service delivery. Apart from that, operationalization of MIS and e Governance are mandatory reforms under JnNURM. These are closely linked with the aspects like efficient management, cost recovery, faster complaint redressal, etc. and facilitate planning and execution across various departments in the ULB. Drawing from international experiences in UWSS sector programmes, the effective use of e-technology in data collection, analysis and dissemination can also be explored and mainstreamed in-sync with the JnNURM e-governance and MIS reforms.

4.4 Access of Basic Services and Existing Service Levels in Slums

The first round of Performance Measurement provides an insight into the existing status of access to basic services and existing service levels in the slums. The findings emerged present a holistic picture for all slums that don't classify between status of basic services in notified and non notified slums.

The similar effort undertaken by NSSO 58th Round in year 2002 on 'Conditions in Slums' addresses the dichotomy of notified and non-notified slums. The adjoining box puts forth highlights from the survey. The findings clearly highlight the fact that status of basic services in notified slums is better than that in non notified slums.

Box 12: Highlights from the NSSO survey 58th Round, 2002

Addressing the dichotomy of notified and non-notified slums

- % of slums with majority as pucca houses: 65% (notified) 30% (non-notified)
- % of slums with tap as a drinking water source: 84% (notified) 71% (non-notified)
- % of slums with no latrine facility : 17% (notified) [1993: 54%] 51% (non-notified)
- % of slums with underground sewerage system: 30% (notified) 15% (non-notified)
- % of slums with no drainage system: 15% (notified) 44% (non-notified)
- % of slums having no garbage collection facility: 16% (notified) 47% (non-notified)
- % of slums with pucca road within the slums: 71% (notified) 37% (non-notified)
- % of slums with pucca approach road to the slum: 86% (notified) 67% (non-notified)
- % of slums with water-logging during monsoon: 36% (notified) 54% (non-notified)
- % of slums with household & street electricity connection: 84% (notified) 53% (non-notified)
- % of slums with only household electricity connection: 11% (notified) 25% (non-notified)
- % of slums with no electricity connection: 1%(notified) 16% (non-notified)

http://www.iussp.org/Activities/wgcurb/chandrasekhar.pdf

The draft National Slum Policy is formulated against the backdrop of inadequate infrastructure availability in slums. Further reforms under BSUP/ IHSDP also aims to ensure universal and equitable access to basic services for all urban dwellers, including slum residents who may be living in non-notified, irregular or illegal settlements, by connecting these areas to municipal services i.e. water supply, toilets, waste water disposal, solid waste disposal, roads, power, etc. Also as per the Twelfth Schedule of the 74th CAA, the functions of urban local bodies include slum improvement and up-gradation.

Caselet 5: Equitable Basic Services to Urban Poor in Tasgaon Municipal Council (TMCl)

The definition of exclusion is not only limited to the slum dwellers but should consider wider gamut of under privileged. This concept has been pursued by TMCl, which made conscious efforts to extend WSS and SWM service delivery not only to the slum dwellers of its 5 non-notified slums, but also to the non slum BPL Communities. Currently, there are 393 BPL families residing in 5 non-notified slums with population around 1764 and two non-slum BPL communities; Gosavi Community and Nath-Panthi Dombari Community, with 124 families and population of around 600. The Council has adopted a strategy to involve Gosavi community for the waste segregation at the landfill site due to which the BPL community can now earn their livelihood. Besides these, all the 393 BPL households from five non-notified slums will be rehabilitated under IHSDP scheme and Tasgaon expected to be a "Slumless-City" by March 2012.

Minimum Norms Defined for Basic Amenities for a Slum by GoI

With the growing investments in urban basic services in the wake of BSUP and IHSDP under JnNURM, the need is for development of new set of norms for the urban basic services that could be used as a minimum level of services in the city including slums, which should be maintained by all ULBs in the country. The following table presents the minimum basic standards for provision of basic amenities in slums as prescribed in the earlier GoI programmes like EIUS, Slum Up-gradation Programme funded by World bank, Urban Basic Services for Poor (UBSP) and the "Working Group on Expenditure Norms', 1995 etc.

Physical Norms and Standards as per Government Sponsored Programmes			
Service	*Population/ Area Target*	*Minimum Physical Standards for Basic Amenities in Slums*	*Service Level Target*
Water Supply	*100% population to be covered*	*Water supply for 150 or less persons or for 30 or less families*	*One regular size tap*
		Water supply for 25 persons (As per draft National Slum Policy, 2001)	*One regular size tap*
		Water supply through stand posts and not piped supply to individual houses	*40-70 lpcd*
		Distance of Household connection or access to public stand post	*less than 250 mts*
Sanitation /Sewerage	*100% city area to be covered by sewerage system with treatment facilities and low cost sanitation methods for low income areas*	*Community latrines for 20 to 50 persons or for below 10 families*	*One latrine/ One seat*
		Community baths for 20 to 50 persons (Women priority)	*One bath*
		For maintaining normal outflow to avoid water accumulation	*Sewer – open drains*
		For quick draining of rain water	*Storm water drains*
Solid Waste Collection Disposal	*All the solid waste generated should be collected and disposed*	*Garbage Collection Points for 15 HHs or 75 persons*	*One Garbage Collection Point*
Street Lighting	*On major roads*	*Street lighting*	*Two poles 30 mts apart*
Footpaths/ Lanes	*Pathway access to every plot*	*Widening and paving of existing lanes*	*Making it pucca lane*

Table 4.13- Equity- Physical Norms and Standards as per GoI Programmes

* *Minimum standards can be increased as per availability in small/medium towns*

The latest norms for basic amenities in slums as prescribed by the GoI in the draft National Slum Policy are reproduced below:

Guiding Principles for Physical Infrastructure Development as per Draft National Slum Policy, 2002

The Draft National Slum Policy states that each State and ULB should determine the norms and standards for basic services such as water, sanitation, electricity, health, etc and how these will be delivered to residents of listed settlements. The tenural status and likelihood of a settlement getting relocated at some point in the future should not deter promoting such systems since the benefits of such environmental improvement far exceed the initial investment incurred.

Water supply: Quantum, duration, timing and water quality are the four critical factors in planning water supply delivery.

The norm for provision of public water supply stand post is suggested to be one source for 25 persons.

Dual and standby systems, such as piped supply supported by local hand-pumps should be considered as a means of helping to address these four factors.

It is desirable that the collection of user charges and the maintenance of assets should be undertaken by community groups on behalf of the ULBs.

Even where individual water tap connections are provided, it may be desirable to install hand-pumps or community storage facilities to offset poor frequency of supply and inadequate storage capacity at individual household level.

Sanitation: ULBs should avoid constructing community latrines within slum/informal settlements as these quickly degenerate on account of poor operations and maintenance (O&M) thus becoming counterproductive to public health. Where there is insufficient space for individual sanitation options (mostly where on-site disposal systems have to be adopted) group or cluster latrines with clearly demarcated and agreed household responsibilities for O&M may be a suitable alternative option.

The norm for cluster latrines at the rate of one seat for 50 persons is suggested, with adequate institutional arrangements for maintenance and upkeep with the involvement of community.

Considering the limitations on improving sanitation in many towns due to the absence of underground drainage and sewerage systems, low cost sanitation options, particularly twin pit pour flush latrines may be a more appropriate and cost effective option for slums duly keeping environmental safeguards in mind.

Storm Water Drains: Drains in slums serve the dual purpose of carrying sullage water from individual houses as well as draining storm water. It is crucial to integrate the outfalls of such drains with the city's main drainage system. The planning of slum drainage should be fully integrated into the planning of neighbouring systems as well as the city as a whole.

Solid Waste Collection: Sustained awareness campaigns and provision of waste collection receptacles will facilitate a cleaner environment. Urban Local Bodies could organize 'clean slum competitions' and institute prizes to create more awareness and encourage the community groups to maintain a clean environment within their localities. At community level, management systems that employ private sweepers by collecting monthly charges may also be adopted.

The findings emerged from the first round of performance measurement are presented in the subsequent sections.

4.4.1 Performance Measurement Data Analysis at State Level under the PAS Project

Benchmarks defined under PAS for Access of Basic Services to Poor

The baseline for assessing the performance in service delivery and service levels is among the key performance indicators and local action indicators and benchmarks defined under the PAS project. The KPIs are distinguished for service delivery outcomes (or main goals of public services) and intermediate operational outcomes that reflect the plans and reforms needed to achieve service goals. The LAIs are identified for local government actions to improve performance on equity, non-revenue water, water quality and cost recovery. The indicators and benchmarks are reproduced below:

Key Performance Indicators and Local Action Indicators: Equity in Service Delivery	*Benchmark*
Coverage of water supply connections in slum settlements (%)	*100*
Population per shared/ community stand post in slum settlements (Ratio)	
Coverage of toilets in 'slum settlements' (%)	*100*
Coverage of HH connections to sewerage network in 'slum settlements' (%)	*100*
Population per toilet seat in community toilets in slum settlements (Ratio)	
Household level coverage of SWM services in slum settlements (%)	*100*

Table 4.14- Equity- KPIs and LAIs for Equity in Service Delivery

Coverage of water supply connections in 'slum settlements' (%)

Definitions: Total households in slum settlements connected to water supply network with a private (not shared) service connection, as percentage of total households in all slum settlements in the ULB.

Coverage of households with access to individual toilets in 'slum settlements' (%)

Definition: Total number of slum households with individual toilets as a percentage of total number of slum households.

Coverage of household connections to sewerage network in 'slum settlements' (%)

Definition: Total number of slum households connected to sewerage network as a percentage of total number of slum households

Household level coverage of solid waste management services in 'slum settlements' (%)

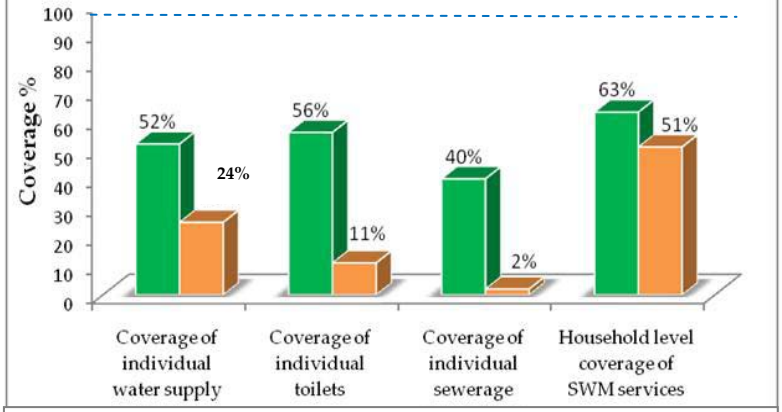
Definition: Total households in slum settlements serviced by door to door collection of MSW as a % of total number of households in slums.

The forays through the first round of Performance Measurement revealed the low service levels in slum settlements and highlighted the importance of increasing coverage of WSS in poor communities residing in slums and population living in out growths areas. The following section presents observations regarding data records for services in slums and findings with respect to access of water supply, sanitation facilities and SWM services in the slum settlements.

Of total 248 ULBs, 49 ULBs reporting no slum, 6 ULBs reporting no information system on slums and 5 ULBs reporting only partial information system on slums. Therefore, the analysis presented in the subsequent sections builds on slum data available for 188 ULBs.

4.4.2 Access to Basic Services in Slums Settlements: Summary of Findings

Water supply, sanitation and waste water services and solid waste management services are the basic services which every citizen is entitled to get, but the right to get privilege of these services is not observed in many ULBs especially in the context of slum dwellers. The reasons behind this are manifold and vary from case to case. In some instances the level of basic services provided in the city and slum settlements have vast difference in coverage and service delivery efficiency. This section attempts a comparative assessment of service levels in cities and slum settlements. The findings as emerged from the state level analysis and class wise analysis are narrated below:



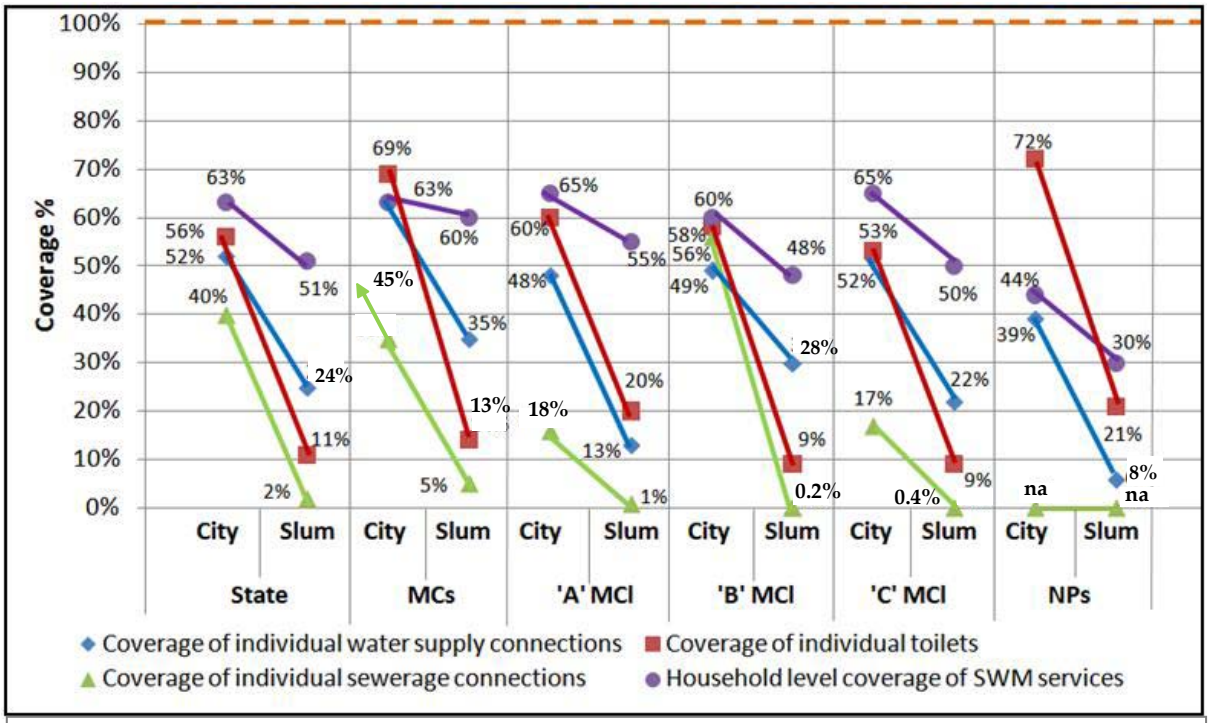
Graph 4-7- Equity_ Comparative analysis for Access and Coverage_City& Slum Settlements_State Level

- **Comparative analysis of access and coverage of basic services in city and slum settlements**

The state level scenario of basic services in cities and slums revealed that there is a disparity in provision of basic services in the city and slum settlements, especially for sanitation (toilet facilities) and waste water services. It is observed that the city level coverage of individual toilets is 56%, whereas in slum settlements, it is 11%. Same is observed in coverage of individual sewerage connections. However, there is lesser difference is in provision of household level coverage of solid waste management services in city and slum, which is 63% and 51% respectively. As regard to coverage of water supply, it is 52% in the city whereas 24% HHs are covered through individual water connections in slum settlements. Majority of the ULBs provide access to water supply through group connections and public stand posts.

- **Access and Coverage: Class wise Scenario in City and Slum Settlements**

The figures for city include slum and non slum areas.



Graph 4-8- Equity_ Comparative analysis for Access and Coverage_City& Slum Settlements_Class wise Scenario

As regard to water supply through individual connections, while analyzing across classes it is observed that 'A' class Municipal Councils and Nagar Panchayats are performing relatively poor than other classes whereas it is reverse in the case with coverage of individual toilets. In fact, the coverage of individual toilets in slum settlements in 'A' class Municipal Council and Nagar Panchayats is the highest among all classes.

The coverage of individual sewerage connections in slums is comparatively very low in all the classes. In 'B' and 'C' class Municipal classes few ULBs have piped sewerage network in the cities and only 1 ULB from each class have the coverage of sewer connections in slums which is observed very low at 0.2% and 0.4% respectively. In Nagar Panchayats there is no piped sewerage in the city. However, it is remarkable that there is lesser variation observed in providing household level solid waste management services in city and slum settlements throughout all the classes.

- **Service Delivery Efficiency**: **State level analysis**

Service Delivery Efficiency - State Level Analysis			
S.N	*Particulars*	*Number of connections*	*Households Served*
1	***Water Supply***		
1.1	*Individual connections*	*208,175*	*208,175*
1.2	*Group connections*	*47,058*	*235,290*
1.3	*Public stand posts*	*13,443*	*403,290*
2	***Sanitation and Waste Water***		
2.1	*Individual toilets*	*217,482*	*217,482*
2.2	*'Pay and use' toilets*	*7,583*	*75,830*
2.3	*Community toilets*	*33,968*	*339,680*
2.4	*Sewer connections*	*52,796*	***
3	***Solid Waste Management***		
3.1	*Slum households served by primary collection*	***	*511,421*
GoI Benchmark: *1 group connection for 25 or less population (5 HHs)* *1 public stand post for 150 or less population (30 or less HHs)* *1 community toilet seat for 20-50 persons (below 10 HHs)* *1 individual connection for 1 HH (PAS Benchmark)*			
Table 4.15- Equity- Service Delivery Efficiency _ State Level Analysis			

The table above shows the number of various basic amenities and households served through these amenities. It is indicated that total 208,175 households are served through individual water connections, 235,290 HHs through group connections and 403,290 HHs are served through public stand posts. It is observed that majority of households are served through public stand posts, followed by group connections and individual connections. *The number of HHs served through group connections and public stand posts are derived by multiplying the respective water connections with standard benchmark values of 5 HHs and 30 HHs.*

It is also observed that 217,482 HHs have individual toilets, 75,830 HHs are served through 'Pay and Use' toilets and 339,680 HHs are served through community toilets. Majority of HHs are served through community toilets, followed by individual toilets and 'Pay and Use' toilets. *The number of HHs served through community toilets and 'Pay and Use' are derived by multiplying number of toilet seats with standard benchmark of 10 HHs.*

Class-wise Analysis: Coverage of water supply connection in slums

Service Delivery Efficiency in Water Supply in Slums – Class wise Analysis						
Class	*No. of individual connection*	*HHs Served*	*No. of Group Connection*	*HHs Served*	*No. of public stand posts*	*HHs Served*
Municipal Corporation	*107,223*	*107,223*	*44,637*	*223,185*	*6,895*	*206,850*
'A' MCl	*40,654*	*40,654*	*429*	*2,145*	*2,424*	*72,720*
'B' MCl	*40,466*	*40,466*	*1,203*	*6,015*	*2,792*	*83,760*
'C' MCl	*19,647*	*19,647*	*783*	*3,915*	*1,284*	*38,520*
Nagar Panchayat	*185*	*185*	*6*	*30*	*48*	*1,440*
Total	*208,175*	*208,175*	*47,058*	*235,290*	*13,443*	*403,290*

Table 4.16- Equity- Service Delivery Efficiency in Water Supply in Slums _ Class wise Analysis

In Municipal Corporations majority of slum HHs are served by group connections followed by PSPs and individual water connections. Although in MCs there are more than 1 lakh individual connections are provided in slums. While in 'A', 'B' and 'C' MCls, majority of the HHs are served by PSPs followed by individual water connections and group connections.

Class-wise Analysis: Coverage of toilets in slums

Service Delivery Efficiency in Sanitation in Slums– Class wise Analysis						
Class	*No. of individual toilets*	*HHs Served*	*No. of Pay and Use Toilets*	*HHs Served*	*No. of Community Toilets*	*HHs Served*
Municipal Corporation	*130,778*	*130,778*	*5,017*	*50,170*	*17,650*	*176,500*
'A' MCl	*63,194*	*63,194*	*427*	*4,270*	*5,817*	*58,170*
'B' MCl	*14,352*	*14,352*	*1,727*	*17,270*	*7,335*	*73,350*
'C' MCl	*8,812*	*8,812*	*366*	*3660*	*3,148*	*31,480*
Nagar Panchayat	*346*	*346*	*46*	*460*	*18*	*180*
Total	*217,482*	*217,482*	*7,583*	*75,830*	*33,968*	*339,680*

Table 4.17- Equity- Service Delivery Efficiency in Sanitation in Slums _ Class wise Analysis

In Municipal Corporations majority of slum HHs are served by community toilets followed by individual toilets and 'Pay and Use' toilets. Although in MCs there are more than 1.3 lakh individual toilets are provided in slums. While in 'A' and 'C' MCls majority of the HHs are served by community toilets followed by individual toilets and 'Pay and Use' toilets. More over in 'B' MCls the maximum HHs are served by community toilets followed by 'Pay and

Use' toilets and individual toilets. But in NPs maximum HHs are served through 'Pay and Use' toilets.

Class-wise Analysis: Coverage of solid waste management services in slums

Service Delivery Efficiency in Solid Waste Management in slums – Class wise Analysis	
Class	***Households served by Primary Solid Waste Management (Door to Door Collection)***
Municipal Corporation	*312,347*
'A' Municipal Council	*93,734*
'B' Municipal Council	*67,376*
'C' Municipal Council	*36,976*
Nagar Panchayat	*988*
Total	*511,421*

Table 4.18- Equity- Service Delivery Efficiency in SWM in Slums _ Class wise Analysis

Total 511,421 households are served through door to door waste collection services in slum settlements. Municipal Corporations are observed to be catering more slum households within their municipal jurisdiction than other classes of ULBs.

The following section presents the findings and observations as emerged through the first round of performance measurement in further detail.

4.4.3 Performance Measurement: Access to Water Supply in Slum Settlements

There are in total 208175 individual water connections, 47058 group water connections and 13443 public stand posts in the slums as reported by ULBs. Coverage of water supply through individual connections is 24% in slum settlements. In case of non-availability of individual water supply connections, the ULBs have opted for provision of water to slum dwellers through group connections and public stand posts. Each group connection is expected to serve five households. (Gazette No. GNT 1096/Project No. 182/96/4 dated 04.04.1997). This has lead to the practice of conversion of public stand posts into group connections by many ULBs, such as Kalyan Dombivli Municipal Corporation and Panvel Municipal Council having water supply only through group connection in slum settlements. Municipal Corporation of Greater Mumbai and Kulgoan-Badlapaur (B MCl) have also initiated the same. But as told by ULB officials, these are only applicable for notified slums.

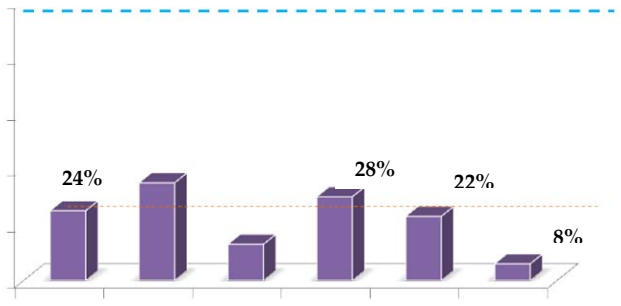
Data Records on Individual Water Connections in Slums

Key Performance Indicators	*Total Cities*	*No. of ULBs reporting 'no data' for coverage of individual Water supply connection*
Coverage of WS connections in 'slum settlements'	*248*	*30*

Table 4.19- Equity- Data Records on Individual Water Connections in Slums

Of total 248 ULBs, 30 (12%) ULBs could not furnish data on water supply through individual water connection. Of 30, 6 ULBs fall under Municipal Corporation, 3 'A' class Municipal Council, 7 'B' class Municipal Council and 14 'C' class Municipal Council categories.

Access and Coverage of Individual Water Connections: State Level Scenario



Graph 4-9- Equity_ Access and Coverage-WS in slums _State Level and Class wise Scenario

At state level the average coverage of water supply through individual connections is 24% in slum settlements. The highest coverage is observed in Municipal Corporations, i.e. 35%, followed by 28% in 'B' MCls and 22% in 'C' class MCls. Rest two classes, 'A' MCls and Nagar Panchayats have less than 15% coverage of water supply through individual water connections in slum settlements.

Better Performing Cities in Coverage of Individual Water Connections in Slums						
Key Performance Indicators	*Total Cities*	*% Coverage*	*Benchmark*	*ULBs meeting the benchmark*	*Min*	*ULBs with minimum service levels*
Coverage of individual water supply connections in 'slum settlements'	*248*	*24%*	*100*	*PCMC (MC), Daryapur (C MCl)-100% coverage*	*0*	*36 ULBs*

Table 4.20- Equity- Better Performing Cities in Coverage of Individual Water Connections in Slums

Note: 0 indicates provision and access of basic services in city but not in slum

Two ULBs have 100% coverage of WS connections in slums, out of which one is C Class. They are Pimpri-Chinchwad MC (100%) and Daryapur C MCl (100%). Other better performing cities are Nashik MC (99%), Bhokardhan 'C' MCl (90%), Kolhapur MC (79%),

Dondaicha 'B' MCl (79%) and Shirpur 'B' MCl (79%). Though 36 ULBs report 0% coverage of individual connections of water supply in slums the water supply is provided either through group connections or public stand posts. Several crucial initiatives by GoM have helped ULBs to improvise level of service delivery in slums.

Reliability of Data: Individual Water Connections in Slums

As per the reliability bands, ULBs having computerized or manual updated household level details of basic services in slums fall under A/A+ category. For the purpose of analysis, same is considered for identifying ULBs maintaining computerized records for data regarding slum settlements. The table below depicts the class wise categorization of relatively better performing ULBs on reliability scale vis-à-vis data records on water supply through individual connections in slum settlements.

Better Performing Cities on Reliability Scale						
Key Performance Indicators	*Number of ULBs having A+/A*	*Municipal Corporation*	*'A' class Municipal Council*	*'B' class Municipal Council*	*'C' class Municipal Council*	*Nagar Panchayat*
Coverage of WS connections in slums	*7*	*Nagpur (17%) Nashik (99%)*	-	*Karad (55%)*	*Karmala (6%) Paranda (44%) Pathari (48%) Shendurjanaghat (5%)*	-

Table 4.21- Equity- Data Reliability-Better Performing Cities for Coverage of WS in slums

Access and Coverage of Individual Water Connections in Slums: State Level Ranges

Coverage of Individual WS Connections in Slums		
Coverage %	*Total ULBs*	*% ULBs*
0	*36*	*14.5*
1-25	*65*	*26.2*
26-50	*40*	*16.1*
51-75	*20*	*8.1*
76-100	*8*	*3.2*
nd-WS	*30*	*12.1*
na-slum	*49*	*19.8*
Total	*248*	*100*

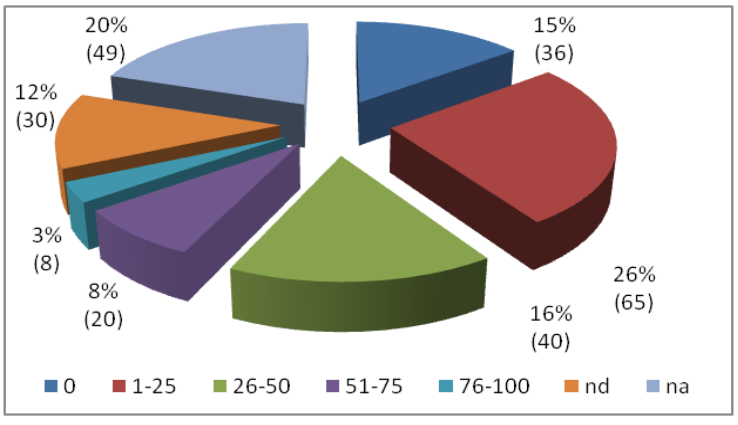


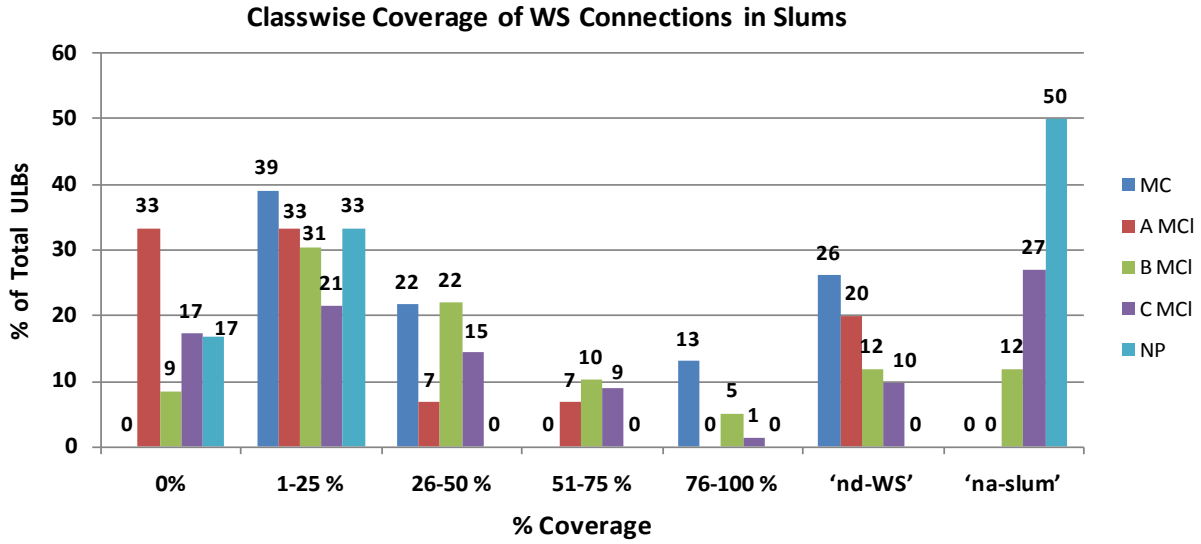
Chart 4-2- Equity_ Coverage of WS connections in slums_Ranges

Table 4.22- Equity- Coverage of Individual WS Connections in Slums_State Level_Ranges

The table above indicates that, 26% ULBs have less than 25% coverage of water supply through individual connections in slums and 15% ULBs report 0% coverage of water supply through individual connections. Only 11% ULBs report to have coverage more than 50% in slum settlements, of which 3% ULBs fall under the category of 75-100% coverage. Low coverage of individual connections of water supply in slums implies practice of group connections and public stand posts by ULBs.

- ❖ The low coverage of individual water supply in slum settlements needs to be seen in the context that many ULBs practice granting of group connection rather than individual connection or supply water from public stand posts. Municipal Corporations like Greater Mumbai, Kalyan Dombivli, Mira-Bhayander, Thane and Municipal Councils like Ambejogai, Shirpur, Shirur have initiated providing group connections or converting public stand posts to group connections.
- ❖ In Gazette No. GNT 1096/Project No. 182/96/4 dated 04.04.1997, the Directorate of Municipal Administration (DMA) states to provide group connections in slums, EWS communities and chawls. Since public stand posts are inadequate and inconvenient for consumers in slums and in economically weaker communities, group connections are to be introduced in these areas. The provision for one ½" group connection was made between 7 applicants (HHs) in Kalyaan Dombivali Municipal Corporation and Kulgaon-Badlapur. Based on successful implementation of above, DMA issued Government Resolution for all ULBs stating to provide one ½" group connection between five households in slums, EWSs and Chawls.

Access and Coverage of Individual Water Connections in Slums: Class-wise Scenario



Note: ' 0' indicates coverage of water supply through individual connections in city but not in slums

Graph 4-10- Equity_ Access and Coverage-WS in slums _Ranges

a) Of total 23 Municipal Corporations about 40% (10) MCs have WS coverage more than 50% in city whereas in slum settlements 13% (3) MCs report to have more than 50% coverage through individual connections.

b) Of total 15 'A' MCls 26% (4) have more than 50% coverage and 74% (11) have 26-50% coverage in city while in slums only 45% (7) 'A' MCls have coverage of water supply through individual connections in slum settlements.
c) In 'B' class Municipal Councils there are 15% (9) ULBs that have coverage more than 50% in slums, whereas it is 45% (26) in city.
d) 51% (74) 'C' MCls have more than 50% coverage in city whereas only 15% (10) ULBs have more than 50% coverage in slums.
e) Nagar Panchayats report to have hardly 25% coverage in slums.
f) It is also observed that all the ULBs across the classes have water supply through individual connections in city but in slum settlements, 33% (5) in 'A' class Municipal Council, 8% (5) in 'B' class Municipal Council, 17% (25) in 'C' class Municipal Councils and 16% (1) Nagar Panchayats have 0% coverage in slum areas.
g) It can be concluded that 'B' class Municipal Councils are comparatively performing well as regard to equitable access of water supply services in city and slum settlements.

Means/ Modes of Water Supply in Slum Settlements

S.N	*Particulars*	*No. of Total ULBs*	*% of total ULBs*	*Average Coverage of WS through individual connections in slum settlements*	*Class-wise Distribution*	*Examples*
1	***Water supply through individual water connections***					
1.1	*ULBs with presence of individual water connection*	*134*	*54%*	*24%*	*MC-15, 'A' MCl- 8, 'B' MCl-41 'C' MCl-68, NP-2*	*Pimpri-Chinchwad MC Wardha (A MCl) Shirpur (B MCl) Daryapur (C MCl) Nernavabpur (NP)*
1.2	*ULBs with only individual water connection*	*22*	*9%*	*41.6%*	*MC- 1, 'A' MCl- 1, 'B' MCl- 6, 'C' MCl- 14*	*Dhule MC, Jalna (A MCl), Dondaicha (B MCl), Daryapur (C MCl)*
2	***Water supply through group water connections***					
2.1	*ULBs with presence of group water connection*	*57*	*23%*	*22.7%*	*MC-11, 'A' MCl-5 , 'B' MCl-16 'C' MCl-24, NP-1*	*Nagpur (MC) Panvel (A MCl) Wani (B MCl) Shirur (C MCl) Shirdi (NP)*
2.2	*ULBs with only group water*	*2*	*0.8%*	*0%*	*MC-1 'A' MCl- 1*	*Kalyan Dombivli MC Panvel (A MCl)*

S.N	Particulars	No. of Total ULBs	% of total ULBs	Average Coverage of WS through individual connections in slum settlements	Class-wise Distribution	Examples
	connection					
3	***Water supply through public stand posts***					
3.1	*ULBs with presence of public stand post*	*127*	*51%*	*21.2%*	*MC-11, 'A'MCl-11, 'B' MCl-35, 'C' MCl-67, NP-3*	*Solapur (MC) Parbhani (A MCl) Daund (B MCl) Tuljapur (C MCl) Malkapur (NP)*
3.2	*ULBs with only public stand Post*	*22*	*8.9%*	*0%*	*'A' MCl- 4 'B' MCl-3 'C' MCl-16 NP-1*	*Ichalkarinji (A MCl) Pandharpur (B MCl) Rahta (C MCl) Malkapur (NP)*

Table 4.23- Equity- Means/ Modes of Water Supply in Slum Settlements

a) It is articulated from the table above that 134 ULBs report presence of individual water connection for water supply in slum settlements of which 22 ULBs only provide individual water connections for water supply in slum settlements. Of 134 ULBs 68 fall under 'C' class Municipal Council which constitutes more than 50%.
b) Of total 57 ULBs reporting group connections in slums within their municipal jurisdiction, only 2 (Kalyan Dombivli MC and Panvel 'A' class MCl) are observed to be practicing only group connections in slums for water supply. There is growing realization amongst ULBs to entitle slum dwellers for basic amenities and to make them accountable to pay for the service delivery.
c) It is also observed that 127 ULBs are still practicing public stand posts for water supply in slums and of which 22 ULBs have only public stand post as the mean to serve slum settlements.

Better Performing Cities: Population Ratio with respect to Access to Community Level and Shared Basic Services

The table below analyses the provision of shared/ group services (group water connections) or public services (public stand posts) for slum settlements. The analysis puts forth the adequacy of shared/ group services or public services in terms of 'ratio of population per shared facility' against the benchmark.

Better Performing Cities: Population Ratio with respect to community level WS services						
Local Action Indicator	**Total Cities**	**Benchmark**	**ULB meeting Benchmark (Example)**	**ULBs meeting Benchmark**		**ULBs with Maximum population per shared facility**
Population per shared/ community stand post in slum settlements	248	- 1 group connection for 25 or less popultion (5 HHs) - 1 public stand post for 150 or less population (30 or less HHs)	**Jalgaon MC** (Population per shared/ community stand post in slum settlements - **5**) *(No. of group connections-7251, No. of public stand posts-0)*	<25 persons	25-150 persons	>150 persons
				13 ULBs MC-3, A MCl-1, B MCl-3, C MCl-6	**50 ULBs** MC-4, A MCl-3, B MCl-16, C MCl-25, NP-2	**76 ULBs** MC-8, A MCl-7, B MCl-19, C MCl-41, NP-1

Table 4.24- Equity- Better Performing Cities: Population Ratio with respect to community level WS services

It is indicated from the table above that 63 ULBs meet the benchmark for population per shared water connection/community stand post in slums, of which 13 are performing exceptionally better where 25 persons are sharing one water connection. Jalgaon Municipal Corporation is having lowest ratio of population i.e. 5 persons per shared water connection/community stand post. (Jalgaon MC: group connections- 7,251, public stand posts- 0, individual connections- 2,235, total slum population- 47,902,). The main reason behind these 63 ULBs performing better is the significant presence of group connections and/ or public stand posts for water supply in slum settlements apart from presence of individual connections for water supply in slum settlements. Noteworthy presence of group connections for water supply in slum settlements is observed in Baramati B MCl- 205 GCs and Sangola C MCl- 65 GCs and high number of public stand posts provided by the ULBs e.g. Wardha A MCl- 300 PSPs, Daund B MCl- 270 PSPs, Tuljapur C MCl- 366 PSPs in slum settlements, where there are less individual connections, to cater the water supply needs.

Access to water supply only through public stand posts

- 9% (22) ULBs have water supply in slums only through public stand posts.
- The minimum population sharing one public stand post is 17 (Kundalwadi C MCl).
- The distance of stand posts from households or ratio of households having access to the stand posts is not available.
- Information about daily availability of water is not available.
- Even though the coverage seems to be is satisfactory it is difficult assess the adequacy of the services.

76 ULBs could not meet the benchmark for water supply in slums through shared/community stand posts. Of these 35% are Municipal Corporations, 47% A class Municipal Councils, 32% B class Municipal Councils, 28% C class Municipal Councils and 20% of Nagar Panchayats that could not meet the set benchmark. The reasons vary from ULB to ULB. The major reason observed amongst Municipal Corporations is, although there

is availability of large number of individual water connections along with group water connections and public stand posts in slum settlements, it is still inadequate to match with the growing number of slums and slum population in the cities. In 'A', 'B' and 'C' class Municipal Councils; access to water supply in slum settlements is observed majorly through public stand posts. From 'A', 'B' and 'C' Municipal Councils, many ULBs also provide water supply through individual connections. However the proportion is relatively less. Hence the population per shared/community stand post is less than the recommended GoI benchmark.

These indicative numbers do not depict the holistic picture. This available data presents numbers on access to water supply in slums. But that don't take into account whether the entire slum shares a single or a few stand post taps to avail access to water.

Caselet 6: Conversion of Stand posts into Group Connections in *Karad Municipal Council (KMCl)*

KMCl initiated the conversion of stand posts to group connections as per the GNT 1096/GR no. 182/96/4 issued in 2002 in the same year. Replacement of public stand posts with group connections was undertaken to improve access and to reduce difficulties in fetching water and wastage at the stand posts. Group connections are preferable over stand posts (if individual connections are not feasible) since they improve access and also generate revenue. Similarly, KMCl also wanted to levy charges on group connections and the consumers would have had to undergo official procedures. People's participation was kept in view for this matter by conducting awareness generation meetings and considering community's views. The community was also sensitized about the potential benefits that would outnumber concerns such as levying of charges.

Thereafter, 75 group connections of half inch serving 221 households in eight non-notified slums have been provided. A billing system has been established, whereby bill is generated collectively and a flat annual rate has been charged on half inch connection, which is Rs. 1140/- . It means each household has to pay only Rs. 228/- per year, which is a nominal cost. This system is being expanded to cover rest of the slums. At present, seven stand posts are still in some slums which are vying to be converted into group connections.

Caselet 7: Group Water Connections in Slums of *Shirur, Karad and Sangola Municipal Council*

The Shirur MCI (Pune District), Sangola MCI (Solapur District) and Karad MCI (Satara District) have adopted a model of "Group Water Connections' to provide access of water supply to HHs residing in slums. This model works and has sustained in the absence of subsidy for poor by the respective ULBs. The modus-operandi for the same is as follows:

Registration: 5 HHs can register for one group connection on providing residential proofs i.e. ration card, light bill, photographs of all applicants with duly signed application form. On submission of above the application goes for sanctioning to water committee.

Agreement: The applicants from each HH sign an agreement with the ULB that the provided connection is on a temporary basis and they will be liable to pay water charges regularly. On default of the same the connection will be disconnected.

On sanctioning of the connection the ULB provides the facility on the payment of one time connection fee as per the size of connection, road repair charge based on the kuccha/pucca road and annual water charges.

One time connection fee (as per size of connection): ½"- Rs 2000, 1"-Rs. 4000 for domestic connections.

Road Repair charge: Pucca Road: 50 Rs/ Sqft, Kuccha Road: 30Rs/ Sqft.

Water Charges: Rs. 900/ annum

Sangola (C Class):

- ½" connection – 3479 Total Residential connections
- Slums: 65 Group Connections

- ❖ Other: 51 Group Connections
- ❖ In total 116 Group connections serving 540 HHs.

Karad (B Class):

- ❖ ½" connection – 8931 Total Residential connections
- ❖ Slums: 20 Group Connections
- ❖ Other: 45 Group Connections
- ❖ In total 65 Group connections serving 325 HHs.

Shirur (C Class):

- ❖ ½" connection – 8931 Total Residential connections
- ❖ Slums: 156 Group Connections
- ❖ Other: 186 Group Connections
- ❖ In total 156 Group connections serving 780 HHs.

Modalities of Water Supply in Slum Settlements

Particulars	*No. of ULBs*	*% of Total ULBs*	*Class-wise Distribution*	*Examples*
ULBs with all sources (individual + group + public stand post)	*32*	*13%*	*MC-7, 'A' MCl- 4, 'B' MCl- 9, 'C' MCl- 11 NP- 1*	*Ahmednagar MC, Wardha (A MCl), Ambajagai (B MCl), Shahada (C MCl), Shirdi (NP)*
ULBs with individual and group connections	*16*	*6.5%*	*MC-3 'B' MCl- 5 'C' MCl-8*	*Meera Bhainder (MC) Kopargaon (B MCl) Kagal (C MCl)*
ULBs with group connection and public stand posts	*7*	*2.8%*	*'B' MCl- 2 'C' MCl- 5*	*Buldhana (B MCl) Shirur (C MCl)*
ULBs with only public stand Post	*22*	*8.9%*	*'A' MCl- 4 'B' MCl-3 'C' MCl-16 NP-1*	*Ichalkarinji (A MCl) Pandharpur (B MCl) Rahta (C MCl) Malkapur (NP)*
ULBs with no water supply connection individual, group and public stand post	*7*	*2.8%*	*'B' MCl- 1 'C' MCl- 6*	

Table 4.25- Equity- Modalities of Water Supply in Slum Settlements

32 ULBs have all types of provisions of water supply in slum settlements, followed by 16 ULBs providing individual and group connections in slum settlements for water supply and 7 ULBs having group connections and public stand posts.

Caselet 8: Individual Water Connections in Slums of Shirpur-Warwade 'B' Municipal Council

The Shirpur-Warwade Municipal Council has taken up a initiative for improving access of water supply in the slums. The model adopted for it is to provide individual water connections to every household residing in slum areas. In total there are 2212 individual connections provided for water supply in all the 9 slum areas, where 2812 households are residing. The council ensures adequate and regular supply of water twice a day (40 minutes each time) and provides storage tanks for storing water. The strategy adopted by the municipal council emphasizes on gradual shift of provision for water supply through public stand posts to individual connections. No subsidy in water charges are levied for the service provided by the council. The water charges are levied based on the size of connection, for ½" domestic water connection Rs 1000 are levied on annual basis. The water charges are to be paid quarterly by the slum HHs availing water supply through individual connections. Apart from that, one time connection fee is also to be paid that includes Rs 100 as form fee, Rs 100 as new connection fee and Rs 1500 for road repair and maintenance work. The municipal council ensures door to door billing and recovery of water charges. Further there is close monitoring for illegal connections by the council. This practice has not only lead to adequate coverage of water supply to all citizens but also ensures 97% recovery of water charges. Increasing recovery is the core area for strengthening identified by the SWMCI for sustainability of this initiative.

There are total 7 ULBs that are reporting no provision for water supply either through individual connection, group connection or public stand posts in the slum settlements. Out of 7, one falls under B class Municipal Council and 6 falls under C class Municipal Council. In Meindargi ('C' MCl), slum households are provided water through bore well. The implications that needs further exploration is the possibility of water supply in these slums through water tankers by ULB or through bore well (private or ULB) or possibility of illegal connections or distant possibility of dependency on private water markets.

The news item below highlights that few ULBs are supplying non piped water supply through ULB owned water tankers or hiring private water tankers in un-served areas and outgrowths. E.g. Pimpri-Chinchwad M.Corp.

DNA PIMPRI-CHINCHWAD/PUNE

PUNE | WEDNESDAY, DECEMBER 1, 2010 5

Steep hike in tanker water rates

PCMC standing panel okays plan, citing rising fuel costs

Archana Dahiwal

The Pimpri Chinchwad Municipal Corporation (PCMC) standing committee on Tuesday approved a proposal to increase water tanker rates. The hike will be applicable to private and civic body's tankers.

Speaking to reporters, standing committee chief Prashant Shitole said, "The PCMC has not hiked the rates for 20 years. The rate at which water will be supplied by the civic body to private tankers having a capacity of 9,000 litres will be increased from Rs110 per trip to Rs270 per trip. The rates will vary between Rs300 and Rs600 for tankers of higher capacity."

Civic officials said private tankers make about 200 trips per day within the PCMC limits and surroundings. The civic body supplies nearly 15 lakh litres of water to private tankers and earns Rs16,500 every day.

The PCMC-owned tankers with 9,000-litre capacity are rented out at Rs550 per trip. The new rate will be Rs770 per trip up to 5 km within PCMC limits. For tankers supplying water outside PCMC limits, the rate slab will be between Rs1,500 and Rs2,000.

Shitole cited rising fuel price as the reason behind water tanker rate hike.

Community Managed Service Delivery

Some ULBs have undertaken cost effective measures for providing basic services in slums. One such attempt proactively utilized and practiced by some ULBs is community managed service delivery in slums. An illustration of the same is presented below.

Caselet 9: Community Managed Services in *Nanded-Waghela Municipal Corporation (NWMC)*

NWMC is proactively promoting community participation in management of water supply. Two projects are launched by the NWMC namely community managed water supply in slums and replacement of stand posts with group water connections to facilitate efficient supply, maintenance and billing. In case of community managed water supply in slums, the communities are provided with assets including a sump, a pump and network by NWMC and communities then take on the responsibility of O and M. Design, construction and installation of the pump and accessories are carried out by the NWMC. The entire scheme is then handed over to the association. At the start of the scheme, the association is required to open an account in a bank and deposit Rs. 200 per hut towards O & M cost. The group water connection charges will be borne by the NWMC. The corporation will provide a metered connection for supply and the consumers will pay the bill towards water supply to the group.

"Limited community participation in management of urban services constrains efficient provision of urban infrastructure and water supply and sanitation services, especially in small and medium-sized towns."

Illegal Connections and Non Revenue Water

As discussed in the above sections, very few ULBs report more than 24% of coverage of individual water supply connections in slums. As emerged during the discussions within the project team based on the performance measurement data, observations made by the field team and the news items highlighting the issue of illegal water connections in the local and national newspapers, there might be a possible correlation between low coverage of water supply connections in slums and high extent of non revenue water. This possibly could be a result of presence of illegal connections in slums. Illegal connections could be judged vis-à-vis coverage of individual WS connections in slums, as there are more probabilities of illegal connections occurring in slums and other unserved areas. Based on the performance measurement data it can be implied that 16% coverage of WS connections in slums in Parbhani could be upgraded just by regularizing illegal connections in slums, which may also help in reducing NRW and increasing city level coverage of individual connections of water supply as well. For e.g. Nagpur, Latur and Jalgaon are few cities that have shown promise in regularizing of illegal connections. Thus there are good prospects of ULBs to upgrade their coverage of WS connections in slums by identifying and regularizing illegal connections and having due modalities and procedures in place to handle the issue.

The example (Box 11) presents the availability of basic amenities in slums of Ambajogai (B MCl). This ULB reports 16 slums, out of which 12 are notified and 4 are in public land. The water supply coverage through individual connections is 61% and all means of water supply in slums are observed. In terms of sanitation, the coverage of toilets in slums is 13.5% and mainly 'Pay and use' toilets are observed. 150 households are served through primary collection of solid waste management. But the research tool used is not sufficient and adequate to understand the modalities of basic entitlements/provision in notified and non-notified slums. Eg. Whether individual water connection and individual toilets are legal entitlements for slum dwellers residing in notified slums only? This puts forth a fundamental question of gaining more insights into the issues in service delivery in notified and non notified slums.

Box 13: Ambajogai, Municipal Council (B Class)	
Total Number of Slums:	*16*
Notified Slums:	*12*
Slums on Public Land	*4*
Total number of Households in Slum Settlements	*2220*
Total Population in Slum Settlements	*11103*
Coverage of Individual Water Supply Connections in Slum Settlements	*61%*
Number of Individual Water Connections	*1350*
Number of Group Water Connections	*50*
Number of Public Stand Posts	*105*
Coverage of Households with Access to Individual Toilets in Slum settlements	*13.5%*
Coverage of Household Connections to sewerage Network in Slum settlements	*0%*
Number of Individual Toilets	*300*
Number of Pay and Use Toilets	*1200*
Number of Community Toilets	*407*
Household Level Coverage of Solid Waste Management Services	*7%*
Number of Households Served by Primary Collection	*150*

4.4.4 Performance Measurement: Access to Sanitation Facilities in Slum Settlements

Access to safe sanitation and safe disposal of waste water is one of the fundamental basic services. As per round –I of Performance Measurement 217482 individual toilets, 7583 'Pay and use' toilets and 33968 community toilets are reported in slums. The Government of India norms for minimum basic amenities criteria for slum suggests one toilet seat for either 20-50 persons or below 10 families.

Data Records on Individual Toilets in Slums

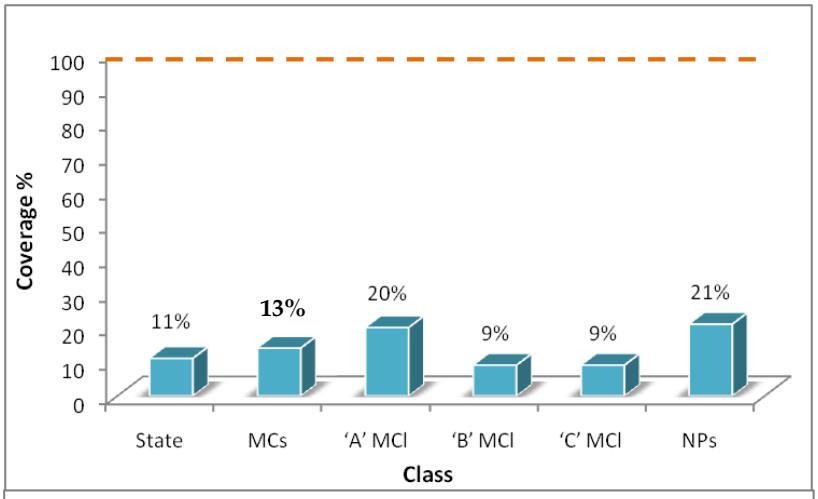
Key Performance Indicators	Total Cities	'no data' for coverage in slums	na - sewerage connections
Coverage of toilets in slums	248	31	– 214 ULBs with no piped sewerage network at city level. – 215 ULBs with no piped sewerage network in slums.
Coverage of sewerage connections in slums	248	12	

Table 4.26- Equity- Data Records on Individual Toilets in Slums

There are total 31 ULBs that don't furnish data on coverage of toilets in slums. Of these, 13 are Municipal Corporations, 2 'A' class Municipal Council, 5 'B' class Municipal Council and 11 'C' class Municipal Council that fall under this category. In case of absence of individual toilets in slums, community toilets and 'Pay and Use' toilets are constructed either by government or non-governmental organizations. However, the management of these shared toilets varies in each slum.

As far as coverage of sewerage connections in slums is concerned, there are 12 ULBs that don't furnish data on coverage of sewerage connections in slums of which 11 are Municipal Corporation and 1 is 'C' Municipal Council.

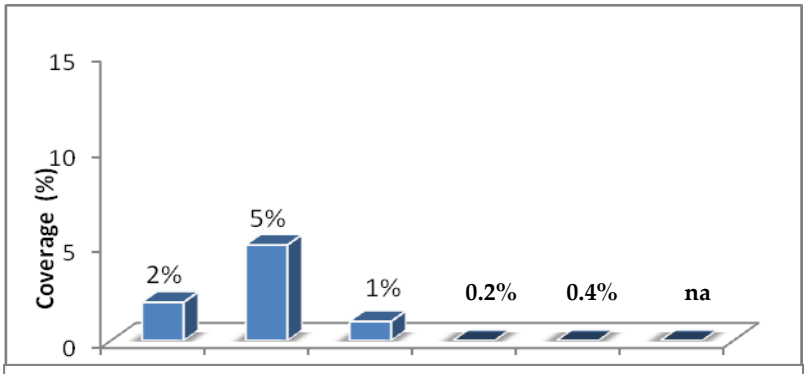
Access and Coverage of Individual Toilets: State Level Scenario



Graph 4-11- Equity_ Access and Coverage-Individual Toilets in slums _State Level and Class wise Scenario

The State average for coverage of individual toilets in slum settlements is 11% which is much less than the overall State average of 56% at city level. Within the classes, 'A' MCls and Nagar Panchayats seem to be performing relatively better than other Classes. There are 6 ULBs that have coverage above the state average out of which Nagpur is the only Municipal Corporation (60%). In Latur, the coverage of individual toilets in slums is 86%. Apart from Nagpur and Latur; Yavatmal (A MCl), Manwat (C MCl), Mehkar (C MCl) and Mowad (C MCl) are few ULBs that are performing better.

One of the key issues observed here is that many Municipal Corporations as well as Municipal Councils do not maintain the records of number of HHs in the slums with access to individual toilets.



Graph 4-12- Equity_ Access and Coverage- Sewerage Connections in slums _State Level and Class wise Scenario

Access and Coverage of Sewerage Connections in Slums: State Level Scenario

State average for individual sewerage connections in slums is mere 2% in comparison with state average of 42% coverage at city level. Situation becomes precarious in 'B' and 'C' class Municipal Councils. Nagar Panchayats don't have sewerage network at city level. Also there are no or very few individual sewerage connections in slum settlements of ULBs that have sewerage network. Coverage of sewerage network in slum settlements needs much more attention in the state. The disparity between the level of service in city and slum settlements as regard to sewerage connections is more severe than water supply and SWM.

Better Performing Cities in Coverage of Sanitation Facilities in Slums							
Key Performance Indicators	*Total Cities*	*% Coverage*	*Benchmark*	*Max*	*ULBs with maximum service level*	*Min*	*ULBs with minimum service levels*
Coverage of toilets in slums	*248*	*11%*	*100%*	*86.2 %*	*Latur A MCl - 86% Nagpur MC - 60%*	*0*	*81 ULBs*
Coverage of sewerage connections in slums	*248*	*2%*	*100%*	*30%*	*Nagpur MC - 30%*	*0*	*14 ULBs*

Table 4.27- Equity- Better Performing Cities in Coverage of Sanitation Facilities in Slums

Note that '0' indicates coverage of individual toilets in city but not in slums

8 ULBs report to have more than 50% through individual toilets in slums. Latur Municipal Council has maximum (86%) coverage of individual toilets in slums. Other ULBs are Nagpur MC (60%), Yavatmal 'A' MCl (55%), Mehkar 'C' MCl (64%), Manwat 'C' MCl (64%), Mowad 'C' MCl (53%), Chandur Bazar 'C' MCl (51%) and Dhamangaon Rly 'C' MCl (51%). 95 ULBs report 0% coverage of individual toilets in slums which needs to be seen in the context of provision of sanitation facilities in the form of community toilets or 'Pay and Use' toilets.

7 ULBs report to have coverage of sewer connections in slums. Of these 3 are MCs, 2 are 'A' MCls, 1 is 'B' MCl and 1 is 'C' MCl. Nagpur Municipal Corporation has maximum (30%) coverage of sewerage network in slums i.e. 30% of slum HHs in Nagpur are connected by the underground sewerage network. Other ULBs having sewerage connections in slums are Sangli MC (8%), Nanded MC (0.1%), Panvel A MCl (3%), Ambarnath A MCl (1%) and Panchgani C MCl (2%).

Reliability of Data: Individual Toilets and Sewerage Connections in Slums

As per the reliability bands, ULBs having computerized or manual updated household level details of basic services in slums fall under A/A+ category. The table below depicts the class wise categorization of relatively better performing ULBs on reliability scale vis-à-vis data records on toilets and sewer connections in slum settlements.

Better Performing Cities on Reliability Scale						
Key Performance Indicators	No. of ULBs having A+/A	Municipal Corporation	'A' class Municipal Council	'B' class Municipal Council	'C' class Municipal Council	Nagar Panchayat
% Coverage of toilets in slums	5	Nagpur (60%)	Achalpur (48%)	Karad (10%)	Paranda (7%) Pathari (0.2%)	-
% Coverage of sewerage connections in slums	4	Nagpur (30%) Nanded (0.1%)	Panvel (3%)	-	Panchagani (2%)	-

Table 4.28- Equity- Data Reliability-Better Performing Cities for Sanitation Facilities

Access and Coverage of Individual Toilets in Slums: State Level

Coverage %	Total ULBs	% ULBs
0%	81	32.7
1-25	58	23.4
26-50	22	8.9
51-75	6	2.4
76-100	1	0.4
nd-toilets	31	12.5
na - slum	49	19.8
Total	248	100.0

Chart 4-3- Equity_ Coverage of individual toilets in slums_Ranges

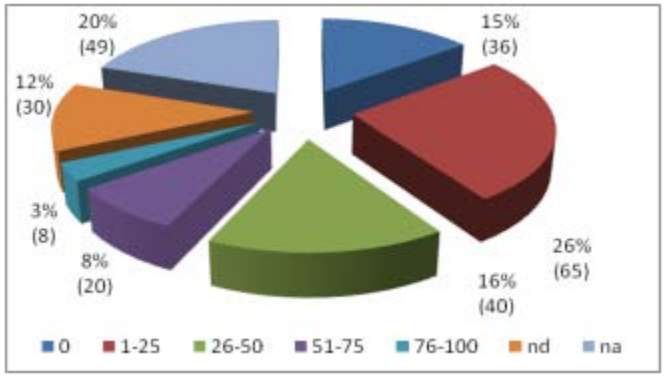
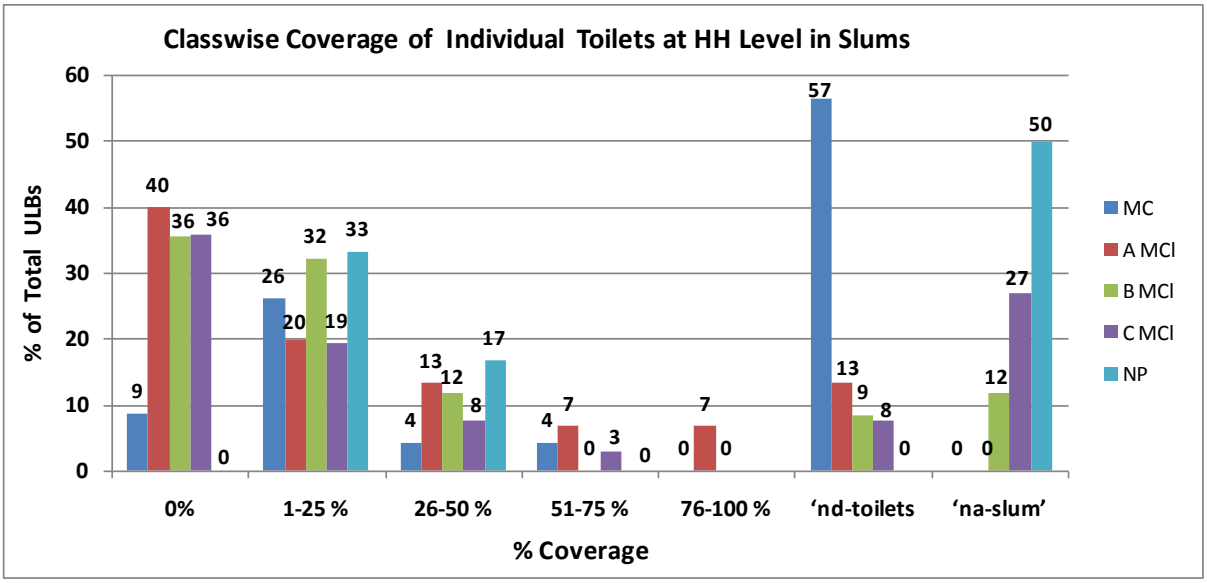


Table 4.29- Equity- Coverage of Individual Toilets in Slums_State Level_Ranges

The table above indicates that, 23% (58) of the ULBs have coverage of toilet facility below 25% and 33% (81) have 0% coverage through individual toilet connections at HH level in slums. 3% (6) ULBs are able to maintain the service level between 51-100% and one ULB is able to extend the coverage of toilet facility more than 75%, i.e. Latur 'A' MCl (86%). Low coverage of individual toilets in slums implies access to sanitation facilities through community toilets and 'Pay and Use' toilets.

Access and Coverage of Individual Toilets in Slums: Class-wise Scenario

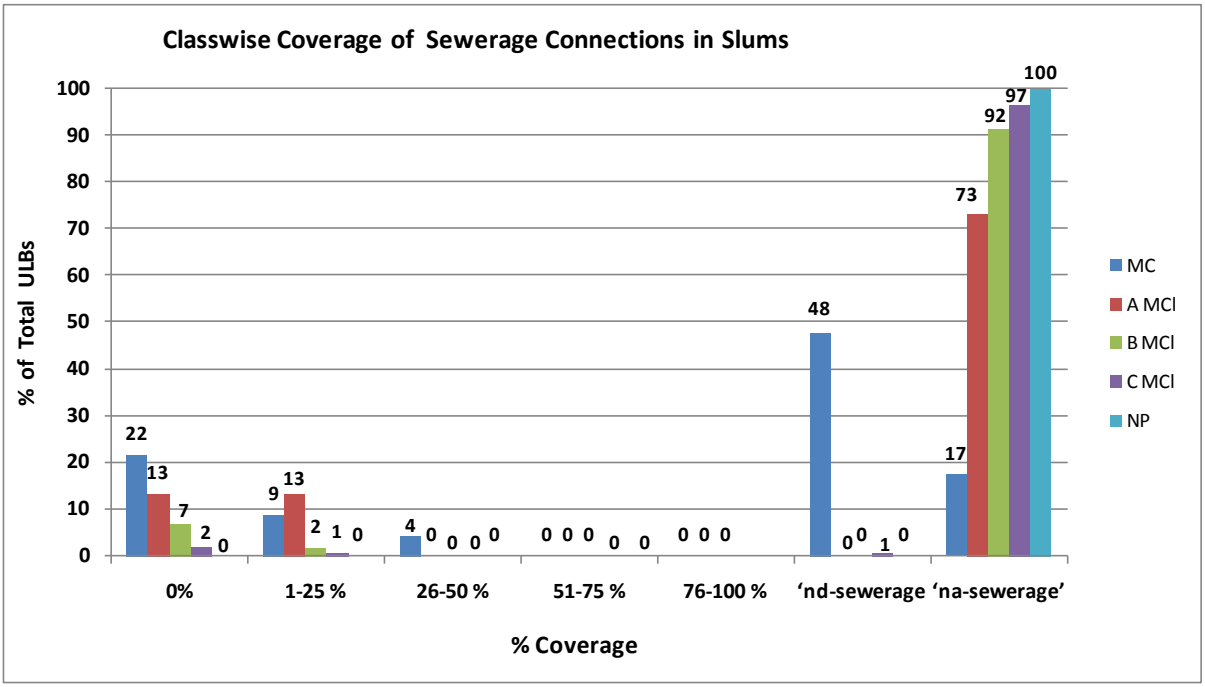


Note: ' 0' indicates coverage of individual toilets at HH level in city but not in slums

Graph 4-13- Equity_ Access and Coverage-Individual Toilets in slums _Ranges

a) Major proportion of ULBs having coverage of toilets in slum settlements falls under the category of 1-25% coverage, which is comparatively less. However, at city level the coverage is found to be more than 50% in all the classes.
b) Of total 23 Municipal Corporations about 4% (1) MC have individual toilet coverage more than 50% in slum settlements whereas 56% (13) MCs report to have more than 50% coverage at city level.
c) Of total 15 'A' MCls 33% (5) have less than 50% coverage and 13% (2) more than 50% coverage in slums whereas at city level 52% (8) 'A' MCls have coverage more than 50%.
d) None of the 'B' MCls and Nagar Panchayats have coverage more than 50% in slums whereas 61% (36) B MCls and 100% (6) NPs have coverage more than 50% at city level.
e) 3% (4) 'C' MCls have more than 50% coverage in slums whereas 49% (54) ULBs have more than 50% coverage at city level.
f) None of the ULBs across classes have 0% coverage of individual toilets at HH level in the city, whereas 33% (81) ULBs report 0% coverage of individual toilets in slum settlements.
g) There are 9% (2) Municipal Corporations, 40% (6) 'A' class Municipal Councils, 36% (21) 'B' class Municipal Councils and 36% (52) 'C' class Municipal Councils have 0% coverage of toilets in slum settlements.
h) Inference can be drawn from the table above that the situation of sanitation service (coverage of toilets) in all classes of ULBs is not observed to be equitable in slum settlements.
i) 'A' Municipal Councils are comparatively performing better in coverage of individual toilets in slum settlements.

Access and Coverage of Sewerage Connections in Slums: Class-wise Scenario



Note: ' 0' indicates coverage of sewerage connections in city but not in slums

Graph 4-14- Equity_ Access and Coverage-Sewerage Connections in slums _Ranges

a) 214 ULBs don't have piped sewerage network in cities and 215 ULBs don't have coverage of piped sewerage network in slums.
b) 11 ULBs could not furnish data on sewerage connections at city level. Of these 6 are MCs, 1 is B MCl and 4 are C MCls. Whereas 12 ULBs could not furnish data on sewerage connections in slums. Of these 11 are MCs and 1 id C MCl.
c) None of the ULBs report 0% coverage of sewerage connections at city level whereas 6% (14) ULBs report 0% coverage in slum settlements.
d) 23 (9%) ULBs report to have sewerage connections at city level, of which 13 are MCs, 4 are A MCls, 4 are B MCls and 2 are C MCls. Only 7 (3%) ULBs report to have sewerage connections in slums. Of these 3 are MCs, 2 are A MCls, 1 is B MCl and 1 is C MCl.
e) Of 7 ULBs reporting sewerage connections in slums, Nagpur Municipal Corporation has maximum (30%) coverage of sewerage network in slums i.e. 30% of slum HHs in Nagpur are connected by the underground sewerage network. Other ULBs having sewerage connections in slums are Sangli MC (8%), Nanded MC (0.1%), Panvel A MCl (3%), Ambarnath A MCl (1%) and Panchgani C MCl (2%).
f) Of 7 ULBs reporting sewerage connections in slums, none of these have coverage more than 30%. Of 23 ULBs reporting sewerage connections at city level 8 ULbs report to have coverage more than 50%. They are Kalyan Dombivli MC (67%), Nanded MC (70%), Nashik MC (90%), Pimpri Chinchwad MC (72%), Pune MC (69%), Karad B MCl (61%), Sagmner B MCl (62%) and Talegaon B MCl (67%).

g) It can be inferred that coverage of sanitation facilities in slums of Maharashtra needs good degree of strengthening. Access to safe and hygienic sanitation facilities and safe waste water disposal in case of slums needs immediate attention.
h) Also the need is to explore options to offer a range of affordable, cost effective desirable sanitation products to make sanitation services both safe and sustainable for the poor.

Means/ Modes of Sanitation Facilities (Toilets) in Slum Settlements

Particulars	*Number*	*% of Total ULBs*	*Class-wise Distribution*	*Examples*
ULBs with presence of individual toilets	*90*	*36.3%*	*MC-8, 'A' MCl- 7, 'B' MCl-26 , 'C' MCl-46, NP- 3*	*Nagpur MC Latur(A MCl) Buldhana (B MCl) Mehkar (C MCl) Malkapur (NP)*
ULBs with only individual toilets	*11*	*4.4%*	*'B' MCl- 3, 'C' MCl- 7 NP- 1*	*Udgir (B MCl), Manwat (C MCl) Nervavabpur (NP)*
ULBs with presence of pay and use toilets	*46*	*18.5%*	*MC-13, 'A' MCl-7 , 'B' MCl-14 , 'C' MCl-11, NP-1*	*Bhiwandi (MC) Ambarnath (A MCl) Ambajagai (B MCl) Shirur (C MCl) Shirdi (NP)*
ULBs with only pay and use toilets	*1*	*0.4%*	*'B' MCl- 1*	*Akot (B MCl)*
ULBs with presence of community toilets	*153*	*61.7%*	*MC-13, 'A' MCl- 14, 'B' MCl- 46, 'C' MCl-78, NP-2*	*Solapur (MC) Ambarnath (A MCl) Hinganghat (B MCl) Trimbakeshwor(C MCl) Malkapur (NP)*
ULBs with only community toilets	*57*	*23%*	*MC- 2 'A' MCl- 4 'B' MCl-17 'C' MCl-34*	*Aurangabad (MC) Chandrapur (A MCl) Kulgaon (B MCl) Navapur (C MCl)*

Table 4.30- Equity- Means/ Modes of Sanitation Facilities (Toilets) in Slum Settlements

Of total ULBs, 90 ULBs have individual toilets, 46 have 'Pay and Use' toilets and 153 have community toilets in slums. Out of 90, there are 11 ULBs that have only individual toilets in slums, one out of 46 ULBs has only 'Pay and use' toilets and 57 out of 153 ULBs have only community toilets in slums. So, in conclusion it can be said that, the concept of paying for basic sanitation services is slowly being introduced in slum areas. Also there is more focus on providing sanitation facilities in slums under state level programmes (Sant Gadge Baba

Nagari Swachchhata Abhiyaan) and national policies (National Urban Sanitation Policy) that aim to achieve 'open defecation free' cities.

Caselet 10: Community Toilets in Shirpur-Warwade Municipal Council

The town of Shirpur-Warwade takes pride to be an open defecation free, owing to enough number of sanitation facilities that are provided either in the form of community toilets and public toilets. The municipal council of Shirpur - Warwade also happens to be three times recipient of Sant Gadge Baba Nagari Swachata Abhiyaan award. The improved access to the basic services impacts the quality of life, especially on women's health and security.

Caselet 11: Community Toilets in Yavatmal Municipal Council

The special feature of these community toilets: There is provision for separate 10 seats for children in community toilets.

Caselet 12: Community Led Sanitation, Sangali

Sangali-Miraj-Kupwad M. Corp. in association with an NGO undertook a pilot project of construction of two community toilets in low-income settlements city with active participation of the community and with support from the Institute of Governance, Canada. The success of this has lead to scaling up of the sanitation effort and 4 settlements have been extended individual toilets since 2006. With the growing demand from communities the ULB has further extended sanitation facilities in collaboration with an NGO to at least 1000 families.

Better Performing Cities: Population Ratio with respect to Access to Community Level Basic Services

The table below analyses the provision of shared/ group services (community toilets) or public services ('pay & use' toilets) for slum settlements. The analysis puts forth the adequacy of shared/ group services or public services in terms of 'ratio of population per shared facility' against the benchmark.

Better Performing Cities: Population Ratio with respect to community level services						
Local Action Indicators	*Total Cities*	*Benchmark*	*ULB meeting Benchmark (Example)*	*ULBs meeting Benchmark*		*ULBs with Maximum population per shared facility*
Population per toilet seat in community toilets in slum settlements	*248*	*1 community toilet seat for 20-50 persons (below 10 HHs)*	***Ambajogai B MCl*** *(Population per toilet seat in community and pay and use toilets in slum settlements- 6) (No. of 'pay and use' toilets- 1200, No. of community toilets- 407)*	***< 20 persons***	***20-50 persons***	***>50 persons***
				9 ULBs *B MCl- 5* *C MCl- 4*	*31 ULBs* *A MCl- 3* *B MCl- 5* *C MCl- 22* *NP- 1*	*114 ULBs* *MC- 16* *A MCl- 11* *B MCl- 35* *C MCl- 51* *NP- 1*

Table 4.31- Equity- Better Performing Cities: Population Ratio with respect to community level services

The analysis revealed that the situation is more critical in case of access to sanitation facilities ('pay and use' toilets and community toilets) in comparison to access to water supply in slum settlements.

There are total 40 ULBs meeting the benchmark with 9 ULBs performing exceptionally better with reference to the population sharing per toilet seat in community toilets in slum settlements. Ambajogai 'B' MCl has the lowest number of persons per toilet seat, i.e. 6. This could be achieved in above mentioned ULBs by providing access to sanitation facilities in slum settlements through adequate number of community toilets (Pandharpur B MCl- 669 seats in community toilets, Trimbakeshwar C MCl -232 seats in community toilets). A considerable number of ULBs also have adequate number of individual toilets in proportion to slum population. (Dondaicha B MCl- 800, Mowad C MCl- 39 individual toilets).

Access to sanitation facilities only through community toilets

- 23% (57) ULBs provide sanitation facilities only through community toilets in slum settlements.
- The minimum population sharing per toilet seat in community toilets in slum settlements is 17 (Talegaon B MCl).
- In many slums a few community toilet facilities are shared by the entire slums.
- The functionality and hygiene of community toilets is in question.
- The quantum of public toilets and 'pay and use' toilets in public places and market places are inadequate and not maintained.

114 ULBs could not meet the GoI benchmark of 50 or less persons per toilet seat in community toilets in slum settlements. The situation is observed relatively poor in the context of Municipal Corporations, 'A' class Municipal Councils and 'B' class Municipal Councils, whereby 70% of Municipal Corporations, 73% of 'A' class Municipal Councils, 60% of 'B' class Municipal Councils, 35% of 'C' class Municipal Councils and 20% of Nagar Panchayats could not meet the benchmark. The poor performance of ULBs against the benchmark is a result of inadequate number of individual toilets and/or community toilets in slum settlements, whereby 54 ULBs reporting no individual toilets and 5 ULBs reporting no community toilets in slum settlements. Also in 'A', 'B' and 'C' class Municipal Councils, the proportion of 'Pay and use' toilets is accounted very less.

These indicative numbers do not depict the holistic picture. This available data presents numbers on access to sanitation facilities and door to door solid waste collection in slums. But that don't take into account whether the entire slum shares a few community toilet seats to avail access to safe sanitation.

Caselet 14: Mobile Toilets in Slums of Tasgaon Municipal Council
The Council has provided community as well as mobile toilets in slum areas to reduce open defecation. In addition to that slums also have access to waste collection service is to eliminate waste saturation and decomposition in and around slums.

Modalities of Sanitation Facilities (Toilets) in Slum Settlements

Particulars	Number	% of Total ULBs	Class-wise Distribution	Examples
ULBs with all types of toilets (individual + pay and use + community)	21	8.5%	MC-4, 'A' MCl- 4, 'B' MCl- 8, 'C' MCl- 4 NP- 1	Nagpur MC, Latur (A MCl), Ballarpur(B MCl), Jintur (C MCl), Shirdi (NP)
ULBs with individual and pay and use toilets	4	1.6%	MC-3 ' 'C' MCl- 1	Greater Mumbai (MC) Dharmabad(C MCl)
ULBs with pay and use and community toilets	20	8%	MC- 6 'A' MCl- 3 'B' MCl- 5 'C' MCl- 6	Bhiwandi (MC) Ambarnath (A MCl) Pandharpur (B MCl) Shirur (C MCl)
ULBs with individual and community toilets	54	21.8%	MC- 1 'A' MCl- 3 'B' MCl- 14 'C' Mcl- 34 NP- 1	Jalgaon (MC) Yavatmal ('A' MCl) Buldhana ('B' MCl) Mehkar ('C' MCl) Malkapur (NP)
ULBs with no toilets (individual, pay and use and community toilets)	15	6%	MC- 2 'B' MCl- 2 'C' MCl- 11	

Table 4.32- Equity- Modalities of Sanitation Facilities (Toilets) in Slum Settlements

According to the table above, 6% ULBs don't have any sort of toilet facilities in slums, whereas 8% have all types of toilets for sanitation facilities. The absence of community toilets in slums denotes inadequacy of basic services provided to the slum dwellers to increase their standard of living. There are 2% ULBs where no community toilet exists, whereas 8% ULBs have only 'Pay and Use' and community toilets but not individual toilets. There are 22% ULBs, where there is no 'Pay and Use' toilets introduced in slums.

4.4.5 Performance Measurement : SWM Services in Slum Settlements

Door to door waste collection is one of the fundamental services which help to improve health and hygiene and environmental condition in the city. Access to primary solid waste management services to all including slum dwellers is also crucial as absence of cleanliness may adversely impact the health and subsequent livelihood of the poor. As per the first round of performance measurement, of total 2,766,429 households in slums of ULBs in Maharashtra, 511,421 households are served through door to door waste collection in slum settlements.

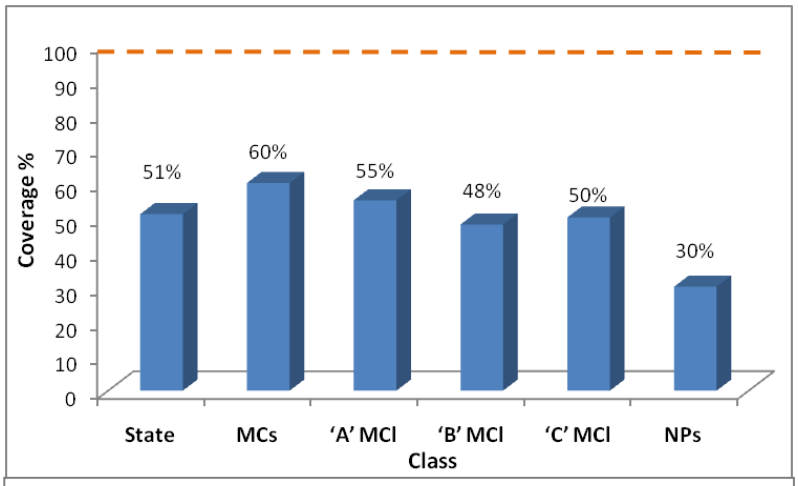
Data Records on HH level SWM Services in Slums

Key Performance Indicator	*Total Cities*	*'no data' for HH level coverage of SWM services in slums*
HH level coverage of SWM services in slums	*248*	*29*

Table 4.33- Equity- Data Records on HH level SWM Services in Slums

Of total 248 ULBs, 29 (12%) ULBs could not furnish data on coverage of door to door waste collection services in slums. Of these 5 are Municipal Corporations, 3 'A' MCls, 7 'B' MCls and 14 'C' MCls.

Access and Coverage of HH Level SWM Services: State Level Scenario



Graph 4-15- Equity_ Access and Coverage- HH level SWM services in slums _State Level and Class wise Scenario

The Municipal Corporations and 'A' class Municipal Councils are able to maintain the HH level coverage of SWM services more than state average of 51%. Municipal Corporations have 60% coverage and 'A' Municipal Councils have 55% coverage of door to door solid waste collection followed by 'C' class Municipal Councils and 'B' class Municipal Council that have 50% and 48% coverage respectively. However, Nagar Panchayats have the lowest 30% HH level coverage of SWM services in slum settlements.

Better Performing Cities in Coverage of HH Level SWM Services in Slums						
Key Performance Indicators	*Total Cities*	*% Coverage*	*Benchmark*	*ULBs meeting benchmark*	*Min*	*ULBs with minimum service levels*
HH level coverage of solid waste management services in slums	*248*	*51%*	*100%*	*60 ULBs* *MC- 4 (Bhiwandi)* *'A' MCl- 3 (Achalpur)* *'B' MCl-15 (Amalner)* *'C' MCl-38 (Bhagur)*	*0*	*62 ULBs* *MC- 3* *A MCl- 2* *B MCl- 16* *C MCl- 39* *NP-2*
Note that '0' indicates coverage of door to door collection of solid waste at city level but not in slums						
Table 4.34- Equity- Better Performing Cities in Coverage of HH Level SWM Services in Slums						

There are total 60 ULBs meeting the benchmark, having 100% household coverage of solid waste management services in slums. Bhiwandi MC, Achalpur MC, Amalner B MCl and Bhagur C MCl are the few illustrations of better performing cities in providing access to SWM services I slums. However, there are 62 ULBs that are reporting 0% coverage.

Reliability of Data: HH Level Coverage of SWM Services in Slums

As per the reliability bands, ULBs having computerized or manual updated household level details of basic services in slums fall under A/A+ category. The table below depicts the class wise categorisation of relatively better performing ULBs on reliability scale vis-à-vis data records on door to door waste collection services in slum settlements.

Better Performing Cities on Reliability Scale						
Key Performance Indicators	**No. of ULBs having A+/A**	**Municipal Corporation**	**'A' class Municipal Council**	**'B' class Municipal Council**	**'C' class Municipal Council**	**Nagar Panchayat**
HH level coverage of SWM services in 'slum settlements'	6	Nagpur (68%) Pune (13%)	Achalpur (100%) Ichalkarinji (47%)	Parali-Vaijanath (17%)	Karmala (56%)	-
Table 4.35- Equity-Data reliability- Better Performing Cities in Coverage of HH Level SWM Services in Slums						

HH Level Access and Coverage of SWM Services in Slums: State Level

Coverage %	No. of ULBs	% ULBS
0	62	25.0
1-25	11	4.4
26-50	12	4.8
51-75	10	4.0
76-100	75	30.2
na-slum	49	19.8
nd-SWM	29	11.7
Total	248	100.00

Chart 4-4- Equity_ Coverage of SWM services in slums_Ranges

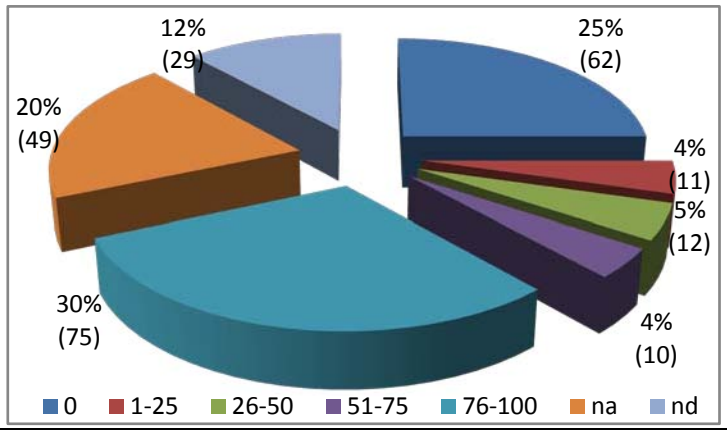


Table 4.36- Equity-Data reliability- Coverage of HH Level SWM Services in Slums_State Level_Ranges

The table above indicates that, 85 (34%) ULBs have household level coverage in slum settlements more than 50% of which 75 (30%) ULBs fall under the category of 75-100%. Also 23 (9%) ULBs have coverage less than 50% while 62 (25%) ULBs report to have 0% household level coverage of SWM services in slum settlements.

Community participation is used as tool for service delivery in solid waste management in some ULBs. The illustrations below put forth the modus-operandi for the same in three ULBs.

Caselet 15: Community Participation for Door to Door Waste Collection in *Wardha Municipal Council*

The Wardha Municipal Council has taken a pro-poor initiative by involving poor in door to door collection of solid waste. Thus the preference for beneficiaries is given to poor from socio-economically backward sections of the society. The beneficiaries get themselves registered with the WMCl. Ghantagadis are rented out to individuals for a minimal monthly payment of Rs. 50 as a rent deposited with WMCl. The individual takes the Ghantagadi from ULB and collects waste from door to door and from community bins. The person expects Rs.10/- per month as a service charge from every household. Initially ULB provided 30 Ghantagadis but currently 17 are in use. Through this the services are provided to the civic societies and almost 40 per cent of the city population is covered. This practice has lead to substantial savings by the WMC. Increasing recovery is the core area for strengthening identified by the WMCI for sustainability of this initiative

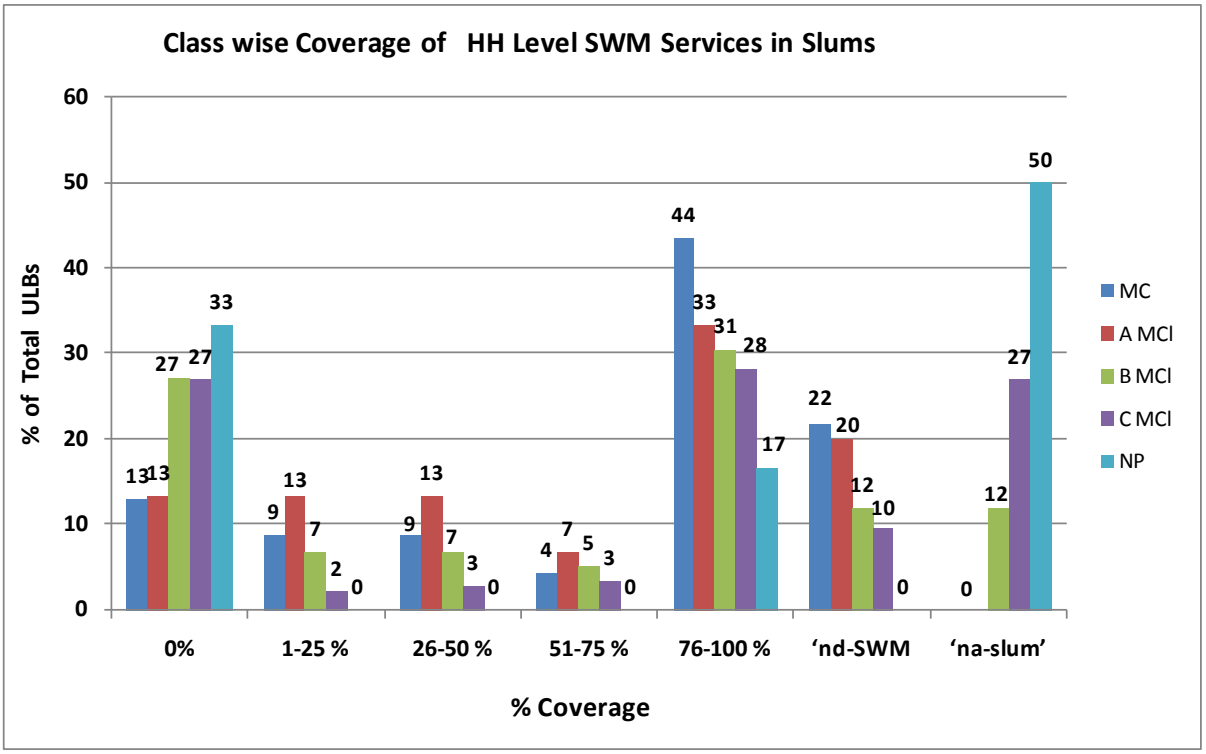
Caselet 16: SHG as a Tool for Community Participation in Provision of Services in *Yavatmal Municipal Council*

Two SHGs have taken an initiative of buying two autohoopers for collection and transportation of waste. These autohoopers are hired by Yavatmal Municipal Corporation for a monthly rent of Rs. 6000 for collection and transportation of waste from all wards. This practice has lead to financial savings. SHGs also distribute brooms, dust bins, cloth bags to women during Makar Sankrant festival.

Caselet 17: Community Participation for Waste Segregation in Tasgaon Municipal Council

The pro-poor approach observed in Tasgaon Municipal Council (TMCl) is women from local Gosavi community are involved in segregation of waste. These women waste pickers' collect recyclable waste directly from land fill site. They take away around 0.6 Tonne Per Day (TPD) of waste from the landfill site. Waste segregation has improved efficiency of composting thus giving good quality compost, a source of revenue for the Council. As the landfill site is 7 Kms away from the city, the TMCl provides transport facility to them. Women rag pickers earn an average of Rs. 200 per day by selling the recyclable waste.

Access and Coverage of HH level SWM Services in Slums: Class-wise Scenario



Note: ' 0' indicates coverage of door to door waste collection in city but not in slums

Graph 4-16- Equity_ Access and Coverage-HH level SWM Services in slums _Ranges

a) Analysis across classes revealed that there is disparity in HH level coverage of solid waste management services amongst ULBs. None of the other basic services have 0% coverage in city.
b) There are total 36 ULBs and 60 ULBs that are reporting 100% HH level coverage of solid waste management services in the city and in slum settlements respectively.
c) Amongst the ULBs providing coverage of door to door waste collection services in slums majority of them either fall under the category of 76-100% coverage or less than 50% coverage.
d) Of total 23 Municipal Corporations about 44% (10) MCs have HH level SWM coverage more than 75% in slums whereas in city 39% (9) MCs report to have more than 75% coverage through door to door waste collection services.
e) Of total 15 'A' MCls 40% (6) have more than 50% coverage and 26% (4) have less than 50% coverage in slums while in city 67% (10) 'A' MCls have coverage more than 50% and 26% (4) have coverage less than 50%.
f) In 'B' class Municipal Councils there are 35% (21) ULBs that have coverage more than 50% in slums, whereas it is 63% (37) in the city.
g) 46% (32) 'C' MCls have more than 50% coverage in slums whereas only 65% (94) ULBs have more than 50% coverage in the city.
h) Only 3 Nagar Panchayats report to have coverage of SWM services in slums, of which 1 report to have coverage between 75-100%

i) There are almost 21 ULBs (8%) ULBs that are reporting 0% coverage of solid waste management services in the city and 62 (25%) ULBs are reporting 0% coverage in slum settlements.
j) In spite of disparity between various ULBs across the classes, the equitable access to solid waste management services in both city and slum settlements is relatively satisfactory than coverage of other basic services in slum settlements. Especially in Municipal Corporations and 'A' class Municipal Councils, there is very less difference between HH level coverage of solid waste management services in city and slum settlements.

It can be concluded from the discussions above that service delivery in all the ULBs across classes is comparatively satisfactory as regard to equitable distribution of water supply and solid waste management services, but much effort is required to be taken to improve in service delivery of sanitation and waste water in city as well as slum settlements.

4.4.6 Performance Measurement : Findings and Inferences Basic Services in Slum Settlements

Fundamental issues that came forward are:

a) Poor database on slum settlements especially on services in slums
b) Poor access to basic services in slums
c) Information about only the availability and not the adequacy of the facilities available is available for slums.
d) Need to strengthen understanding on modalities of basic entitlements/provisions in notified and non-notified slums.
e) Need to gain more insight into the issues of service delivery in non-notified slums and slums on private land.

Findings regarding services in slums….

a) The average coverage of water supply through individual connections is 24%, coverage of toilets is 11%, coverage of household connections to sewerage network is 2% and household level coverage of solid waste management services is 51% in slum settlements.
b) As regard to water supply through individual connections, 'A' class Municipal Councils and Nagar Panchayats are performing relatively poor than other classes. The coverage of individual toilets in slum settlements in 'A' class Municipal Councils and Nagar Panchayats is the highest among all classes.
c) The coverage of individual sewerage connections in slums is comparatively very low in all the classes. In 'B' and 'C' class Municipal classes, few ULBs have piped sewerage network in the cities but only 1 ULB from each class have coverage of sewer connections in slums.
d) There is less difference is observed in provision of door to door waste collection services in city and slum settlements throughout all the classes.

e) Most of the slums are not connected with the trunk infrastructure of the city – thus low coverage of water supply, toilets and primary SWM services in slums. Majority of ULBs have coverage of water supply through individual connections that fall between the ranges of 1-25%. 36 (14%) ULBs have 0% coverage of individual water connections. 33% (81) ULBs have 0% coverage of toilets in slums and 23% (58) ULBs have 1-25% coverage of toilets in slums. However, the HH level coverage of solid waste management services shows completely different picture having 30% (75) of ULBs under the range of 76-100% coverage.
f) Provision of water supply is mainly through group connections and public stand posts. There is relatively less proportion of ULBs (9% or 22 no.) providing water supply through individual connections. There are 23% (57) ULBs that are providing water supply through group water connections in slum settlements, of which 1% (2) ULBs provide water supply service only through group connections.
g) 51% (127) ULBs provide water supply through public stand posts in slum settlements, of which 9% (22) ULBs provide water supply only through public stand posts in slum settlements.
h) Water supply through individual connections is practiced mostly for notified slums (e.g. Shirpur MCl.) for which residents pay property tax along with water charges.
i) In case of non-availability of individual water supply connections, the ULBs have opted for provision of water to slum dwellers through group connections and public stand posts. Each group connection is expected to serve five households. This has lead to the practice of conversion of public stand posts into group connections by many ULBs, such as Kalyan Dombivli Municipal Corporation and Panvel Municipal Council having water supply only through group connections in slum settlements.
j) Most of the slums have access to sanitation services through community toilets and in few ULBs through pay and use toilets. 62% (153) ULBs provide community toilets and 36% (90) ULBs provide individual toilets in slums. There are 90 ULBs providing access to individual toilets in slum settlements, of which 11 ULBs are providing sanitation facilities only through individual toilets in slums. However, the number of individual toilets varies from 11 (Loha C MCl) to 350 (Udgir B MCl).
k) Access through individual toilets is observed in few ULBs mostly in notified slums. (e.g. Lonavala MCl.)
l) The disparity between the level of service in city and slum settlements as regard to sewerage connections is more severe than water supply and SWM. There is more focus on providing sanitation facilities in slums under state level programmes (Sant Gadge Baba Nagari Swachchhata Abhiyaan) and national policies (National Urban Sanitation Policy) that aim to achieve 'open defecation free' cities.
m) Municipal Corporations and A class Municipal Councils are able to maintain the coverage more than the state household level coverage of 51% in SWM services in slum settlements i.e. 60% and 55% respectively, followed by C lass Municipal Councils with 50% coverage and B class Municipal Councils having 48% coverage.
n) In spite of disparity in service levels between various ULBs across the classes, there is very less difference between HH level coverage of solid waste management services is observed in city and slum settlements.

o) Community participation is used as tool for service delivery in solid waste management in some ULBs.
p) There are 19% (47) ULBs that are being able to provide basic services such as individual water supply connections, individual toilets and door to door solid waste collection services in slums. Of 47, four ULBs are Municipal Corporations, 6 are 'A' class Municipal Councils, 15 'B' class Municipal Councils, 21 'C' class Municipal Councils and 1 Nagar Panchayat. The highest coverage of water supply through individual connections in slum settlements is reported as 100% (PCMC, Daryapur C MCl), coverage of toilets in slum settlements is 86% (Latur A MCl), coverage of HH connection to sewerage network in slum settlements is 30% (Nagpur MC) and there are altogether 60 ULBs that have 100% HH level coverage of solid waste management services in slum settlements. There are 2 ULBs (Nagpur MC, Sangli MC) having access to all four basic services including piped sewerage network connections in slum settlements.
q) Further exploration is needed with respect to possibility of correlation between low coverage of water supply connection in slums and high extent of non-revenue water which possibly could be a result of presence of illegal connections in slums.
r) Some ULBs have undertaken cost effective measures for providing basic services in slums. One such attempt proactively utilized and practiced by few ULBs is Community Managed Service Delivery in slums.

It can be concluded that service delivery system in all the ULBs across the class need to be more equitable for the deprived population as regard to equitable distribution of water supply and solid waste management services, but there is a much effort to be taken to improve in service delivery of sanitation and waste water in city as well as slum settlements. In 'B' class Municipal Councils, 'C' class Municipal Councils and Nagar Panchayats, the situation is more critical as regard to individual sewerage connections in city as well as slum settlements. This inequity is more severe in sanitation and waste water management. However, for other sectors of water supply and SWM too more focused efforts need to be undertaken for improving the access of the deprived to the basic services.

Issues in service provision in slums

Certain Fundamental Issues:

a) 21 per cent of the slum households have no proof of citizenship
b) 30 per cent of them have no ration card. Very few of them have voter identification cards.
c) All these makes access to basic amenities from formal government agencies extremely difficult.

Source: NSS 58th Round (2002), India Urban Poverty Report 2009, P. 224

Issues/ challenges faced by ULBs in providing services in slums

a) Non notified slums are not tax payers
b) Issues related to tenure
c) Non recovery of service charges
d) Area not under ULB jurisdiction
e) In absence of legal service provision the ULBs face issue of illegal and unauthorized connections

Issues/ challenges faced by the slums dwellers and the urban poor

a) Process of getting connections for poor, is tedious such as filling forms etc.
b) Perceived high initial connection charges
c) Periodic/ Annual service charges are perceived to be high for slum dwellers to pay. Affordable access to connections is needed by the poor.

4.4.7 Inferences and Identification of Areas for Improvement

The following section elucidates the inferences derived from the performance measurement exercise in previous sections. It also attempts to put forth the areas for improvement and interventions needed based on the inferences derived.

a. In slum settlements the provision of water supply is through individual connections, stand post or group connections. As emerged from the analysis in previous sections the coverage of water supply through individual connection in slums is comparatively low, as compared to coverage of water supply at city level. Majority of slum HHs are served through public stand posts and group connections.

b. It is also observed during field visits in few ULBs that illegal/unauthorized water connections and water supply through authorized and unauthorized private tankers is also prevalent in urban areas.

c. There is inadequate and inequitable supply of water vis-à-vis slums and across different service zones in the planned areas of the city. High Non revenue Water is observed in many ULBs either due to physical losses (due to leakage or breakage in pipelines) or loss due to illegal/ unauthorized connections. This has resulted in revenue losses to the ULBs and unhygienic water supply due to breakage in pipelines.

d. The sanitation facilities in slums majorly include community toilets and coverage through individual toilets in slum settlements is observed to be low. Also the population per toilet seat in community toilets and pay and use toilets are very high against the set benchmarks under GoI recommendations in many ULBs. Also the quantum of public toilets and 'pay and use' toilets in public places and market places are inadequate and not maintained.

e. Due to limited availability of individual, community and public toilets and lack of proper operation and maintenance, the open urination and defecation is very common. And especially women, adolescent girls and elderly people have to face physical and mental stresses. In this situation, public health as well as cleanliness of city is badly affected.

Box 14: Adequacy of Basic Services to Poor

With reference to water it is seen that a substantial portion of the benefits provided by public agencies are focussed on middle and upper income households. Field observations further indicate that many poor draw their water from Public Stand Posts. The quality of water in such cases is unsatisfactory causing water borne diseases and sometimes epidemics. In the case of sanitation, the percentage of urban households having no toilet facility is 31% while the corresponding figure for slums is as high as 54%. It is seen that most free community toilets built by state government or local bodies are rendered unusable because of the lack of maintenance. Also significantly, 80% of the slums are dependent on municipal bodies for the disposal of sewage while the remaining 20% have no provision for disposal of sewage. In pointing this out, the author wishes to draw attention to possible areas of participation by NGOs in the provision of such basic services. *(Source: India Urban Poverty Report)*

f. Both Central and State Governments implement various programmes for construction of individual and public toilets. One such example is GoI's integrated Low Cost Sanitation Scheme and GoM's Sant Gadge Baba Nagari Swachchhata Abhiyan. In addition to that ULBs and various NGOs also have taken initiative in constructing public toilets and community managed services for solid waste management. In few ULBs as observed during field visits, slum HHs in notified slums have constructed individual toilets and taken individual or group water connections. And with the help of external agencies (NGOs and CBOs) in many slums, local community is involved for door-to-door waste collection and waste segregation.

g. More dedicated efforts will need to be put forth for collecting data in notified and non-notified slum settlements and service levels in slums. Also there is a realization that data alone does not provide holistic picture of ULB functioning, there is a need for focused endeavor to carry out process mapping of key processes that affects ULB's WSS performance. This is to be followed by holding discussions with a wider group within a ULB and other stakeholders for re-engineering current processes at the ULB level to improve internal accountability mechanisms within the ULB. Embarking on above there is a need to focus on understanding following in a purview of facilitating development of Performance Improvement Plans:
   - Processes at city level related to affordable services (water connections/ toilets/ subsidy in tariffs), database management system, taxation structure etc.
   - Capacity, technical expertise and budgetary funds available with ULBs for efficient service delivery.

h. The data collected through the PAS check list is a starting point and not entirely sufficient, due to data gaps in the information furnished by the ULBs, with respect to service levels in slums. Thus data alone does not provide a clear/ holistic picture. To resolve these gaps, appropriate modalities of participation of other actors e.g. elected

representatives, ward committees, area sabhas, NGO, CBOs and community (slums dwellers) need to be evolved. This may be done in tandem with collecting information through checklist.

4.5 Special Thematic Issues:

Houseless Population Concerns in access to UWSS….

The Census of India 1991 defines 'houseless people 'as persons who are not living in census houses. The latter refers to 'a structure with roof' hence the possible places where the houseless population is likely to live could be along the roadside, pavements, drainage pipes, under staircases, or in the open, temple-mandaps, platforms and the like' (Census of India 1991:64). This part of the population includes those sleeping without shelter, in construction not meant for habitation, and in welfare institutions (United Nation 1999). The Census of India, 2001 estimates 4,47,585 houseless households throughout the country. The research confirms that the urban homeless people have little and troubled access to even the most elementary public services and everything that they can use has to be paid for.

The survey of four cities (Delhi, Chennai, Patna and Madurai) shows that 45 per cent homeless respondent pay to relieve themselves in public toilets. Water for drinking is often not potable and is usually erratic in supply, although it is available free at roadside taps for 67 per cent of the people surveyed in four cities. But 13 per cent of the respondents buy water from tankers, and 12 percent get it from shops. 55 per cent of homeless people use community toilets, but over 20 per cent still relieve themselves in open spaces (Table No. 46). A similar proportion bathes in community pay facilities, whereas around 24 per cent bathe at public taps. The table below indicates high dependency of houseless population on public toilets. (*Source: Harsh Mander, A study of Homeless Population in Delhi, Chennai, Patna and Madurai, India Urban Poverty Report, 2009, P-298,299)*

Place of Defecation for Homeless					
Place of Defecation	*Delhi*	*Chennai*	*Madurai*	*Patna*	*Total*
Open Space	*15*	*3*	*26*	*25*	*69*
	(16.13%)	*(3.75%)*	*(31.7%)*	*(29.41%)*	*(20.29%)*
Pavement	*8*	*1*	*1*	*6*	*16*
	(8.6%)	*(1.25%)*	*(1.2%)*	*(7.06%)*	*(4.71%)*
Public Toilet	*49*	*65*	*21*	*51*	*186*
	(52.7%)	*(81.25%)*	*(25.6%)*	*(60.0%)*	*(54.71%)*
Night Shelter	*3*	-	-	-	*3*
	(3.2%)	-	-	-	*(0.88%)*
Private Toilet	*9*	*9*	*33*	*1*	*52*
	(9.7%)	*(11.25%)*	*(40.2%)*	*(1.18%)*	*(15.29%)*
Any Other	*9*	*2*	*1*	*2*	*14*
	(9.75)	*(2.5%)*	*(1.2%)*	*(2.35%)*	*(4.12%)*
Total	*93*	*80*	*82*	*85*	*340*
	(100%)	*(100%)*	*(100%)*	*(100%)*	*(100%)*
Source: Harsh Mander, A study of Homeless Populations, India Urban Poverty Report 2009, p-300					
Table 4.37- Equity- Place of Defecation for Homeless					

Based on above facts and observations made during the field visits it can be inferred that,

a) The houseless population is highly dependent on public toilets. The houseless population for water depends on public water supply through stand posts, hand pumps, ULB bore wells etc. Considering the increasing houseless population, an issue that needs to be flagged is acute lack of formal/ dedicated access of water supply and sanitation facilities to the houseless population.
b) Inadequate access to public water supply through stand posts, hand pumps, ULB bore wells etc for houseless population.
c) Lack of access to public toilets for houseless population and floating population leads to open defecation along foot paths and road side thus creating unhygienic conditions..
d) While considering the high dependency of houseless population, street vendors, floating population on public stand posts for access to water drinking water, any possible future strategy to discourage public stand posts need to exclude the market places and public places. This is with reference to conversion of PSPs into group connections for providing access of water supply to poor (slum dwellers).
e) Inadequate provisions of public water supply and sanitation facilities (public toilets) in market places for the informal sector. There is lack of benchmarks for this crucial consideration.
f) With no access to basic services leading to buying of water through private contractors for which poor houseless population pays more then average citizen. Another negative impact of it is high % of illegal water connections to gain access to water and open defecation along foot paths, road side – creating unhygienic conditions.
g) There is a strong need for legal and institutional mechanism to provide safe access to WSS and SWM facilities either through adequate number of free public facilities or subsidized public facilities and adequate night shelter facilities with adequate WSS services to houseless population. The benchmarks for the same also need urgent attention.

Gender Concerns in access to UWSS….

There is a rising concern at national and international level to focus on the gender issues e.g. the magnitude and lack of and/ or poor access to and quality of basic services that is affecting women and especially poor women. Other issues that need focus are related to improving the access and availability of basic amenities and public provisioning related to water, fuel, toilets and sanitation, electricity and so on, in order to improve the conditions of living and well being for poor women and secondly, addressing factors involving external environment such as shelter spaces, transport, overall security levels and so on that can improve the standards of living for poor women and also facilitate their participation in the urban labour market. *(Source: India Urban Poverty Report, 2009, UNDP)*

Water Supply and Sanitation: Children and Gender Concerns

Inadequate water supply facilities and poor sanitary conditions can have a deleterious impact on household outcomes. The severely poor access to and quality of basic services is affecting women and especially poor women. If the local supply of water is inadequate,

women and female children spend a considerable amount of time in fetching water. This affects the decision of the girl child to go to school and also reduces the likelihood of women participating in other economic activities. Another important gender issue vis-à-vis the PAS consideration is impact on adolescent girls. Poor sanitation facilities at school can adversely affect retention of adolescent girls in schools. Lack of quality sanitation facilities lead to health ailments such as leucorrhea. This is also reflected in relevant global analysis such as the Global Gender Gap Report 2008 by the World Economic Forum. The report ranks India on the overall status of women very lowly at 113 while on the sub-parameter of women's health and survival India stands almost at the lowest end with a standing of 128 among 130 countries.

Poor sanitary conditions and poor water quality lead to sickness, cause diarrhea and other water borne diseases among children and adults and also affect life expectancy. Among water borne diseases, diarrhea disproportionately affects children under the age of five. Poor health among children adversely affects the attendance rate at schools. "Water borne diseases are caused by contamination of water with viruses (viral hepatitis, poliomyelitis), bacteria (cholera, typhoid fever, bacillary, dysentery etc.), parasites (amoebiasis, giardiasis, worm infestation, guinea worm etc.) or chemicals. India still losses between 0.4 to 0.5 million children under age five each year due to diarrhea. Community studies from two urban communities have revealed that the incidence of (of viral hepatitis) may be around 100 per 100,000 population." (Planning Commission, 2002, pp. 45-46)

(Source: S. Chandrasekhar, Growth of Slums, Availability of Infrastructure and Demographic outcomes in Slums: Evidence from India.)

Differently Abled Population Concerns in access to UWSS….

There is growing concern for initiating barrier free designs for public buildings and government buildings with differetly abled friendly features. A barrier free building is one which includes approach, main gates, toilets, lighting, exit, emergency evacuation facilities, parking, building entrance, signages, lifts, toilets, ramps designed in a manner that allows the differetly abled to move freely. Following are the considerations in reference to public water supply and sanitation facilities (public toilets, stand posts etc) and WSS facilities in public buildings:

a) Provisions need to be made for differently abled population for special toilets especially in community toilets and public toilets with comfortable access. (large size of toilets with wheelchair access, low height seats, height of water taps, ramps with gentle slope and hand rails in addition to steps, low height of electrical switches, anti-skid flooring, special door designs that can be pushed from wheel chair etc)
b) Special provision/ design for height of water taps for differently abled (easy to access from wheel chair etc)
c) Also provisions need to be made for special toilet seats for children in community toilets and public toilets.

4.6 Legal Provisions and Policy Recommendations for Access of Basic Services to Urban Poor

Several crucial initiatives are taken by GoI and GoM from time to time that helped ULBs to improve access of basic services in slums. With this perspective it is worthwhile to understand the provisions in relevant Acts and GRs as announced and released by GoM from time to time. In order to gain more insight, the existing provisions that legalize service delivery of basic services to the poor especially those living in slums are studied. The recommendations under various programmes and policies by GoI also referred for amendment in the state acts to enable access of basic services to the poor. The section below elucidates on the same.

4.6.1 Relevant State Acts in Maharashtra

Law relating to Slums in Maharashtra:

The Maharashtra Slum Areas (Improvement, Clearance and Re-Development) Act of 1971 (Slum Act), provided for protection against eviction. It allowed notification and recognition of slums and defined nature of improvement works to be undertaken. The act facilitates declaration of an area to be a 'slum' and permits its notification, whereby improvements can be extended to the notified area and earmarked for improvement in the Development Plan. This however applies to areas on state government lands and not central government lands.

Amendment of **'The Maharashtra Slum Areas (Improvement, Clearance And Re-Development) (Amendment) Act 2001**: As per this amendment all pavement dwellers who could establish that their names were on the electoral roll (5) on 1 January 1995 were protected, to the extent that their homes could not be demolished without rehabilitation.

'The Maharashtra Slum Areas (Improvement, Clearance and Re-Development) (Amendment) Act, 2003: This amendment states special provisions for in-situ rehabilitation housing schemes for protected occupiers in slums areas. The amendment allows for the construction or reconstruction of dwelling units or structures in the scheme area for providing basic amenities to the slum dwellers who are protected occupiers as defined in clause C of section 3X and their in-situ rehabilitation in such scheme area.

Slum Rehabilitation Authority (SRA): Maharashtra has constituted the SRA under the Maharashtra Slum Areas Act, 1971 for the purpose of slum rehabilitation. The SRA implements schemes that focus on redevelopment as well as rehabilitation of slum-dwellers.

Slum Rehabilitation Act 1995 was passed by Government of Maharashtra to protect the rights of slum dwellers and promote development of slum areas. The Act protected from eviction anyone who could produce a document providing they lived in the city before January 1995, regardless if they lived on the pavement or other kinds of municipal land. The scheme envisages up-gradation of slums by providing employments, drinking water facility, electricity, toilet facility and proper drainage systems at their own locations, instead of resettlement of slum dwellers to another place.

The SRA Scheme can be commenced only if the land is notified as slum area under the act and sufficient number of persons occupying the structure on the slum area comes forward for the purpose of development or owner himself with support of sufficient number of persons residing thereon seeks to development the land. SRA and other schemes are applicable only to inmates of declared slums i.e. those who have been living in those slums before 1.1.1995, all slums should be declared to improve the overall environment of the city.

Slum Up gradation Programme, 1985; Slum Redevelopment Scheme (SRD), 1991 and Slum Rehabilitation Scheme (SRS), 1995 have been successively evolved for bringing about improvement to slum areas.

Slum Redevelopment Scheme (SRD) introduced in 1991 facilitated private sector participation in development of slum areas by granting incentive of increased Floor Area Ratio (FAR) of 2.5 to facilitate incremental space/ tenements, which were expected to cross-subsidize the slum tenements. The slums were to be provided with 180 sqft tenement per family. Thirty years lease was to be given to slum dwellers which were required not to transfer their tenement for a period of ten years. The scheme also required to rise own contribution to be paid as one third upfront contribution and balance in installments as loan. The scheme was to be eligible for all those living in slum structures prior to 1.1.85.

Slum Rehabilitation Scheme (SRS) was introduced in 1995. The SRS was advancement over the Slum Redevelopment Scheme (SRD) in that it included all slum dwellers on the electoral roll of 1995 including pavement dwellers and area of the tenement was increased to 225 sqft and the tenements were to be given for free of cost. Other incentives that were provided included transit facilities construction in vacant lands, time bound scrutiny, additional commercial component of 5% and transfer of development rights (TDR) in respect to surplus floor area which could be transferred to another area. But the SRS scheme covers slums on state government land but excludes those on central government land which therefore would not entitled to tenure security.

Box 15: Slum Rehabilitation Scheme

Slum Rehabilitation Scheme (SRS) is being implemented in the cities of Mumbai, Pune, Pimpri-Chinchwad and Nagpur. Under this scheme, initially as per the state policy, the dwelling unit of 225 sq.ft carpet area was to be provided to slum dwellers who have their names registered in the voters list since or prior to 01.01.1995 and have been living in the same slum. Based on the suggestions by the GoI after the launch of JnNURM , the state government have, vide Government Resolution No. TPB 4308/897/CR 145/08/UD-11 dated 16.4.2008, decided to increase the total carpet area for residential tenements for slum dwellers to 269 sq.ft. (25.0 sq. mts) This is applicable to the projects where actual construction work is commenced on or after 26.05.2008. Similarly in-situ FSI for slum rehabilitation schemes has been increased from 2.5 to 3.0 and in cases where it was 3.0 to 4.0 [in regulation3.7 and 3.8 of Appendix IV of Regulation 33(10)

4.6.2 Important Government Resolutions, GoM :

For Declaration of Slums

1. Government Resolution No. Jho-pu-yo- 1096/Project No. 68/Slum Rehabilitation -2/ Gru-ni-sel, dated 16.5.1996, the Government of Maharashtra **granted sanction for**

rehabilitation to hutment who were residing and whose hutments have been existing and whose names appear in the voter's list of 1976, 1986, as well as those hutment dwellers who came to reside after 1985 and whose name appears in the voter's list dated 1.1.1995 and continued to stay at the same address.

2. The next G.R. is dated 9.5.2000. This G.R. provided for **carrying out of survey and census of the huts and hut dwellers existing on 1.1.1995 and issuing them identity cards**. The next G.R. after this is dated 11.7.2001. The same is in matter of revised policy for issuance of photo passes. The scheme known as Photo-Pass 2000 is made applicable to those slums on lands belonging of the ownership of the state government as set out there in which have been declared as slums. The scheme was not to apply to huts on the roads and footpaths. It was not to apply to huts if twenty five in number or less irrespective of they being together or scattered.

Box 16: Photopass: official certification of a slum dweller

A "photopass" is official certification of a slum dwellers eligibility to be resettled if the land on which the hut is situated is needed by the government for a public purpose. As per Government policy, slum dwellers prior to 1.1.95 are to be provided with security of tenure. As a part of this scheme photo passes and patta are given to slum dwellers.

(JnNURM Quarterly Report on implementation Reforms by Nanded-Waghela Municipal Corporation)

3. The G.R. of 10.7.2002 further **provides for basic amenities**.

4. Government Resolution No. Jho-Su-Yo-2004/Project No. 62/Jho-Pa-Su-1A, dated 22.06.2004 orders **to issue Slum Dwellers' Eligibility Identity Photo pass to all slum dwellers living prior to 1.1.1995.** This includes conducting Cadastral Survey in all the slums and providing photo passes based on it. Similarly, municipal corporations and councils having more than 50,000 populations according to 1991 Census are ordered to implement Maharashtra Slum (Improvement, Alleviation and Redevelopment) Act 1971 and provide all basic services to the slum dwellers. This act has been implemented in 61 municipal corporations and councils and issued photo passes. There was an issue of those slum dwellers who were not covered by Cadastral Survey due to their absence in the slums at the time of survey. In this background, the resolution basically provides the guidelines to the Competent Authorities of each municipal corporation and council regarding those slum dwellers that were missed in the Cadastral Survey due to the reasons such as have gone to visit native place, work, and closure of hutment, out of hutment due to sickness or any other reason. In all above mentioned cases, if the hutment dwellers apply for issue of photo passes to their respective competent authorities, they will be considered and issued photo passes as per all the terms and conditions laid down in Ref. No. 4 of G.R No. Ga-Va-Su- 1220/Project no. 204 (1)/Jho-Pa-Su-1, dated 11.07.2001 by the Competent Authority of the respective Municipal Corporation or Council.

5. **Transferring Security of Tenancies to affected slum dwellers in MMRDA region**
Government Resolution No. Paryayi -2006/Project No. 81/Slum Rehabilitation -2/ UD-32, dated 19.5.2006, the Government of Maharashtra to accord sanction to the transfer of

tenancies or benefits to the affected slum dwellers existed prior to 1.1.2000. This special Government Resolution is issued referring to the rehabilitation of slums that will get affected due to implementation of MUTP and MUIP in the MMRDA region. Prior to implementation of projects the survey is to be carried out for identifying the slums and assessing their socio-economic losses. Based on that, the slum dwellers eligible for availing benefits of the rehabilitation scheme are identified. (Reference: Government Resolution, Housing Department, Project No. 1700/CR 31/Slum -2/ UD-32, dated 12.12.2000; Government Resolution, No. Paryayi 2005/ Project No. 107/Slum -2, dated 14.11.2005). MMRDA or the implementing agency will be responsible for rehabilitating the affected slum dwellers.

6. G.R. No.: Jho-Pu-Yo- 2008/Project No. 236/Jho-Pa-Su- 1 dated 02.07.2010 provides **guidelines for slum rehabilitation in public owned lands.**
   a) For increase in FSI of Housing Projects under BSUP/IHSDP and schemes for EWS/LIG and Transit Camps
   b) Vide Government Resolution No. TPS-1107/U R 36/CR 135/08/UD-9, dated 24.12.2008, the Government of Maharashtra has decided to make 2.5 FSI admissible to projects under Basic Services to the Urban Poor (BSUP) and Integrated Housing and Slum Development Programme (IHSDP) components of JnNURM. These are subject to the following conditions:
      - These orders will be applicable to BSUP, IHSDP and schemes for EWS/LIG and Transit Camps.
      - These schemes should be implemented by Municipal Corporation/ Council and not by the developer.
      - 15% of admissible 2.5 FSI should be made available for the sale component. If the schemes are not viable within the limit of 15%, the Vice President and Chief Executive Officer, MHADA may, after detailed scrutiny, grant additional 10% of 2.5 FSI for sale component.
      - Permission to sale or lease flats constructed under the said sale component may be granted to the Municipal Corporation/ Council as per the Bombay Provincial Municipal Corporation Act, 1949 and the Maharashtra Regional and Town Planning Act, 1965.
      - E.g. Nagpur Slum Rehabilitation Authority is permitted to implement BSUP by clubbing SRA and BSUP (Vide order dated 23.10.2008). In some cities like Katol, Tiroda etc, beneficiaries have been permitted to construct their own houses (Vide Orders dt. 2nd July, 2008 and 5th Sept. 2008 respectively)

7. Eligibility criteria of the slum dwellers for Slum Rehabilitation Scheme.

Government Resolution No. Jho-Pu-Yo- 1097/Project No. 4515/Jho-Pa-Su- 1, dated 14.05.1998 provides the **eligibility criteria of the slum dwellers for Slum Rehabilitation Scheme.** Slum dwellers who were listed in Election Voters' list either of 1976, 1980 or 1985 or 1995 and staying in the same address prior to 1995 were considered as eligible beneficiaries for Slum Rehabilitation Scheme in Mumbai. Those slum dwellers using the hutment for commercial purpose and are registered under Shop and Establishment Act, have electricity bill, photo pass etc., will be provided with the 225 sq. ft. area or area of previous shop,

(whatever may be less) for free. They may get preference to buy the shop as equal to the area of previous area (in case they used to have larger than 225 sq. ft.). For those dwellers having two individual huts without common wall, using differently for both commercial and residential purpose, they will be provided with two different tenements for both the purposes under this scheme. The eligibility issues are dealt by the Competent Authority. For those slum dwellers, who are residing in the same area prior to 1.1.1995 but are not listed in the Election Voter's list should first enlist their name in the Voter's list and should go for further step. The Competent Authority is also granted with the power to rusticate the ineligible candidates under Maharashtra Slum (Improvement, Alleviation and Redevelopment) Act 1971.

8. **Precautions to be taken while issuing Annexure-II for the eligibility of slum dwellers under SRA for Slum Rehabilitation Scheme:**

G.R. No.: Jho-Pu-Yo-2007/Project No. 105/Jho-Pa-Su- 1 dated 17.01.2008 provides the guidelines to the 'Competent Authority' mentioned as in Section 3 of Maharashtra Slum (Improvement, Alleviation and Redevelopment) Act 1971 to determine the eligibility of beneficiaries under Slum Rehabilitation Scheme. The resolution mainly works on accepting Voter's Card issued by District Election Officer as a proof to determine eligibility and in absence of it other documents issued by the government can be used such as telephone bill or electricity bill, but not the Rationing Card, wherein the name of the person should exactly match in all the documents, giving a written remark by the competent authority in all the documents submitted and same should be documented in his office. The GR also mentions about taking photograph and video graph of each slum dwellers' family after deciding their eligibility to get privilege of Slum Rehabilitation Scheme. Also to confirm the identity of eligible beneficiary of the scheme the G.R. states use of modern technologies such as Irish technology/ biometric technology along with thumb impression etc. The Competent Authority should personally do site visit of the slum to ensure the fact. The Slum Rehabilitation Proposal should include competent authority signed map of the proposed site including total area, total hutments, area of each hutment, open plot, lanes etc. and should also prepare satellite survey and cadastral digital map. Each eligible slum dwellers should be given membership of respective cooperative housing societies, for which consent should be taken on Rs. 100 stamp paper with photograph and same should be notarized.

9. For provision of basic services

a) In Gazette No. GNT 1096/Project No. 182/96/4 dated 04.04.1997, the Directorate of Municipal Administration (DMA) states **to provide group connection in slums, EWS communities and chawls.** Since public stand posts are inadequate and inconvenient for consumers in slums and in economically weaker sections' communities, group connections are to be introduced in these areas. The provision for one ½" group connection was made between 7 applicants (HHs) in Kalyaan Dombivali Municipal Corporation and Kulgaon-Badlapur and water tax is equally distributed among all seven households and paid accordingly. Based on successful implementation of the above, the DMA issued Government Resolution for all ULBs stating to provide one ½" group connection between five households in slums, EWSs and Chawls. The deposit amount and water tax to be distributed equally among all 5

households and paid accordingly to the ULB by the group leader appointed by the HHs.

b) Government Resolution No. Na-Da-Va- 2010/Project No. 219/Pa-Pu-22 dated 25.06.2010 sanctions the implementation of Maharashtra Suvarna Mahotsavi Nagari Dalit Vasti Pani Purwatha va Swachchhata Yojana (Maharashtra Golden Jubilee Urban Dalit Vasti Water Supply and Sanitation Scheme) **to provide individual water connections and individual toilet facilities to urban Scheduled Caste and Neo Buddhist communities in the state**. The Urban Local Bodies are pleaded for proposal to provide with the grant under this scheme, i.e. Rs. 4000/- for Individual water connection and Rs. 12000/- for Individual Toilet construction per household. Under the scheme, 90% of the total amount will be incurred through government grant and rest of 10% will be either self contribution amount from beneficiaries or will be borne by concerned Urban Local Bodies.

c) Government Resolution No. Su-Ni-A- 2010/Project No. 132/Pa-Pu- 22 dated 19.06.2010 is related to the Universalization of Water Supply and Sanitation in urban areas under Maharashtra Sujal va Nirmal Abhiyan. Government of Maharashtra has initiated this Government Resolution to provide guidelines to successfully implement the Maharashtra Sujal va Nirmal Abhiyan, Nirmal Mahanagar Pradesh Campaign in all the ULBs of Maharashtra. GoM has also decided to increase the grant in Water supply and Sewerage to those ULBs, who are successful to reach the expected level of City Water Supply and Sanitation on 22.10.2008 in its Resolution No. Na-Pa-Pu 2008/Project No. Pa-Pu-22.

For Urban Water Supply:

For Urban Water Supply, this G.R. states to provide individual water connections to all authorized households; conversion of stand posts into group connections, identification and regularization of unauthorized connections by making it compulsory to take individual and group connection in given time period. Notified slums are to be served with group water connections and to be provided with individual connections as per the demand. In group water connections the water tax is to be shared by all the group members. In case of non-notified slums, Public Water Booth should be constructed for water supply, which will be totally operated by local SHGs or voluntary organizations in the matters of providing monthly or quarterly prepaid card with photo proof and fixing water tax rate.

Innovative ideas such as increasing water tax pay points and giving concession in case of prior payment may be used for smooth functioning and easy water tax recovery by the ULBs. Under the MSNA programme identification of unauthorized connections is done in both slum areas and authorized settlements. The ULBs should also initiate the activities for prevention of misuse, overuse, wastage, illegal use in group connections and take proper action. ULBs should also warn citizens not to use Tulu pumps in water connection. It also states charging punishment fee in case of unauthorized use by citizens.

For Urban Sanitation:

Under Urban Sanitation, the G.R. states to provide individual and community toilet connections in non-slum areas and shared group or community toilet connections in slum

areas. It also states to prepare and submit proposal with survey report for providing funds for construction of toilets for Below Poverty Line Population.

Also construction and maintenance of public toilets to be given preference at socially important places, markets, bus depots, railway stations and government offices, make special efforts to renovate old toilets and their maintenance responsibility to be given to local SHGs and voluntary organizations. Provision of Mobile Toilets is to be made, where permanent toilets cannot be constructed. The G.R. further elaborates on inclusion of issues of women, children, elderly and differently abled population in construction of public and community toilets.

The ULBs are also envisaged to undertake the construction of toilets in schools, health centers, industries, commercial organizations etc. and provide proper Dislodging Synch for all toilet connections.

The GR further states the ULBs to prepare report on status of the existing public and community toilet facilities under National Urban Sanitation Policy. In coordination with local SHGs and voluntary organizations, ULBs should conduct sensitizing programmes in communities about importance of use of toilet and discourage open urination and defecation. Sant Gadge Baba Urban Sanitation Campaign should be the monitoring body to record the initiative taken by the ULBs on construction of individual and public toilets and their maintenance.

Apart from these, government administrative departments are ordered to construct toilets in various government offices in all the cities according to Government Gazette No. Sa-Swa-A 2009/Project No. 197/Pa-pu-16 dated 23.02.2010. MSRTC should take initiative in construction of toilets for both men and women in all the bus stands. Health Department should construct toilets for both men and women in all the Health centers. Educational department should construct toilets in schools, colleges, universities and all educational institutions and monitor the same in private educational institutions. Social Justice and Indigenous Department should be responsible for construction and maintenance of toilets in all hostels, Ashram Schools and other administrative agencies.

Citizens not having individual toilets should be given notice to construct individual toilets in given time period. ULBs also should think about giving some concession on toilet construction for some time period. People not following the rules regarding toilet construction should be made punishable.

- The practical difficulties faced by the ULBs like issue of non-notified slums and issues related to tenure act as hindrance in service delivery in slums. The issue of non notified slums and the issue of security of tenure needs an urgent attention in the definitions of the slum in the Maharashtra Slums Area (Improvement, Clearance and Redevelopment) Act.
- In practice if a slum has been notified, as per the Maharashtra Slum Areas (Improvement, Clearance and Re-Development) Act of 1971, it is officially recognized by the government and receives services. But the non-notified slums (especially on private land) regardless of their conditions are not entitled for basic service provision. Thus non-notified slums suffer from an extremely degraded local environment due to lack of service provision.
- Also many times notified slums grow without their boundaries getting updated, so there are no services in the newer sections, putting pressure on existing the systems. In addition to that the baseline as per the state resolution, passed by the Government of Maharashtra, is recognizing slum dwellers that have been living in the city before 1995 as legitimate city residents who are entitled to resettlement if evicted for development projects or for other reasons.
- Slums located on public land do not need to be notified in order to receive basic services provision. In practice, services are only provided to notified slums, so many slums located on public land remain non notified and un-serviced. Also lack of land tenure also gets in the way of local governments providing legal services to such settlements at levels similar to those provided to the rest of the city. Identifying and implementing innovative solutions to problems of land tenure is a prerequisite for slum improvements.
- Providing affordable housing with tenure to poor families will make them less vulnerable and more secure. Secure tenure (*patta*) encourages urban poor families to invest and upgrade their housing. It also encourages them to connect and pay for municipal services inside their homes, i.e., metered water connections, toilets with sewerage, metered power supply, etc.
- Providing legitimate services at an individual HH level to the poor for whom they pay as per their affordability will help improve cost recovery, reducing O&M costs for common and free services such as community toilets and community stand-posts and strengthen city's finances. Over time the poor can be fully integrated into the city and be included in the property tax net, adding to city revenues. This in turn help cities to make savings and generate additional resources for investment in future infrastructure development.

4.6.3 Recommendations under National and State Level Policy and Programmes:

1. Draft National Slum Policy, 2001

Municipal Services to be brought under Consumer Protection Act: It will be desirable to bring Municipal Services under the Consumer Protection Act to monitor quality and reliability of basic infrastructure services delivered at settlement level. This should be uniformly applied irrespective of tenure and land status of the settlement. The specific mandate is to monitor absolute levels of service coverage and differential levels of service availability throughout the ULB area. It is recommended that a special consumer panel be established in each municipality comprising members from different settlement categories (in proportion to their total number in the population) with authority to report to Council.

2. Addressal of Security of tenure under JnNURM (BSUP/ IHSDP), 2005

a) According to the JnNURM "all slum dwellers must be provided with security of tenure". As far as possible, city governments must try and provide tenure/patta to slum dwellers on-site or at sites nearby (within 1-2 kms. radia) existing settlements to ensure that their livelihoods are not affected. Only those slums that are non-tenable may be relocated; that is those that are located either on infrastructure pathways, land sites marked for major development projects in the city or where sites are near areas which can pose health risks such as large drains, land fill sites, etc. City governments are required to report to JNNURM the numbers of slum settlements (notified and non-notified) which are granted security of tenure annually.

b) Reforms under BSUP aim to create an enabling environment in cities for provision of land tenure, slum upgrading and poverty reduction. In order to grant land tenure, local governments must:
   - Undertake a citywide, slum mapping, which locates on a city map all notified and non notified slums.
   - Enlist all families through household survey with biometric identification.
   - Assess future housing demand for the poor.
   - Inventory housing sites/spaces for new housing projects.
   - Prepare draft legislation for approval by the local body. Based on the information collected, the city government must draft its policy on tenure and initiate the approval process from the designated bodies. This policy must be in synergy with the state policy. The city may choose one or a combination of the following options for granting tenure, depending upon the local Context.
     - Tenure/patta on existing sites
     - Tenure/patta on relocated sites near the existing site
     - Tenure/patta on far off relocated sites

3. Addressal of Security of tenure under Rajiv Awas Yojna, 2009

a) Government of India introduced Rajiv Awas Yojana (RAY) which would extend support to state that are willing to assign property rights to people living to slum areas.

b) Recommendations under RAY state that reforms for security of tenure through entitlement will be critical for achieving the aim of inclusive cities. Accordingly, central assistance under RAY will be predicated on the condition that states / UTs assign legal title to slum-dwellers over their dwelling space.

c) RAY recommends UBLs to undertake slum mapping including mapping of the ownership category of the encroached land viz. municipal, state, central government, public sector undertaking and private in order to find or work out solution for regularization and reconstruction suitable to ownership category, ensuring land use modification, additional FAR wherever infrastructure permits etc. to create virtual space and provide incentives.

4.7 Ongoing National and State Level Programmes

The advent of JnNURM has lead to the realization that the data base for undertaking a huge programme like JnNURM is grossly inadequate. JnNURM (BSUP/ IHSDP) calls for preparation of CDPs and DPRs and that requires a strong database. In the absence of adequate and reliable data, the CDPs of cities and towns already prepared have not adequately addressed the concerns of the urban poor, especially slum dwellers that too those in non notified slums. Adequate and reliable database on urban poor including slums, status of basic services in slum settlements, concerns for homeless is a pre-requirement to assess the true picture and undertake formulation of plans, policies and schemes so that potential beneficiaries are targeted in a meaningful manner. Creating a strong data base on urban poor including slums is also of prime importance in the wake of other National level programmes like Draft National Urban Sanitation Policy that recommends preparation of integrated City Sanitation Plans and special slum and community level sanitation plans. Embarking on above, for taking concrete actions the municipal level action plans needs to be prepared which also requires a considerable amount of data.

This section provides an overview of ongoing National and State Level Programmes and recommendations and provisions under them for provision of access of basic services to poor.

4.7.1 National Level Programmes

4.7.1.1 Basic Services for Urban Poor and Integrated Housing and Slum Development Programme, JnNURM, 2005

Housing for Poor under JnNURM with better UWSS access

The role of housing and provision of basic services to the urban poor has been integrated into the objectives of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). The Sub-Mission II of the JNNURM involves Basic Services to the Urban Poor (BSUP) including the Integrated Housing and Slum Development Programme (IHSDP). The sub-mission on Basic Services to the Urban Poor (BSUP) aims to provide integrated services to the urban poor including slum dwellers in 63 mission cities. These include affordable housing and both physical and social amenities. Slum development and basic services to the urban poor in rest of the cities and towns are taken up under the scheme of Integrated Housing and Slum Development Programme (IHSDP). The GoI has committed a sum of Rs. 50,000 Crores as Grant to States and UTs under JnNURM of which Rs. 20,000 Crores are meant for slum up-gradation, housing and basic amenities to the urban poor. (Source: Report of the committee on slum statistics/ Census, August 2010, Annexure-II, p-41)

Fundamental Tenets

Box 17: ***Seven point Charter pertaining to Basic Services for Urban Poor, JnNURM:***
Provision of basic services to urban poor including security of tenure at affordable prices, improved housing, water supply, sanitation and ensuring delivery through convergence of other already existing universal services of the government for education, health and social security. Care will be taken to see that the urban poor are provided housing near their place of occupation.

1. Focused attention to integrated development of basic services to the urban poor in the cities covered under the Mission.
2. Scale up delivery of civic amenities and provision of utilities with emphasis on universal access to the urban poor. It asks the ULBs to provide basic urban services including housing to all urban poor without any discrimination (legal/ illegal, registered/ unregistered) by 2012.
3. Secure effective linkages between asset creation and asset management so that basic services to the urban poor created in cities are not only maintained efficiently but also become self-sustaining over time.
4. Ensure adequate investment of funds to fulfill deficiencies in the basic services to the urban poor.

Reform Components under BSUP with respect to Basic Services

1. Community stand-posts where in-house connections are not possible to provide. Norms laid down by GoI for such services must be adhered to. These community stand posts could gradually be improved from common stand posts to large group/ small group metered connections to private connections.
2. Community Toilets where private toilets cannot be provided. Norms laid down by GoI for such services must be adhered to. Community toilets must be planned and operated in partnership with the slum community. (In Pune, housing for sweepers has been provided above the toilet complex, which is supervised by a slum sanitation committee. The remuneration for sweeper is paid from the people's contribution.)
3. Regular and efficient solid waste management with door to door waste collection and regular disposal from community to the waste collection site of the municipality.
4. Drains of concrete and covered with proper gradients/ connected with city networks/ underground drainage systems for wastewater disposal.
5. In house metered water connection and a life time tariff with payments in easy installments both for connections and user costs, and in-house toilets linked to underground sewerage/ septic tanks. This is with reference to the construction of new housing/ dwellings for the poor.
6. Incremental grading: Norms for service provision need to be developed on an incremental plan i.e. moving from community connections for water supply, sanitation to household connections while improving the level of services.

Linkages with other Reforms:

a. **Internal earmarking of funds for poor:** BSUP will ensure that funds are earmarked for services to sums and are demand driven and used efficiently.
b. **Modern Municipal Accounting Systems:** The DEA (Department of Economic Affairs) system will help to track expenditure on service provision and housing to slum areas.

Box 18: ***Pro-poor Reforms under JnNURM for the States and Cities:***

- Internal earmarking within ULB budgets for BSUP/ IHSDP
- Status of 7 point charter under BSUP/IHSDP
- Earmarking of 20-25% of developed land for EWS/ LIG

c. **User costs for full cost recovery:** Lifetime tariff slabs for the poor will need to be ensured in setting up of tariff systems. Provisioning of metered services in slum areas will improve cost recovery and reduce transmission losses.
d. **Property Tax:** Inclusion of poor (resettled or provided housing/pattas) into property tax system.
e. **Property Titling:** Inclusion of poor with houses/pattas) in property titling.

The objectives, outputs and outcomes of the PAS project have a direct relevance with the urban reforms stipulated under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) whereby more than 50% of the budget allocation is earmarked for UWSS.

JnNURM is the flagship project for urban development and urban poverty alleviation. The PAS project is positioned to be perceived as an enabler towards fulfillment of the reform commitment envisaged under JnNURM by the local and state government such as 100% cost recovery of O & M through levy of user charges/ service charges, implementation of e-governance reforms, MIS etc.

4.7.1.2 National Urban Sanitation Policy, 2008

The Ministry of Urban Development, Government of India has also launched National Urban Sanitation Policy (NUSP). The Policy has been finalized after a very intensive consultative process. The policy, for the first time, provides the necessary framework for the states to approach urban sanitation in an integrated manner. The national policy attempts to address the institutional issues, the plight of the urban poor, the issue of manual scavengers, poor awareness on sanitation, lack of integrated planning technical knowhow and capacity – which causes most of our infrastructure to operate in a sub-optimal manner. The vision of the NUSP is: All Indian cities and towns become totally sanitized, healthy and livable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.

Recommendation under National Urban Sanitation Policy for the states:

a. Provision of basic services should be de-linked with issues of land tenure.
b. To resolve tenure, space and affordability constraints to provide individual sanitation facility.
c. Provision of basic services would not entitle the dweller to any legal right to the land on which he/she is residing.
d. Min. 20% of funds in sanitation sector to be earmarked for the urban poor.
e. Formulation of special slum and community level sanitation plans

Draft NUSP mandates states to allocate clear land ownership or long term lease to slum dwellers where ever possible. Slums eligible for in-situ up-gradation will have to participate in sharing costs to be incurred for this up-gradation

4.7.1.3 Draft National Slum Policy, 2001

The main objective of the draft National Slum Policy is to integrate slum settlements and the communities residing within them into the urban area as a whole by creating awareness amongst the public and in Government of the underlying principles that guide the process of slum development and improvement and the options that are available for bringing about the integration. The policy also aims to strengthen the legal and policy framework to facilitate the process of slum development and improvement on a sustainable basis.

Provisions under the Draft National Slum Policy

1. The Policy embodies the core principle that households in all urban informal settlements should have access to certain basic minimum services irrespective of land tenure or occupancy status.
2. This Policy stresses, inter-alia, a priority role for local bodies in the discharge of functions listed in the Twelfth Schedule of 74th CAA viz:
    i. slum improvement and up-gradation,
    ii. urban poverty alleviation,
    iii. regulation of land use and construction of buildings,
    iv. provision of urban amenities, and
    v. public health and sanitation including provision of water supply.
3. The Government of India's Draft National Slum Policy suggests an inclusive definition of slums, listing of slums and registration of and issuing identity cards to slums-dwellers to make them eligible for in-situ slum improvement for "tenable" sites and resettlement in case of "untenable" sites.
4. The criteria for defining a slum/informal settlement shall take into consideration economic and social parameters (including health indicators) as well as physical conditions. Each State/Union Territory shall lay down the norms/criteria for categorizing an area as underserviced and the local body of each town shall list all such areas as slums.
5. The policy adopts an approach of in situ up-gradation and improvement as opposed to resettlement. It recommends clearance only in exceptional circumstances. Policy allows for in-situ improvement works to be carried out even before granting tenure.

6. The policy has provisions for granting of tenure, predicated upon streamlining acquisition processes in case of private land and conflict resolution in case of public land.
7. Reforming Subsidies: Provision of individual household services such as water supply, electricity and sanitation would facilitate recovery of user charges and wherever these services are to be subsidized, they can be quantified and used judiciously.

4.7.1.4 Rajiv Awas Yojna, 2009

The main focus of the RAY is an integrated approach aimed at bringing within the formal system those who are forced to live in extra-formal space and in denial of right to services and amenities available to those with legal title to city space, and at correcting the deficiencies of formal system of urban development and town planning that have failed to create condition of inclusiveness and equity.

As per the draft guidelines for slum free city planning under Rajiv Awas Yojna

1. Preparation of State-wise Legislation: For Assignment of Property Rights to Slum Households
2. Legislative changes for commitment to reservation of 10-15% of land in every new public/ private housing projects or 20-25% FAR, whichever is greater
3. Legislative changes for earmarking of 25% of municipal budget for the urban poor and the 7-Point basic services and entitlements to the poor as enlisted under the 7-Point Charter of JnNURM.
4. Reform to the rental and rent control law regarding urban housing
5. Review and amendment to the legislation, rules and regulations governing urban planning
6. Mapping of all slums notified as well as non-notified and all unauthorized colonies and regularized unauthorized colonies un-served by municipal services.
7. Slums that are identified can be upgraded holistically on site, with or without enabling changes in land use and FAR and those which are untenable have to be relocated. A city wide plan to be made to shift untenable slums to the nearest possible vacant land or notified slums which has space to receive them.

4.7.2 State level Programmes

4.7.2.1 Sant Gadge Baba Nagari Swachchhata Abhiyaan, 2002

As narrated in the previous section 1.1.2 'Sectoral Background', the Sant Gadge Baba Nagari Swachchhata Abhiyaan (SGBA) is an ongoing state level progamme being implemented in Maharashtra. The following text sheds light on the focus areas under SGBA pertaining to slum development and access of basic services in slum settlements. Furthermore

Box 19: ***Focus Areas under SGBA:***

- Slum Development : Water Supply in Slums, Toilet Facility in Slums.
- Improvement in Access to Urban Basic Services and their Status
- Slum Rehabilitation and Redevelopment

the data collected regarding slum development from the ULBs every year under the SGBA is also reproduced below.

Focus areas covered pertaining to equity and inclusion (Slum Settlements)

a) Water supply in Slum Areas

- No. of Water Supplied HHs in slums
  - By Individual Connection
  - By Stand Posts
- No. of slums not connected through piped Water supply
- No. of Stand Posts in slums

b) Adequacy of water supply tax for Water Supply Improvement

- Water Supply Tax Recovery in Slums
  - No. of Water supply Tax payer Households in Slums
  - No. of non-tax payers
  - Recovery through Billing
  - Recovery through Stand Post Committee
- Total Water Tax recovery amount in previous year

c) Toilet Facility in Slums

- Adequacy of Toilets in slums
  - Total number of slum pockets
  - Total population in slums
  - No. of toilet seats in slums
  - No. of slums having less than 50% of less toilets against norm
- Quality of toilets in slums
  - No. of toilets having adequate water supply
  - No. of toilets having electricity connection
  - No. of toilets having sewerage connection
  - No. of permanently constructed toilets (having tiles flooring)
- Initiatives to quantitative improvement of toilets in slums
- Status of Master Plan
  - No. of toilet seats under construction
  - Toilet construction budget allocated (previous year)
  - Budget Allocation for toilet construction in slums (next year)

d) Slum Development

- Improvement in basic services in slums
  - Water supply Improvement
  - Solid Waste Management
  - Cleanliness and Gutter Improvement
  - Public Health Improvement
- Slum Rehabilitation/Redevelopment
  - Housing up-gradation in slums
  - Slum Rehabilitation and Redevelopment

- No. of HHs distributed with PATTA and expenditure incurred
- No. of VAMBAY projects in city
- No. of beneficiaries under VAMBAY project
- Total expenses from municipal funds for slum rehabilitation

– Participation of Non-governmental organizations
- Steps taken to involve NGOs and CBOs

– Financial Management of Slums
- No. of Households paying Service Fee
- Total demand of current year
- Total Recovery of current year
- Rehabilitation Expenditure Recovery
- Method of rehabilitation
- Cost recovery from beneficiaries
- Current year Recovery
- Current year Demand

4.7.2.2 Maharashtra Sujal va Nirmal Abhiyan, 2010

As described in the the previous section 1.1.2 'Sectoral Background' regarding Maharashtra Sujal va Nirmal Abhiyan (MSNA) the text below briefly narrates the baseline reforms under MSNA pertaining to equitable access of basic services to all including urban poor. These reforms are mandatory and supported by the WSSD and UDD. *For Water Supply, Sanitation and Solid Waste Management baseline reforms under MSNA mandates*

Box 20: ***Focus Areas under MSNA with respect to Access of Basic Services to Urban Poor:***

Universal Access (including poor) to Sustainable, Reliable, Affordable & Quality Water Supply, Sewerage, Sanitation & Solid Waste services.

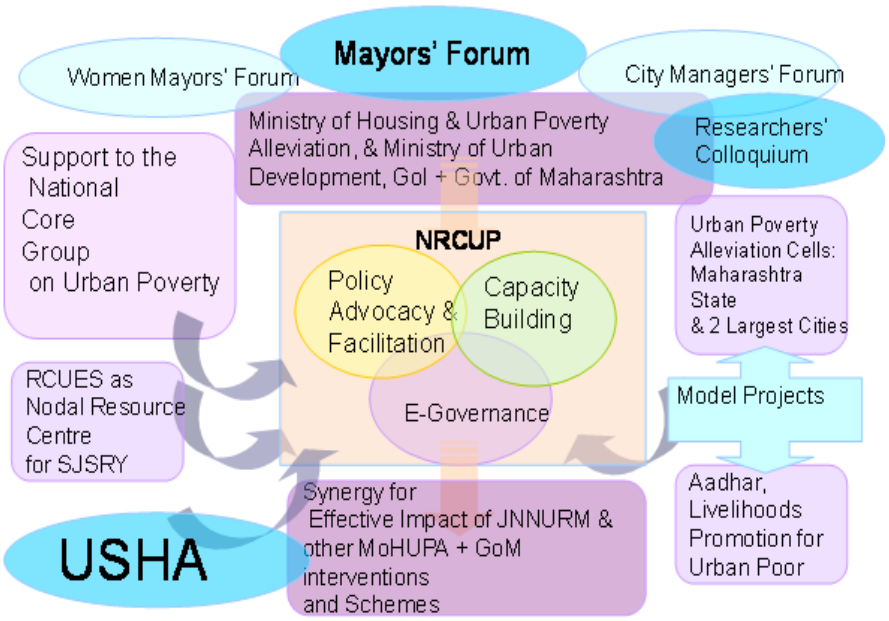
- Ensuring Universal Coverage of WSS services
- Conversion of stand post connections into group connections
- Ensuring Open defecation free cities & towns (Construction of Toilet Blocks - Public & Community and Encouraging individual toilet facility by providing incentives)
- Ensuring Efficient functioning of existing toilet facilities (Rehabilitation of un-serviceable toilets & ensuring its connectivity to safe disposal system)

4.7.2 Mainstreaming PAS with GoI and GoM:

Addressing equity issues is among topmost priorities of GoM and GoI amply reflected through 'Inclusive Growth' as the core theme for the current Five Year Plan (2007-2012). A key element of the progress has been efforts to highlight synergy between the PAS project and GoM and GoI policy priorities. This endeavor is designed to ensure that the government sees reflection of its own priorities in the PAS project and considers the PAS project as a catalyst to accelerate its efforts towards its own stated commitment to the citizens of the state/ nation. AIILSG, Mumbai utilized this strategy for buildingin ownership of GoM and for catching the attention of GoI. At a higher level, the core theme of India's current Five Year Plan is 'Inclusive Growth' and the 'equity' component of the PAS project is a sectoral mirror image of inclusive growth. Thus the measures initiated for replication and policy advocacy of PAS with GoI refers to the synergy between the 'Inclusive Growth' as a key concern of GoI policy and pro-'equity' initiatives of PAS.

Box 21: Mainstreaming with Govt. of India and Govt. of Maharashtra Urban Development & Urban Poverty Alleviation Efforts

Leveraging RCUES, AIILSG's Status as RCUES & National Resource Centre for Urban Poverty (NRCUP)



PAS at AIILSG, Mumbai leverages its formal status at policy level to highlight to GoM and GoI synergy between equity as key theme of PAS and government policy priorities. AIILSG, Mumbai utilizes the platform of Mayors Forum, Women Mayors Forum, capacity building programmes and other policy advocacy events to disseminate PAS and its importance vis-à-vis the 7 point charter of JnNURM. The 7 point charter has water supply and sanitation among its key components. The results have been encouraging.

Though the data collection in the first year of the project was focused mainly on the officials from the ULBs, the roles explained above could enable AIILSG, Mumbai to dovetail dissemination of PAS and gain sector insight and learnings with wide range of stakeholders such as municipal elected representatives, NGOs, CBOs, and very importantly the primary stakeholders- the citizens, slum dwellers and urban poor.

4.8 Policy Implications

Developing a deeper insight on practical aspects related to equity issues will lead to formulating realistic strategies for improving the service delivery in UWSS. Findings pertaining to service levels in the slums as emerged from the first round of performance measurement highlighted fundamental issues faced by the slum dwellers in notified and non notified slums. In many instances, slums – notified or non notified are not connected to city level trunk infrastructure. But a more holistic approach is needed to adequately address the issues of inequity in access of basic services to the under-served that includes urban poor, non slum BPL families and other un-served population residing in peri-urban areas/ outgrowths.

The PAS effort tries to bring equity issues including access of slum dwellers to basic services primarily on radar of city planning so that there will be pro active multi stakeholder involvement and viable financial investments.

As observed in many instances, slum dwellers and homeless don't have affordable and sustainable access to safe water. Also lack of adequate sanitation facilities in slums and at public places is a cause of open defecation. Lack of access to basic services has aggravated the adverse impact on the health and hygiene of poor. Provision needs to be made for night shelters for homeless and migrant workers, public toilets for floating population and street vendors. While considering improvement in access to sanitation, special consideration needs to be given to the equity aspects pertaining to differently abled, children and gender equity.

There is an increasing trend towards decentralizing provision of basic services via community driven initiatives with the facilitation of urban local bodies. Also promoting use of low cost technology and tools for community managed services will improve the access of the urban poor to sustainable water supply and sanitation.

The following text narrates the areas of improvement and interventions needed that will enable ULBs to achieve the goal of universal access of WSS services to poor.

a) **Notification of slums:** Rationalizing the slum notification process and linking it to entitlement to basic services is an important step to provide access to basic services to slum dwellers.
b) **Entitlement to basic services**: Providing legitimate services at an individual HH level to the poor for which they pay as per their affordability will help improve cost recovery, reduce transmission losses and strengthen city's finances; and will help cities to make savings and generate additional resources for investment in future infrastructure development. Provisioning of legitimate services will help create an enabling environment for poor people to benefit from city's economic growth.
c) **De-notification of upgraded/tenured settlements and their inclusion in property tax system:** Once upgraded, slums and new housing colonies need to be integrated with the city property tax system. However, the residents of these settlements must be counselled to pay the property tax payments/user charges for household services. ULBs may consider subsidy in connection charges for slums, option for slum households to pay

connection charges in installments and/or affordable lifeline taxes and tariffs, which are deferred to beyond the repayment of loans.

d) *De-linking of security of tenure with entitlement to basic services:* Entitlement to basic services is directly linked with the tenure related aspects. De-linking access to basic services with land tenural aspects would enable ULBs to provide basic services in non-notified slums too.
e) **Incremental upgrading –** Norms for service provision need to be developed on an incremental plan. This will allow urban local bodies to improve service delivery over time, moving from community connections for water supply, sanitation, power, etc. to household connections, while improving the level of services such as inner area roads, street lights, water supply quality and quantity, etc.
f) **ULBs to earmark funds for poor in the budgetary allocation.**
g) **Community managed services** through interventions of ULBs or external agencies (NGOs, CBOs, Private sector) to be promoted.
h) **Low cost technology** options to be explored to provide basic services in slums by employing cost effective measures.
i) **Formulation of Performance Improvement Plans (PIPs) for poor** by ULBs should include strategy for universalizing coverage and access of basic services in slums.
j) Adequate number of functional and maintained **public toilets, 'pay and use' toilets, public stand posts to be provided at public places/market places** to cater the needs of informal sector, floating population and other vulnerable population including homeless, street vendors etc.
k) **Public Private Partnership/ Private Sector Participation** to be explored by ULBs for cost effective solutions for service provisions in slums. Unbundling of services and targeted interventions as a pilot case can be explored by ULBs in partnership with NGOs and private sector.

The magnitude of the task of improving the access of the basic services to the urban poor and marginalised, and sustaining it is herculean considering the rapid urbanization and the associated complexities. However, it is heartening to note that the urban reforms and renewal processes triggered by JnNURM, RAY, USHA, SGBA, MSNA, etc. have the potential to match the challenge. Supported with scientific database and approaches, the policies and programmes of GoI and GoM can be facilitated through systematic performance measurement and monitoring efforts. The subsequent performance improvement will need intensive facilitation at various levels, especially on-field handholding at the grassroots.

4.9 Futuristics

The PAS Project at AIILSG, Mumbai is committed towards improving equity in UWSS throughout the project period of 5 years and beyond. Within the organisation, it is taking shape of a programme for which the anchor has been established in the form of a sustainable node in collaboration with GoM. This node is mandated to provide facilitation support to the governance at various levels.

Moreover, a salient feature is the consistent endeavor to gain insight into the grassroot dynamics and getting the grasp of the real issues and associated interplay of various factors. To enable this, AIILSG, Mumbai has entered into collaboration with an NGO, CSSC (Centre for the Study of Social Change) which has a long standing experience of working with the slum communities and other deprived sections of the society.

Following are the key elements of the AIILSG's workplan for the current year and beyond towards improved equity in UWSS. The details of the current year's workplan are presented in the subsequent table.

Key Elements:

- **Policy advocacy at the state and central level,** and efforts for mainstreaming the PAS endeavor with the government schemes and programmes for urban poverty alleviation such as JnNURM, SGBA and MSNA, etc.
- **Equity-centric analysis** of the data generated
- **Action research in collaboration with CSSC** with respect to various factors associated with equity. Also, a salient feature will be configuring the contours of gender equity, and of issues of specific deprived communities such as differently abled, street vendors and houseless.
- Developing relevant analytical dockets in the form of **working papers, internal notes, project notes** etc.
- **Facilitation at various levels of governance**, including the grassroots, for translation of the concepts into concrete actions leading to desired impacts at least on a sample basis. The facilitation support will include handholding of ULBs **for developing and effecting Performance Improvement Plans.**
- **Capacity building of and networking with the wide array of stakeholders** towards the cause.
- **Documentation and dissemination of good practices** showcasing the significant efforts that have accelerated the strides towards equity. This will also include organising exposure visits of the stakeholders to such good practices.
- Blending the equity aspects in other constituents of the project that keeps the relative inequity consistently on the radar with urge and facilitation towards specific actions.

- Last, but extremely significant, is leveraging the formal standing of AIILSG with the government and dovetailing with AIILSG's various programs (such as capacity building programs, stakeholder consultations and policy deliberation events) for keeping the issue and associated development on the forefront with a constructive and reformative spirit.

Equity Work plan within PAS AIILSG WORKPLAN & ACTION PLAN JULY 10-JUNE 11

- Equity-specific activities: ……
- Equity-actions in sync with others: …….

	PAS AIILSG WORKPLAN & ACTION PLAN JULY 10-JUNE 11													
Budget Head No.	Workplan Activity	Qtr 1			Qtr 2			Qtr 3			Qtr 4			
		July 10	Aug	Sept	Oct	Nov	Dec	Jan 11	Feb	March	April	May	June	
	Performance Measurement													
1	Working Paper on 'Addressing Equity Issues in UWSS & SWM through PAS'													PN
2	Research on Equity Issues in UWSS & SWM (In collaboration with NGOs)													IN
3	Development of Self assessment framework and tool developed after consultation & pilot testing												X	PT /PR
	Data Collection, Verification													
4	Data Collection, Verification: Round 2 (Keeping in mind 13th Finance Commission requirements)								X					PR
5	Data Gap Filling & Quality enhancement (Validation): Round 2													
	ULB training and follow up													
6	ULB Directory													PD
7	ULB training & follow up for self-assessment & SLB											X		PR
	Performance Monitoring													
	Analysis of results annual													
8	Analysis of results of Round 2 of data collection													
9	Publication of analysis report for comparative analysis on key indicators (Round 2)									X				PR
	Training of NGOs in the use of PAS													
10	Inventory of NGOs/ private sector organizations												X	PD

11	Training of NGOs in use of PAS (Will involve CBOs and SJSRY organizations too)						X							PR
	State and national level activities													
12	Advocacy with GoI, GoM & ULBs													
13	State Workshop: Share project results, launch web portal, good practices compendium & newsletter. Introducing concept of 'Self-Assessment' (in sync with III above)									X				M R
14	Preparatory activities, Meetings and follow up activities about mainstreaming PAS within Government of Maharashtra (various depts.)													M R
15	National Workshop on 'Citywide strategy for universal access to WSS for the poor' – in collaboration with the ministry of Housing and Urban Poverty Alleviation, Govt. of India													M R
	Documentation of good practices													
16	Good practices documentation (12)						X							PP
17	Audio visual documentation of progress/ good practices : 3 GPs/yr						X							PP
	Annual publication of good practices													
18	Annual publication of GPs													PP
	Dissemination activities													

PAS AIILSG WORKPLAN & ACTION PLAN JULY 10-JUNE 11

Budget Head No.	Workplan Activity	Qtr 1			Qtr 2			Qtr 3			Qtr 4			
		-10	ug	pt	t	ov	c	r	b	ar	n	ay	ne	
19	UWSS News Monitor													
20	**Quarterly newsletter & its Dissemination**							X						PP
	Exchange visits for ULBs - within state													
21	Exchange visits for ULBs (For 50 persons: Identify sites for visit + Identify ULBs & persons)						X							PR
	Performance Improvement Support													
	Zonal Workshops to Promote PIPs													

22	Zonal workshops to promote self assessment & PIPs (Though activity will start in yr 3, preparatories with ULBs will start in sync with various yr 2 activities)												X	
	Strategy and support for roll out of PIP in Maharashtra													
23	ULB Workshop on Benchmarking with IWA/IWAA in Mumbai (by sidelines of Aquatech India): 28th Feb-1st March													
24	PIP framework development and testing in 2 ULBs in Maharashtra with CRISIL													
25	Follow-up with cities and MMRDA to explore possibilities for support to interested ULBs for universalizing access to UWSS (Kalyan Dombivli Municipal Corporation)													
26	Direct intervention/ facilitation support in select ULB/s and Mumbai Metropolitan Region													
27	Research Projects													IN
28	Note on policy & legal provisions prevailing in Maharashtra for access to basic services in slum areas													IN
29	GIS Application for Service Mapping in Maharashtra (Exploratory to lead to details)													IN
30	Identification of cities/ towns for PIP for financial viability & timeline												X	IN
31	Develop PIP with 3 SLB cities & send to MoUD													

Milestones as committed to BMGF	X				
Products - web posting/ distribution		**Products - web posting/ distribution**		**Products - Internal review, discussion**	
Project Report	PR	Project Promotion materials	PP	Internal concept /discussion note	IN
Project Note	PN	Project Directory	PD	Internal review notes	IR
Meeting Report	MR	Project Manual	PM	Grant progress reports	GP
Project Tools	PT				

5 BACKGROUND STUDIES

Solid Waste Management_ Sectoral Background

Introduction:

Effective management of solid waste has become a major challenge facing city managers in order to make their cities clean and livable. Appropriate solid waste management of a city is crucial for public health and aesthetic surroundings. Therefore, the removal of any scattered and littered waste is as important as effective street sweeping and drain cleaning. This also brings to focus the necessity of synergy in the design, construction and maintenance of roads, surface (storm water) drains and storage, collection and transportation of solid waste.

Due to its size and multiple activities, different types of solid wastes are generated in any city:

- MSW (from the domestic and commercial sectors and common areas such as, parks, gardens, street sweepings and drain silt).
- Construction and demolition debris (C and D waste).
- Bio-medical waste (waste generated by health-care and veterinary establishments).
- Slaughterhouse waste (organized as well, as un-organized activities).
- e-Waste.
- 'Special' waste (small quantities of toxic and hazardous waste generated by the household and trade sectors).
- Industrial waste generated within the city area.

Different Wastes, Definitions and Concepts:

'Solid Waste' is the term used to describe non liquid waste materials arising from domestic, trade, commercial, agricultural and industrial activities, and from public services.

In Indian cities, it is a combination of various heterogeneous waste materials. It is commonly known as garbage, refuse, rubbish or trash. Its main sources are residential premises, business establishments and street sweepings. It is a mixture of vegetable and organic matter; inert matter like glass, metal, stones, ashes, cinders, textiles, wood, grass, etc. According to the percentage of ingredient, it would be highly compatible or combustible, biodegradable or inert. A waste is viewed as a discarded material, which has no consumer value to the person abandoning it. Urban Solid Waste is defined as Material for which the primary generator or user abandoning the material within the urban area requires no compensation upon abandonment. In addition, it qualifies as an urban solid waste it is generally perceived by society as being within the responsibilities of the municipality to collect and disposed of (Cointreau, 1982).

The accepted definition states that four main pillars of any solid waste management system are (i) storage at or near the point of generation, (ii) collection of waste, (iii) street cleansing and (iv) disposal of waste (Holmes, 1984). For selecting an appropriate method of garbage storage, collection and disposal, it is necessary to identify the waste and classify its type.

Municipal Solid Waste (MSW) is the unwanted material discarded as a result of various human activities.

Definitions and Classification of Solid Wastes

Definitions

There are many terms, which relate to the types and sources of wastes and these too must be defined. Based on the source, origin and type of waste a comprehensive classification is described below by Central Public Health & Environmental Engineering Organisation (CPHEEO), Ministry of Urban Development, Government of India in its Manual on Municipal Solid Waste Management (2000).

i) Household / Residential Waste

This type of waste comprises the solid wastes that originate from single and multi-family household units. These wastes are generated as a consequence of household activities such as cooking, cleaning, repairs, hobbies, redecoration, empty containers, packaging, clothing, old books, writing / new paper, and old furnishings. Households also discard bulky wastes such as furniture and large appliances which cannot be repaired and used.

ii) Municipal Waste

Municipal waste includes wastes resulting from municipal activities and services such as street waste, dead animals, market waste and abandoned vehicles. However, the term is commonly applied in a wider sense to incorporate domestic wastes, institutional wastes and commercial wastes.

iii) Commercial Waste

This category includes solid wastes originate in offices, wholesale and retail stores, restaurants, hotels, markets, warehouses and other commercial establishments. Some of these wastes are further classified as garbage and others as rubbish.

iv) Institutional Waste

Institutional wastes are those generated in institutions, such as, schools, universities, hospitals and research institutes. It includes wastes which are classified as garbage and rubbish as well as wastes which are considered to be hazardous to public health and to the environment.

v) Garbage

Garbage is the term applied to animal and vegetable wastes resulting from the handling, storage, sale, preparation, cooking and serving of food. Such wastes contain putrescible organic matter, which produces strong odours and therefore attracts rats, flies and other vermin. It requires immediate attention in its storage, handling, collection and disposal.

vi) Ashes

Ashes are the residues from the burning of wood, coal, charcoal, coke and other combustible materials, for cooking and heating in houses, institutions and small industrial establishments. When produced in large quantities at power generating plants and factories these wastes are classified as industrial wastes. Ashes consist of a fine powdery residue, cinders and clinker often mixed with small pieces of metal and glass.

vii) Bulky Waste

In this category are bulky household wastes which cannot be accommodated in the normal storage containers of households. For this reason they require special collection. In developed countries bulky wastes are large household appliances such as cookers, refrigerators and washing machines as well as furniture, crates, vehicle parts, tyres, wood, trees and branches. Metallic bulky wastes are sold as scrap metal but some portion is disposed of at sanitary landfills.

viii) Street Sweeping

This term applies to wastes that are collected from streets, walkways, alleys, parks and vacant lots. In the more affluent countries manual street sweeping has virtually disappeared but it still commonly takes place in developing countries, where littering of public places is a far more widespread and acute problem. Mechanised street sweeping is the dominant practice in the developed countries. Street wastes include paper, cardboard, plastic, dirt, dust, leaves and other vegetable matter.

ix) Dead Animals

This is a term applied to dead animals that die naturally or accidentally killed. This category does not include carcass and animal parts from slaughter-houses which are regarded as industrial wastes. Dead animals are divided into two groups, large and small. Among the large animals are horses, cows, goats, sheep, hogs and the like. Small animals include dogs, cats, rabbits and rats. The reason for this differentiation is that large animals require special equipment for lifting and handling during their removal. If not collected promptly, dead animals are a threat to public health because they attract flies and other vermin as they putrefy. Their presence in public places is particularly offensive and emits foul smell from the aesthetic point of view.

x) Construction and Demolition Waste

Construction and demolition wastes are the waste materials generated by the construction, refurbishment, repair and demolition of houses, commercial buildings and other structures. It mainly consists of earth, stones, concrete, bricks, lumber, roofing materials, plumbing materials, heating systems and electrical wires and parts of the general municipal waste stream, but when generated in large amounts at building and demolition sites, it is generally removed by contractors for filling low lying areas and by urban local bodies for disposal at landfills.

xi) Industrial Waste

In the category are the discarded solid material of manufacturing processes and industrial operations. They cover a vast range of substances which re unique to each industry. They are considered separately from municipal wastes. It should be noted,

however, that solid wastes from small industrial plants and ash from power plants are frequently disposed of at municipal landfills.

xii) Hazardous Waste

Hazardous wastes may be defined as wastes of industrial, institutional or consumer origin which, because of their physical, chemical or biological characteristics are potentially dangerous to human and the environment. In some cases although the active agents may be liquid or gaseous, they are classified as solid wastes because they are confined in solid containers. Typical examples are solvents, paints and pesticides whose spent containers are frequently mixed with municipal wastes and become part of the urban waste stream. Certain hazardous wastes cause explosions in incinerators and fires at landfill sites. Others, such as pathological wastes from hospitals and radioactive wastes, require special handling at all time. Good management practice should ensure that hazardous wastes are stored, collected, transported and disposed off separately, preferably after suitable treatment to render them innocuous.

xiii) Sewage Waste

The solid by-products of sewage treatment are classified as sewage wastes. They are mostly organic and derive from the treatment of organic sludge from both the raw and treated sewage. The inorganic fraction of raw sewage such as grit is separated at the preliminary stage of treatment, but because it entrains putrescible organic matter which may contain pathogens, must be buried / disposed off without delay. The bulk of treated, dewatered sludge is useful as a soil conditioner but invariably its use for this purpose is uneconomical. The solid sludge therefore enters the stream of municipal wastes unless special arrangements are made for its disposal.

Bio-Medical Waste

- **Hospital Wastes** means all waste coming out of hospital of which around 80% are actually non-hazardous, around 15% are infectious wastes and around 5% are non-infectious but hazardous wastes.
- **Medical wastes** means any waste which is generated in the diagnosis treatment or immunization of human being or animals, in research pertaining hitherto or in the production or testing of bio-medicals (Wording and definition used in the USA).
- **Clinical wastes** means any waste coming out of medical care provided in hospitals or other medical care establishments. This is the wording and definition used in the Basal Convention regulating Tran boundary movement of hazardous waste.
- **Pathological wastes** include human tissues, organs and body parts and body fluids that are removed during surgery or autopsy or other medical procedures, and specimens of body fluids and their containers. (They are part of infectious waste as well as of three kinds of waste listed above).
- **Infectious wastes** include all kind of waste which may transmit viral, fungal, bacterial of parasitic diseases to human beings. In addition to medical wastes, it includes infectious animal wastes from laboratories, slaughter houses, veterinary practices, etc.

- Different categories of wastes must be separated at the source of generation since they require different segregation, storage, collection, transportation and disposal methods.

Plastic Waste

Use of plastics has grown manifolds all over the world as it has many advantages. They are light easy to mould, durable and easy to adapt to different user requirements. However plastics are difficult to destroy and are classified as non-biodegradable. On the other hand it is easy to recycle plastics.

E-waste

Electronic waste – or e-waste is the term used to describe old, end –of-life electronic appliances such as computers, laptops, TVs, DVD players, mobile phones, mp3 players etc. which have been disposed of by their original users. While there is no generally accepted definition e-waste, in most cases, e-waste comprises of relatively expensive and essentially durable products used for data processing, telecommunications or entertainment in private households and businesses. There is no clear definition for e-waste; for instance whether or not items like microwave ovens and other similar "appliances" should be grouped into the category has not been established.

WEEE Categories

- Large household appliances.
- Small household appliances.
- IT and telecommunications equipment.
- Consumer equipment.
- Lighting equipment.
- Electrical and electronic tools (with the exception of large-scale stationary industrial tools.)
- Toys, leisure and sports equipment.
- Medical devices (with the exception of all implanted and infected products).
- Monitoring and control instruments.
- Automatic dispensers.

The presence of these different types of waste streams complicates the solid waste management scenario leading to deficiencies in planning and management. This is further aggravated by the unplanned settlements – slums and squatter settlements. Apart from the fundamental issue of service provision and problems of accessibility, some of these areas undertake unauthorized recycling of plastics; batteries etc. which may have grave environmental implications.

Solid waste management is an obligatory duty of every municipal body. Their responsibilities have been augmented through 74th Constitutional Amendment Act, 1992, wherein its 12th Schedule stated 'public health, sanitation, conservancy and solid waste management' as one of the main functions to be performed by the municipal body. The recommendations of the Committee constituted by the Hon'ble Supreme Court of India to examine solid waste management in Class I Cities in India, makes it mandatory for the municipal bodies to effectively manage urban solid waste .

As per the legal requirements Municipal Solid Waste (Management & Handling) Rules, 2000, it is mandatory for all municipal bodies to prohibit dumping and littering of solid waste anywhere in the city; to make it mandatory for the waste generators to segregate and store waste at source; for municipal bodies to collect such segregated waste directly from the households and transport it to designated places; to recycle dry waste; to process biodegradable waste by composting or any other suitable methods; to send waste that cannot be processed and the residue after processing to the sanitary / scientific landfill site.

This task has gained significant importance with the promulgation of the Municipal Solid Waste (Management & Handling) Rules, 2000 wherein every municipal authority shall, within the territorial area of the municipality, be responsible for the implementation of the provisions of MSW Rules, 2000 and for any infrastructure development for segregation storage, collection, storage, transportation, processing and disposal of municipal solid wastes. The municipal bodies are faced with a challenge to meet the compliance deadlines put forth in the MSW Rules, 2000 within their limited resources. Any violation of the provision of the Municipal Solid Wastes (Management & Handling) Rules, 2000 will attract the penal provision of the Environment (Protection) Act 1986 (29 of 1986).

The issue of solid waste management in cities has received growing attention of late for obvious reasons. Pursuant to the order of the Hon' ble Supreme Court of India dated 16-1-1998, the Ministry of Urban Affairs & Employment, Government of India, constituted a Committee for identifying the deficiencies in the existing solid waste management systems in India, which prepared a report incorporating several recommendations for improving solid waste management practices in Class I ULBs in India. Three important notifications were issued by Ministry of Environment and Forests, Government of India, viz. Bio-Medical Waste (Management and Handling) Rules, July 1998 which apply' to all persons who generate, collect, receive, store, transport, treat, dispose or handle bio-medical wastes in any form, Municipal Solid Wastes (Management and Handling) Rules, September, 2000 which apply to every municipal body responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid waste, and Recycled Plastics Manufacture and Usage Rules, i999 about usage of plastic waste.

According to the Rules 2000, to comply with or contravention with any of the provisions of the Act, or rules made or the orders and directives and on the failure, or non-fulfillment of any of the provisions is punishable, which may be to the extent of 5 years imprisonment or liable to pay a fine of Rs.1.00 lakh or with the both. In case of failure of payment of the fine an additional fine @ Rs.5000/- per day is liable to be paid for such failure. Similarly, municipal bodies have to ensure handling of bio-medical waste as per Bio-Medical Waste (Management & Handling) Rules, July 1998. The Model Municipal Law, Ministry of Urban Development & Poverty Alleviation, Government of India (October, 2003) also stated solid wastes management as a Duty of Municipality in respect of solid wastes management and handling.

Legal Aspects in Solid Waste Management

The legislative measures regarding solid waste management can be summarized as follows:

- **Indian Standard Method**
  - Physical Analysis and Determination of Moisture in Solid Wastes (excl. industrial solid wastes).
  - Guidelines for Selection of Methods for Urban Solid Waste Disposal.
  - Solid Wastes - Hospitals – Guidelines for Management.
- **Function of Urban Local Bodies (ULBs)**
  - Solid waste management is an obligatory function of the municipal bodies in India.
  - 12th Schedule of 74th Constitutional Amendment Act, 1992 states **'public health, sanitation, conservancy and solid waste management'** as one of the main civic functions to be performed by the municipal body.
- **Ministry of Environment & Forests, Government of India**
  - Coastal Regulation Zone (CRZ) and regulating activities in the CRZ, 1991.
  - Bio-Medical Waste (Management & Handling) Rules, 20th July, 1998.
  - Recycled Plastics Manufacture and Usage Rules, 1999.
  - Bio-Medical Waste (Management & Handling) Amendment Rules, 6th March, 2000.
  - Bio-Medical Waste (Management & Handling) (Second Amendment) Rules, 2nd June, 2000.
  - Municipal Solid Waste (Management & Handling) Rules, 25th September, 2000.
- **Municipal Solid Wastes (Management & Handling) Rules, 2000.**

Application of MSW Rules, 2000: These rules shall apply to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes.

Responsibility of municipal authority

- Every municipal authority shall, within the territorial area of the municipality be responsible for the implementation of the provisions of these rules and for any infrastructure development for collection, storage, segregation, processing and disposal of municipal solid wastes.
- The municipal authority shall comply with these rules as per the implementation schedule laid down in Schedule I.
- Secretary-in charge of the Department of Urban Development of the concerned State or the Union Territory, in case of a metropolitan city, or
- District Magistrate or the Deputy Commissioner concerned in case of all other towns and cities.

Responsibility of the State Government and the Union Territory Administrations.

- Secretary-in charge of the State Department of Urban Development or the Union Territory shall have the overall responsibility for the enforcement of the provisions of MSW Rules, 2000 in the metropolitan cities.

- District Magistrate or the Deputy Commissioner of the concerned district shall have the overall responsibility for the enforcement of the provisions of MSW Rules, 2000 within the territorial limits of their jurisdiction.

Management of Municipal Solid Wastes

- Any municipal solid waste generated in a city or a town, shall be managed and handled in accordance with the compliance criteria and the procedure laid down in Schedule II of MSW Rules, 2000.
- The waste processing and disposal facilities to be set up by the municipal authority on their own or through an operator of a facility shall meet the specifications and standards as specified in Schedule III and IV of MSW Rules, 2000.

Annual Reports

- State Pollution Control Boards and the Committees shall prepare and submit to the Central Pollution Control Board an annual report with regard to the implementation of these rules by 15th September every year in Form IV of MSW Rules, 2000.
- Central Pollution Control Board shall prepare the consolidated annual review report on management of municipal solid wastes and forward it to the Central Government along with its recommendations before 15th December every year.

Accident Reporting

- When an accident occurs at any municipal solid wastes collection, segregation, storage, processing, treatment and disposal facility or landfill site or during the transportation of such wastes, the municipal authority shall forthwith report the accident in Form V to the Secretary in charge of the Urban Development Department in metropolitan cities, and to District Collector or Deputy Commissioner in all other cases.

Penal Provisions for the MSW Rules 2000

Any violation of the provision of the Municipal Solid Wastes (Management & Handling) Rules 2000 will attract the penal provision of the Environment (Protection) Act 1986 (29 of 1986)

According to the Rules, to comply with or contravention with any of the provisions of the Act, or rules made or the orders and directives and on the failure, or non-fulfillment of any of the provisions is punishable, which may be to the extent of 5 years imprisonment or liable to pay a fine of Rs.1.00 lakh or with the both. In case of failure of payment of the fine an additional fine @Rs.5000/- per day liable to be paid for such failure.

[Refer Municipal Solid Wastes (Management & Handling) Rules, 2000 by Ministry of Environment & Forests (MOE&F), Government of India for detail information]

Ministry of Urban Development, Government of India has identified service level performance parameters for Solid Waste Management covering household level coverage of solid waste management services, efficiency of collection of municipal solid waste, extend of segregation of municipal solid waste, extent of municipal solid waste recovered, extent of scientific disposal of municipal solid waste, extent of scientific disposal of municipal solid waste, efficiency in redressal of customer complaints, and efficiency in collection of SWM changes.

Urban Poverty Linked Solid Waste Management:

A Solid Waste Management is a complex system of various strongly interrelated activities, primary and secondary collection, transport to processing plants and waste disposal sites, recoyer- and recycling activities. The sector as a whole consists of a formal and an informal sector. Formally, the municipal body in cities is responsible for processing household, commercial and institutional waste. Formal municipal waste collection, processing and disposal, besides having financial problems, is characterised by ineffective institutional arrangements and organisational problems. Lack of long term planning leads to problems being solved on ad-hoc basis and many times efforts are duplicated. Part of the solid waste generated in urban centres is processed by large or small recycling units. Before reusable material reach such small units, they go, through many wings of the informal sector those of individuals and group of rag pickers, waste dealers, and wholesalers selling solid waste as raw material to recycling sector.

With the growth of urban population in big cities and the increase in the quantum of waste generation, solid waste management becomes more complex and requires integrated planning and managerial skills. Once method of doing so is recognising the informal sector's activities in recovery, re-use and recycling and incorporating them into a city waste management system.

This informal sector comprises several small and micro enterprises producing goods and services in recycling sector in unregulated but highly competitive markets. These enterprises are generally independent, use low levels of skills, technology and are highly labour intensive. The Report of the Committee constituted by the Hon'ble Supreme Court of India (1999) on Solid Waste Management in Class 1 ULBs in India stated that in India there is a large urban informal sector of waste pickers who earn their livelihood from waste-picking from the streets, community garbage collection bins and waste disposal sites. It is estimated that these waste pickers pick up about 5% to io% of the total waste generated in large urban centres and pass it on to the informal waste recycling sector through various levels of intermediaries. These rag pickers thus reduce the burden of municipal bodies by several million rupees a year in solid waste collection, transport and disposal costs, as well as resultant saving of landfill space in cities.

The cost of solid waste management includes : the expenditure actually incurred by the urban informal sector, for example door-to-door waste collectors, rag pickers, intermediary recycling agents and waste sellers / middlemen involved in waste recycling, recovery and reuse of materials either at the source or at the municipal disposal sites, that is the costs which are 'non-paid'. In other words, the concept of 'full-cost' has to be used so that all directly paid costs

and the indirect costs (externalities) borne by the society at large are reflected. While calculating the full cost of city solid waste management, the expenditure incurred by the informal sector other than the municipal bodies (externalities such as the efforts of various constituents of the informal sector) have also to be included in the total cost towards solid waste management. The social and environmental costs should also be included so that the municipal bodies has at its disposal the necessary finances for organizing and institutionalising these informal activities in solid waste management. Without such provisions the situation of the urban informal waste recycling sector and segment of urban poor will remain abysmally poor in our urban centres.

Aspects of the dependence of the under privileged on discarded garbage and role of all these stakeholders are so important for big cities that they deserve to be better understood than they are at present it is beyond the capacity of most municipal bodies to eliminate these informal networks in waste recycling sector should they wish to. It remains isolated from socioeconomic initiatives that are changing the urban service delivery system. Whatever the innovative alternatives that may be worked out, solid waste management must evolve a positive approach to regard informal waste recovery, reuse and recycling as an integral component of solid waste management in cities.

In this connection, guidelines are issued to the Municipal Authorities for involving the NGOs and the CBOs in solid waste management, particularly for decentralized waste processing in SWM services for dry waste recycling. The NGOs and CBOs are considered as Agency of the MC and the Municipal Councils for the purpose of the Municipal Acts. The Water Supply and Sanitation Department, Government of Maharashtra issued a policy circular dated January 2002, for the involvement of the rag pickets in city solid waste management and waste recycling.