GUIDELINES FOR VALIDATING PAS-SLB DATA

Prepared by:

Urban Management Centre

Under the Performance Assessment System Program

July 2014

URBAN MANAGEMENT CENTRE

performance assessment system

The Urban Management Centre (UMC) is a women promoted not-for-profit organization, that works towards professionalizing urban management in India and worldwide. UMC provides technical assistance and support to city governments and facilitates change through peer-to-peer learning processes. It enhances the capacity of city governments by providing expertise and ready access to innovations on good governance implemented in India and abroad. It facilitates city governments to design, implement and evaluate municipal development and management projects. UMC extensively works in the areas of urban water and sanitation, heritage management, urban planning, urban health, municipal finance, urban management, urban transportation and institutional restructuring. The Urban Management Centre evolved from being a project office of the International City/ County Management Association (ICMA). Its genesis is marked from 1997, and still continues to be an affiliate partner to ICMA. The Urban Management Centre was formally registered in 2005.More information :www.umcasia.org

PAS, a seven-year action research project, has been initiated by CEPT University with funding from the Bill and Melinda Gates Foundation. PAS aims to develop better information on water and sanitation performance at the local level to be used to improve the financial viability, quality and reliability of services. It will use performance indicators and benchmarks on water and sanitation services in all the 400-plus urban areas of Gujarat and Maharashtra. UMC and the All India Institute of Local Self Governance are CEPT's project partners in Gujarat and Maharashtra, respectively. More details are available on www.pas.org.in

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List of Acronyms

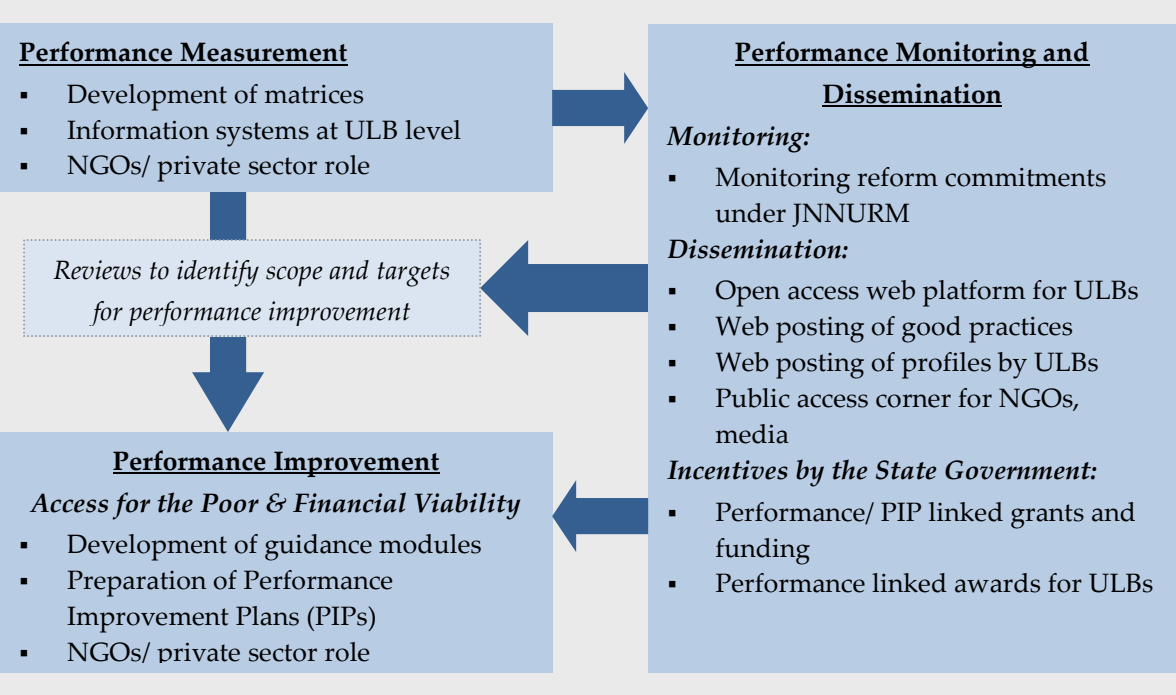
CEPT	Centre for Environmental Planning and Technology
GUDM	Gujarat Urban Development Mission
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KPIs	Key Performance Indicators
LPCD	Litres Per Capita Per Day
NGO	Non-Governmental Organisation
NRW	Non-Revenue Water
PAS	Performance Assessment System
PIPs	Performance improvement Plans
SLB	Service Level Benchmark
ULBs	Urban Local Bodies
UMC	Urban Management Centre
WDS	Water Distribution System

Contents

1.INTRODUCTION TO THE PERFORMANCE ASSESSMENT SYSTEM (PAS)

Performance Assessment System (PAS) is a seven-year action research project, being implemented by Urban Management Centre in Gujarat in partnership with CEPT University. The PAS program funded by The Bill and Melinda Gates Foundation, has three main components: Performance Measurement, Performance Monitoring and Performance Improvement.

The aim of the PAS program is to measure, monitor and improve the performance of municipal water supply and sanitation services in 400 ULBs in the states of Gujarat and Maharashtra.
The project is monitoring and assessing the performance of all 167 cities in Gujarat over the last five years. UMC is working with the ULBs on various performance improvement and information system improvement initiatives.



1.1. PAS in Gujarat

The PAS performance measurement framework has been aligned with the SLB framework. The UMC-PAS teamhasundertakenperformance measurement across all 167 urban local bodies in Gujarat for the past five consecutive years.Data for the PAS/SLB frameworkis collected in an exhaustive checklist.

At the beginning of the project in years 1 and 2, the team visited all 167 urban local bodies; spending 2-3 days in each city, helping them collate data from existing registers and logbooks. In order to perform ground validation, the teams also visited all water sanitation utilities like water sources, water treatment plants, water distribution stations (WDS), waste water treatment plants- oxidation ponds or sewerage treatment plant and solid waste dumping sites. The teams repeated the exercise for data collection by visiting each city for

year 2 and year 3 as well.The city visits for collecting data for 3 yearsmade city officials familiar with the indicator framework and the data requirements. It also ensured that the UMC team had strong baseline data and an understanding of data reliabilities across sectors.

Meanwhile, an online data entry tool was developed under the project, enabling cities to enter their own data, assess their own performance over the years and also compare themselves with other cities. The tool is hosted on PAS portalwww.pas.org.in.The website is bilingual, with information in both Gujarati and English.

Figure 2 Snapshot of PAS portal in Gujarati

Figure 1Snapshot of PAS portal in English

Subsequently data for year 3 and 4 was collected through centralized data collection camps at the state government offices. About 15 cities were scheduled for data entry in the PAS portal every day. Checklists of previous years were emailed to the citiesinGujaratiand they were askedto fill data for the current year. They were also requested to bring supporting documents for the data sets that they filled. The data was collected, validated and finalizedin three months.
For the fourth year's data collection, all 8 Municipal Corporations and 18 Class A municipalities filled the data into the PAS portal themselves from their offices, while the remaining 141 Class B,C,& D municipalities received assistance from the UMC-PAS team at GUDM, Gandhinagar.

UMC team also helped the cities set targets to be achieved in each sector for the next financial year. It was done based on the trend of current indicators and cities were explained how to set realistic targets for the next financial year. UMC developed a bilingual manual on "Guidelines for Online Data Entry" to help municipal officers fill SLB data on the PAS portal themselves. This manual was shared with all the Urban Local Bodies of Gujarat.

From year 5 onwards, the emphasis was on making ULBs capable of filling data themselves. Trainings were organised in clusters designed to cover all 167 urban local bodies.

In the coming years, it is hoped that the Gujarat State SLB Cell shall take the lead in performance measurement, including data collection and validation.

It is in this context that these guidelines have been formed so as to support the SLB cell's validationof data.

2. PAS-SLB DATA VALIDATION GUIDELINES

The PAS-SLB data validation guidelines have been formed to support the Gujarat State SLB cell, as well individual ULB SLB cells,in their efforts to ensure the authenticity of SLB data. These guidelines are a ready reference for validation or cross checking of SLB data filled by the municipal staff.
Such validation of data would also help ascertain the level of understanding among the municipal staff entering data in the online portal, and hence to help design appropriate training programs.
Such validation will also indicate areas where the current information systems need to be strengthened.
In fifth year of the project, municipal staff of all ULBs have initiated online data entry of PAS-SLB dataontothePAS portal and Urban Management Centre has cross checked the filled data. Even in previous years,whentheUMC team was collecting the data,the data was checked thoroughly for issues andtrends.

2.1 Need for validation

The current data provided by ULBs for the PAS-SLB indicator frameworks mostly falls in reliability bands "C" and "D"[1], it becomes essential to validate the data reported. It is envisaged that the SLB-PAS indicator frameworks and datasets shall be used to make key policy decisions and budgets for water and sanitation. It is important that the indicators be based on validated data sets.
The UMC team overthe five years of data collection has observed issues that range from reporting previous year's data in the current year, or only reporting financial information for nine months, or reporting irrational data.

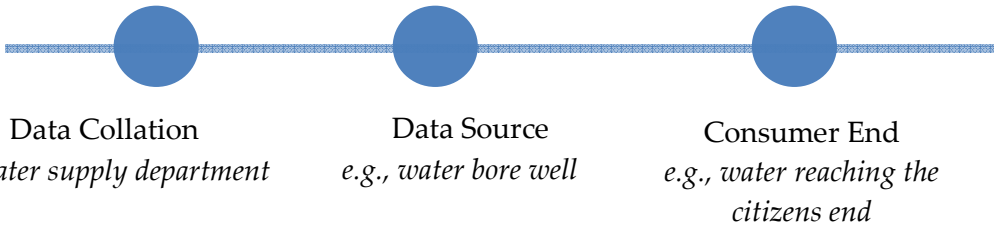
2.2 Target Audience for the Guideline

The guidelines have been written for program officers in the Gujarat State SLB Cell and ULB SLB Cells.
While, these guidelines have been written for the context of Gujarat, they can be adapted to other states of India. These guidelines are to be read in conjunction with the Guidelines on Data Entry", prepared by UMC[2].

[1]Data is mostly based on estimates and not based on any systematic data recording systems
[2]http://www.umcasia.org/UserFiles/umc/file/Revised%20English%20Manual%2020-11-2013.pdf

2.3 Methodology for the Validation

Typically, in any ULB, the data flows from the source of origin, it is collated at a certain frequency and is then recorded and used for generating the SLB-PAS indicators.
For instance, togenerate the indicator for "Per Capita Water Supply", data is generated in various formats at water procurement points (bulk water), at water treatment plants and at bore wells where ground water is sourced. Such data gets collated either daily or monthly in the water supply department. The complexity increases when there are numerous water sources.
Hence, it is important to validate, on a sample basis, the data at all locations.



Data provided by ULBs needs to be validated at multiple levels and through multiple methods. This section describes these levels and provides a sample regime for data validation.
Data can be validated as follows:

I. Through a desk review at the State SLB cell or elsewhere
II. By visiting urban local bodies (ULBs) through:
    a. physical verification of records at municipal office
    b. physical verification on the site and utilities
III. Through a technical audit (actual measurement of service delivery on ground)

The following sample size is recommended specifically for the State SLB cells. It is recommended that everymethod of validation be used every year. The sample sizes mentioned here are indicative and have been designed so as to ensure the veracity of the validation process and yet avoid making it cumbersome.

Method	Suggested Sample
Desk Review	100% ULBs
By visiting ULBs and by physical verification of records	10% ULBs, equally distributed across all class sizes
By visiting ULBs and by physical verification on the site and utilities	5% ULBs, equally distributed across all class sizes
Technical Audit of service delivery	1 ULB, from each class size

In the Gujarat context, the effective sample size across the different class sizes of municipalities is shown in the following table.

Class	Number of ULBs	Desk Review (100%)	Physical verification of records (10%)	Physical verification on site and utilities (5%)	Technical Audit (1%)
MC	8	8	1	1	1
Class A	18	18	2	1	1
Class B	33	33	3	2	1
Class C	45	45	5	2	1
Class D	63	63	6	3	1
TOTAL	**167**	**167**	**17**	**9**	**5**

The following sections detail out the process to be adopted for each of these methods.

SECTION: I

A. VALIDATION THROUGH DESK REVIEW

This section details the process for any staff of the State or ULB Cell to validate the data by checking it on the PAS portal.

Step 1: Login on the PAS portal through the SLB Cell user id and check the status of how many ULBs have filled and submitted the data.

Step 2: Go to the "ULB reports" tab, and selecttheoption of "downloadallyearsdata"to review the trend ofkey performance indicators. The website will prompt you to save aspreadsheet.

This spreadsheethasdata for all years till date and has sector-wise data, key performance indicators and reliability of each indicator for all the Urban Local Bodies of the selected state.

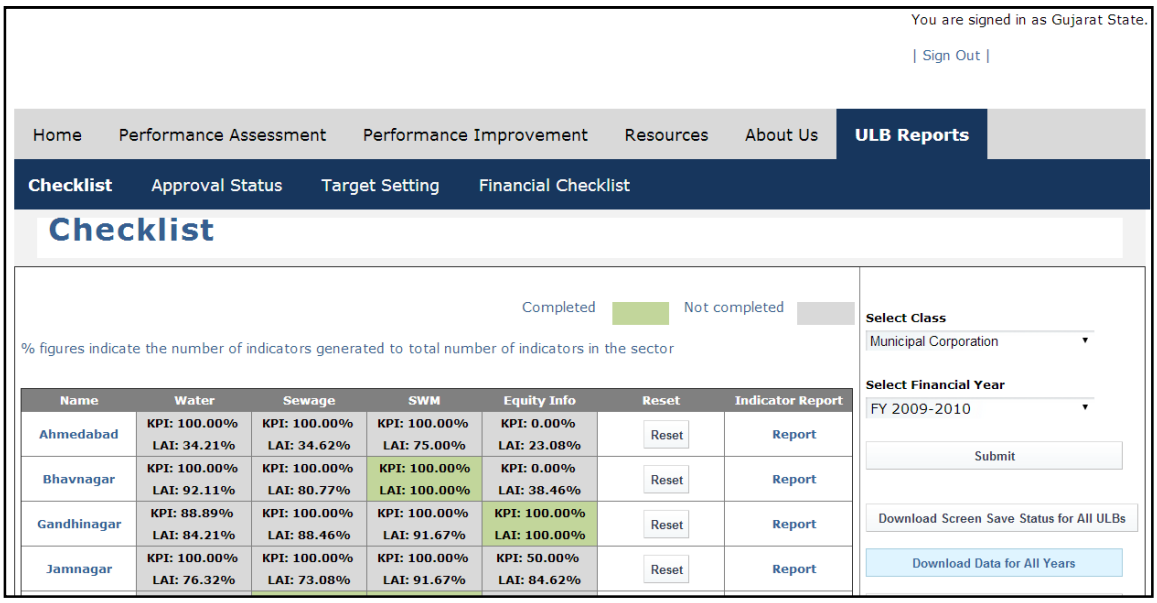


Figure 3Snapshot of the PAS portal that shows status of data filled and Key performance Indicators generated for ULBs of the state

Step 3: Identify and highlight the indicator values which seem very low and high or are beyond the range of acceptability. For example,an indicator value for "Extent of non-revenue water",

					WATER SUPPLY INDICATOR VALUES						
2	Class	City Name	Year	Submit Status (Yes/no)	Per capita available of water at	Extent of metering of wate	Extent of Non Revenue	Continuity of water supply	Efficiency in redressa	Quality of water supplied	Cost recovery in water supply
51	Class A	Anand	2009	YES	68	NA	13.33	4.50	100	100.00	58.0
52	Class A	Anand	2010	YES	75.48	NA	14.39	1.50	100.00	100.00	71.18
53	Class A	Anand	2011	YES	73.74	NA	13.50	1.50	100.00	100.00	79.68
54	Class A	Anand	2012	YES	74.02	NA	13.63	2.50	99.17	100.00	53.15
55	Class A	Anand	2013	YES	73.45	NA	13.80	2.50	95.00	95.03	53.15
56	Class A	Anand	2014	YES	66.92	NA	13.70	2.50	97.35	96.83	30.71
159	Class B	Amreli	2009	YES	68	0.00	ND	2.50	100	100.00	71.0
160	Class B	Amreli	2010	YES	115.92	NA	15.66	0.75	50.00	100.00	32.89
161	Class B	Amreli	2011	YES	120.52	NA	11.03	0.75	50.00	100.00	87.47
162	Class B	Amreli	2012	YES	115.00	NA	13.10	0.75	69.44	100.00	96.15
163	Class B	Amreli	2013	YES	119.12	NA	14.13	0.50	76.73	100.00	96.15

Figure 4Snapshot of the Spreadsheet with data and KPIs for all years

Ofless than 10%is not acceptable and hence needs to be cross checked. Typically, most of our cities have age-old water supply systems, and suffer frombilling errors making such a figure impossible and either accidentally or deliberately miss-entered. Identify such anomalies

across all four sectors and report to the concerned officials of the respective ULBs to rectify the data.

2	Class Name	City Name						
3			Coverage of water supply	Per capita available of	Extent of metering of	Extent of Non Revenue Water	Continuity of water supply	Efficiency in redressal of
31	Class B	Anjar	76.30	93.42	NA	1.11	0.37	73.45
37	Class B	Dabhoi	95.09	141.54	NA	0.68	1.50	97.74
51	Class B	Okha	57.22	34.15	NA	8.40	0.30	100.00
84	Class C	Khed Brahma	79.01	92.40	0.00	6.00	0.45	71.17
87	Class C	Lunavada	84.33	49.00	NA	2.50	0.75	100.00
116	Class D	Bhanvad	92.54	67.52	NA	5.29	0.17	67.28
124	Class D	Dakor	84.98	89.57	NA	3.85	2.00	95.24
140	Class D	Kheda	76.43	41.73	NA	1.67	3.00	100.00
160	Class D	Talod	87.10	87.94	NA	2.19	1.00	100.00
161	Class D	Tarsadi	82.27	50.91	NA	0.73	1.50	90.00
171								

Figure 5sample spreadsheet showing cities that seem to have very low NRW

Step 4: Cross check the data filled by ULBs with various infrastructure improvements supported under various Central and State Government schemes. For example, if new water treatment plants have been commissioned in the year under a scheme, the SLB-PAS data for the specific city should reflect the same.

Step 5: the detailed set of guidelines for each data set is in Section II

B. VALIDATION BY VISITING URBAN LOCAL BODIES

This section details the process for any staff of the State or ULB SLB cell validating the data by visiting the cities and verifying the records in the ULB offices or by visiting the water-sanitation utilities.
Typically, a one or two day visit to each city will be required tovalidate the data provided by the ULB and to make the appropriate changes in the portal.

B.1. Verification of Records in the ULB offices

Step1: Carry a printed copy of the filled SLB-PAS checklist

Step2: Identify the key data elements that need to be verified on the ground (detailed guidelines are presented in Section II)

Step3: Meet with relevant officials and understand their data collection system, and collect the documentary evidence/reports in the form of computerised or manual registers and document the methods of estimation. Check all data elements that are required to generate Key Performance Indicators (KPIs)

B.2. Verification of data on site and Utilities

In the absence of records at ULB offices, a few data elements can be cross checked or verified by visiting the site where the data originates. For example, verifying the ground water withdrawal by the ULB by visiting the ULB's borewell pumping station. In addition to the steps mentioned above, take the following steps:

Step1: Visit the site to confirm data. For example, validate capacity of the water treatment plant, water distribution stations, sewerage treatment plant, solid waste treatment plant etc.

Step2: Check the data maintained in log books, registers at site

C. VALIDATION AT CONSUMER END

For many of the indicators, data is simply not available with ULBs. For instance, data pertaining to solid waste generated in cities or water reaching the consumers end is usually based on estimates. It is important to validate such data points.
An external agency or consultant could also be hiredforsuchvalidation.Certain critical aspects where audits could be conducted are:

- Quantity of water produced or purchased
- Water supply at consumers' end
- Amount of Waste water treated
- Solid waste generation etc.

SECTION – II DATA VALIDATION RULES

A. General Information

In this section, there are three major data elements that need tobe checked and verified.

- Population for the present year (cell 1.3)
- Households for the present year (cell 1.5)
- Total properties and Commercial properties (cells 1.13 and 1.20)

S.No	Description of data elements	Unit	Data Source (*Verify the data from the respective sources-in order of preference)*	Data validation rules	Data validation level
1.0	**Demography**				
1.3	Population (Present Year)	Persons	Estimated based on Census 2001 and 2011 figures	Check whether the population growth is based on growth rate from 2001 to 2011. You can refer to the projection sheet provided by UMC. If it is very close to projected figure then accept it.	*State SLB cell*
1.5	Number of Households (Present Year)	Number	Estimated based on Census 2001 and 2011 figure	Households for the present year can be derived from present year population divided by family size of previous year	*State SLB cell*
1.9	Number of Slums (Present Year)	Number	▪ Census 2011 ▪ BPL survey ▪ Record maintained by ULB	Check slum data with that of Census 2011 or based on recent surveys undertaken by the ULB under RAY, MGY, USHA, Mission Manglam etc.	*ULB office*
1.11	Number of Slum Households (Present Year)	Number	▪ Census 2011 ▪ BPL survey ▪ Record maintained by ULB	If slum settlement number is differentto previous years, then the number of households will also be different. If the number of slum settlements remains the same, then the number of households will be more or same, but not less than the previous year	*ULB office*
1.13	Number of Properties (Present Year)	Number	▪ Property Tax Software ▪ Property	Verify that vacant plots in the city have not been included under the total	*ULB office*

S.No	Description of data elements	Unit	Data Source (*Verify the data from the respective sources-in order of preference)*	Data validation rules	Data validation level
			Connection Register	number of properties. Check if the number of properties is less than previous years	
1.20	Number of Commercial and other establishments (offices, institutions, markets, Hotels and Restaurants)(Present Year)	Number	▪ Property Tax Software ▪ Property Connection Register	Check if number of properties is less than previous years	*ULB office*

B. Water supply

In this section, thefollowing major data elements should be checked:

- Number of Residential connections (cell 1.3)
- Number of Non Residential connections (cell 4.3)
- Quantity of water produced (cells 2.1 to 2.5)
- Quantity of water billed (cells 2.6 and 2.9)
- Operating expenses (cells 8.1 to 8.7)
- Operating revenues (cells 8.8 to 8.11 and 9.2 to 9.3)

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
1.3	Domestic Connections (Unmetered)	Number	▪ Property Tax Software ▪ Water Connection Register	Check against figures for last year. Generally, the number should be more than previous years except if the ULB has cutconnections in the reporting year. For validation, ask for a report generated from the property tax software or manual register format	ULB office
1.13	Households served by Domestic connections	Number	▪ Property Tax Software ▪ Water Connection Register	In most municipalities, the number of domestic connections and the number of households served are the same. Only a few Corporations and Class A municipalities may have more than one household being served by one connection.	ULB office
2.0	**Per capita supply of water**				
2.1	Installed capacity of Treatment Plants for surface water source	MLD	▪ Record maintained by the ULB, ▪ Displayed onsite (WTP) ▪ Detail Project Report (DPR), ▪ City Developmen t Plan (CDP) orother reports available	This will increase only in case a new WTP has been commissioned or an existing WTP has been expanded	ULB office / On site

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
2.2	Volume of water produced through Surface Water Sources	MLD	▪ Bulk flow meter at intake point of source ▪ Manual record of pumping hours maintained by ULB	It is applicable only to ULBs who have their own surface water sources within their jurisdiction. If surface water is purchased by the ULB from the Irrigation Department or other departments, then it should be mentionedunder other sources.	ULB office / On site
2.4	Volume of water produced through Ground water (power pumps)	MLD	▪ Manual record of pumping hours maintained by ULB ▪ Bulk flow meters	This quantity would increase only if a new bore has been sourced or if pumping hours have increased. Quantity could reduce if quantity of water produced through surface water sources (2.2) has increased	ULB office record /On site
2.5	Volume of water produced through any other Sources	MLD	▪ Bulk flow meter at intake point of source ▪ Bulk water purchase bill ▪ Manual record of water purchased	Quantum of water would increase only if "water quantity" has been increased.	ULB office / On site
	Water consumption details				
2.6	Volume of water billed from Domestic Connections	MLD	Manual record of water supplied maintained by ULB	The increase in volume of water billed will be proportional to the increase in number of connections	ULB office Audit (Actual measurement)
2.9	Volume of water billed from Non domestic Connections	MLD			
2.12	Total Volume of water unbilled (free supplies to Public taps)	MLD		Check the number of public taps reported, if the number of connections has decreased from the previous year, proportionally the volume of water should also decrease	
2.13	Total Volume of water unbilled	MLD		Check the number of free connections reported, If the	

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
	(free connections e.g. Religious institutions etc)			number of connections decreased from the previous year, proportionally the volume of water is also decrease	
4.0	**Extent of metering of water supply connection**				
4.3	Non Domestic connections (Unmetered)	Number	▪ Property Tax Software ▪ Water Connection Register	Check against figures for last year. Generally, the number should be more than previous years except if the ULB has closed connections in the reporting year. For validation, ask for report from property tax software or manual register format	ULB office
4.6	Public taps (Unmetered)	Number	▪ Property Tax Software ▪ Water Connection Register	Check against figures for last year. Generally, the number should be same as that of the previous year, except if the ULB has closed connections in the reporting year.	ULB office
6.0	**Efficiency of redressal of complaints**				
6.1	Complaints received during the year	Number	▪ Computerized records ▪ Manual records	Verify with the record maintained by ULB. In absence of records, ask ULB the basis of estimates	ULB office
6.2	Complaints resolved within 24 hours during the year	Number			
7.0	**Quality of water supplied**				
7.1	**Residual Chlorine** - No. of Samples taken at the source/ outlet of Water Treatment Plant (in a year)	Number	▪ Computerized record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of sources and per day samples taken at each source)	ULB office / Onsite
7.2	**Residual Chlorine** - No. of Samples taken at intermediate points (in a year)	Number	▪ Computerized record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of WDS and per day samples taken at each WDS)	

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
7.3	**Residual Chlorine** - No. of Samples taken at consumer end (in a year)	Number	▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of samples taken per day at consumer end)	
7.4	Total Samples taken for Residual Chlorine tests (if location wise samples are not available)	Number		Total of all above samples. This is kept blank, if location wise samples are available and filled	ULB office / Onsite
7.5	Number of Samples Passed	Number	▪ Computerised record ▪ Manual record	Check the figure, should not be more than the total number of samples taken	
7.6	**Physical/Chemical** - No. of Samples taken at the source/outlet of Water Treatment Plant (in a year)	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of sources and per day samples taken at each source)	
7.7	**Physical/Chemical** - No. of Samples taken at intermediate points (in a year)	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of WDS and per day samples taken at each WDS)	
7.8	**Physical/Chemical** - No. of Samples taken at consumer end (in a year)	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of samples taken per day at consumer end)	
7.9	Total Samples taken for Physical/Chemical tests (if location wise samples are not available)	Number		Total of all above samples. This is kept blank, if location wise samples are available and filled	
7.10	Number of	Number	▪ Accredited	Check the figure, should not	

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
	Samples Passed		Lab report ▪ Computerized record ▪ Manual record	be more than the total number of samples taken	
7.11	**Bacteriological** - No. of Samples taken at the source/outlet of Water Treatment Plant (in a year)	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of sources and per day samples taken at each source)	
7.12	**Bacteriological** - No. of Samples taken at intermediate points (in a year)	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of WDS and per day samples taken at each WDS)	ULB office / Onsite
7.13	**Bacteriological** - No. of Samples taken at consumer end (in a year)	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check records of ULB maintained. If records, are not maintained at ULB, ask for basis of estimation of samples taken (Number of samples taken per day at consumer end)	
7.14	Total Samples taken for Bacteriological tests (<u>if location wise samples are not available</u>)	Number		Total of all above samples. This is kept blank, if location wise samples are available and filled	
7.15	Number of samples passed	Number	▪ Accredited Lab report ▪ Computerised record ▪ Manual record	Check the figure, should not be more than the total number of samples taken	
8.0	**Cost recovery in water supply services**				
	Financial Information - Operating Expenses(1st April to 31st March)				
8.1 to 8.7	▪ Regular Staff and administration ▪ Outsourced/Contract Staff Costs	Rs. Lakhs	▪ Budget document ▪ Annual accounts ▪ Finance register/	Verify the figures from budget document maintained by ULB. The figure should not be same as previous year; either increase or decrease	ULB office

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
	▪ Electricity Charges/Fuel Costs ▪ Chemical Costs ▪ Repairs/Maintenance Costs ▪ Bulk (Raw/Treated) Water Charges ▪ Other Costs		*patrak* ▪ Bulk water purchase bill	If value is taken from budget document, it should be converted from Rs. Thousand to Lakh If value is taken from finance patrak, then It should be converted from Rupees to Lakh	
	Financial Information - Operating Revenues				
8.8 to 8.11	▪ Arrears at the beginning of the year ▪ Revenue demand from user charges ▪ Revenue demand from tax/cess - Water Service only ▪ Revenue demand from other revenues (eg. connection costs/Donations etc.)	Rs. Lakhs	▪ DCB tables (Demand, Collection and Balance Statement) from Property tax software. ▪ Finance register/ *patrak*	Verify the figures from budget document maintained by ULB. The figure should not be same as previous year; either increase or decrease If figure is taken from DCB table, the it should be converted from Rs. Thousand to Lakh If figure is taken from finance *patrak*, then it should be converted from Rupees to Lakh	ULB office
9.0	**Collection efficiency of water supply related charges**				
9.2 to 9.3	▪ Collection against arrears ▪ Collection against the current demand of the year	Rs. Lakhs	▪ DCB tables (Demand, Collection and Balance Statement) from Property tax software. ▪ Finance register/ *patrak*	Verify the figures from budget document maintained by ULB. The figure should not be same as previous year; either increase or decrease If figure is taken from DCB table, it should be converted from Rs. Thousand to Lakh If figure is taken from finance *patrak*, then it should be converted from Rupees to Lakh	ULB office

C. Sewerage and Drainage

In this section, following are the major data elements that should be checked. These are as mentioned below:

- Number of properties with toilet (cell 1.2)
- Number of properties with sewer connections (cell 2.2)
- Operating expenses (cells 8.1 to 8.7)
- Operating revenues (cells 8.8 to 8.11 and 9.2 to 9.3)

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (Order in preference)*	Data validation rules	Data validation level
1.0	**Sanitation Coverage -**				
1.2	Properties with toilets	Number	Estimated	Verify that vacant plots in the city have not been included in the total number of properties with toilet Verify, the number should not be less than the previous year	ULB office
1.3	Households dependent on functional community toilet	Number	▪ Manual register maintained by ULB ▪ Estimated based on number of functional seats of community toilet	Verify with records of functional toilet seats maintained by ULB. Number will reduce, either due to increase in number of individual toilets or demolition of functional community toilet seats due to lack of maintenance	ULB office
2.0	**Coverage of sewerage network**				
2.2	Properties with sewer connections	Number	▪ Property Tax Software ▪ Sewer Connection Register	Check with the records maintained by ULB. It should not be less than the previous year. If the ULB does not have sewerage system, then it is "NA" means not applicable.	ULB office
2.3	Properties with onsite sanitary disposal	Number		Check whether ULB has sewerage network or not. If not then the number of properties with toilet will be equal to the number of properties with onsite sanitary disposal.	ULB office

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (Order in preference)*	Data validation rules	Data validation level
				Verify, If the number of sewer connections increase, then the number of onsite sanitary disposal will decrease.	
3.0	**Collection efficiency of sewage network**				
3.18	Volume of sewage actually treated at the Primary Treatment Plant	MLD	▪ Log records	This is applicable only in ULBs where sewerage network exists Check with log records maintained by ULB. If records are not maintained, ask ULB for the basis of estimation	Onsite / Audit (actual measurement)
3.19	Volume of sewage actually treated at Secondary Treatment Plant	MLD	▪ Bulk flow meter at inlet of STP ▪ Log records	This is applicable only with ULBs which have a secondary treatment plant. Check with log records, or bulk flow meter, the quantity of waste water received at the inlet point of secondary treatment plant.	Onsite / Audit (actual measurement)
4.0	**Adequacy of sewerage treatment capacity**				
4.1	Installed capacity of Primary Treatment Plant	MLD	▪ Record maintained by ULB ▪ Onsite display (PTP) ▪ Detail Project Report (DPR) ▪ City Development Plan (CDP) and other relevant reports available in ULB	It remain the same as previous years, it will increase only if a new treatment plant has been constructed or any expansion of existing Primary Treatment Plant or oxidation pond has been performed.	ULB office / Onsite
4.2	Installed capacity of Secondary Treatment Plant	MLD	▪ Record maintained by ULB ▪ Onsite	It remain same as previous year, it increase only in case new STP constructed or any expansion of existing STP	ULB office / Onsite

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (Order in preference)*	Data validation rules	Data validation level
			display (STP) ▪ Detail Project Report (DPR) ▪ City Development Plan (CDP) and other relevant reports available in ULB		
5.0Extent of Reuse and Recycling of Sewage					
5.1	Volume of sewage actually treated at Secondary Treatment Plant	MLD	▪ Bulk flow meter at inlet of STP ▪ Log records	This is applicable only with ULBs having secondary treatment plant Check with log records or bulk flow meter, the quantity of waste water received at the inlet point of secondary treatment plant.	ULB office / Onsite
5.2	Volume of treated waste water reused after Secondary treatment	MLD	▪ Flow meter at outlet of STP ▪ Log records	This is applicable only to ULBs having STP. Check with log records maintained at STP	ULB office / Onsite
6.0Quality of sewage treatment					
6.1	Number of treated effluent samples tested in a year	Number	▪ Accredited Lab reports ▪ Record maintained by ULB	This is applicable only to ULBs having functional treatment plant. Verify with records maintained by ULB. Number of effluent samples taken at sewage outfalls on daily/monthly basis, which have to be consolidated on a yearly basis.	ULB office
6.2	Number of treated effluent samples passed in a year	Number	▪ Accredited Lab reports ▪ Record maintained by ULB	Verify with Lab reports maintained by ULB. Number of effluents samples that have passed tests in a year	ULB office
7.0	**Efficiency in redressal of customer complaints**				

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (Order in preference)*	Data validation rules	Data validation level
7.1	Sewage related complaints received during the year	Number	▪ Computerised record ▪ Manual record / register	Verify with record maintained by ULB. In absence of records, ask ULB the basis of estimates	ULB office
7.2	Sewage related complaints resolved within 24 hours during the year	Number	▪ Computerised record ▪ Manual record / register	Verify with record maintained by ULB. In absence of records, ask ULB the basis of estimates	ULB office
8.0Extent of cost recovery in sewage management					
	Annual operating expenses			Generally, ULBs consider sewerage and solid waste together as "Conservancy". Cross check with data source and extract sewerage related expenses separately	
8.1 To 8.7	▪ Outsourced/contract staff costs ▪ Electricity charges /Fuel costs ▪ Chemical costs ▪ Repair/maintenance costs ▪ Contractor cost for O&M ▪ Others (specify)	Rs. Lakhs	▪ Budget document ▪ Annual accounts ▪ Finance register/ patrak	Verify the figures from budget document maintained by ULB. The figure should not be same as previous year; either increase or decrease If value is taken from a budget document, it should be converted from Rs. Thousand to Lakh If value is taken from finance patrak, then It should be converted from Rupees to Lakh	ULB office
	Annual operating revenues				
8.8 To 8.11	▪ Arrears at the beginning of the year ▪ Revenue demand from user charges-sewerage only ▪ Revenue demand from tax/cess-sewerage only ▪ Revenue	Rs. Lakhs	▪ DCB tables (Demand, Collection and Balance Statement) from Property tax software. ▪ Finance register/patrak	Verify the figures from DCB statement maintained by ULB. The value should not be same as previous year; either increase or decrease If figure is taken from DCB table, the value should be converted from Rs. Thousand to Lakh If figure is taken from finance patrak, then the value should be converted	ULB office

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (Order in preference)*	Data validation rules	Data validation level
	demand from other sources (e.g, connection costs/ donations etc)			from Rupees to Lakh	
9.0	**Efficiency in connection of sewage charges**				
9.2 To 9.3	▪ Collection against arrears ▪ Collection against current demand	Rs. Lakhs	▪ DCB tables (Demand, Collection and Balance Statement) from Property tax software. ▪ Finance register/patrak	Verify the figures from DCB statement maintained by ULB. The value should not be the same as previous years; either increase or decrease If figure is taken from DCB table, the value should be converted from Rs. Thousand to Lakh If figure is taken from finance patrak, then the value should be converted from Rupees to Lakh	ULB office
10.0	**Storm water drainage**				
	Coverage of storm water drainage				
10.1	Total length of road network	Kilometer	▪ Record maintained by ULB; Town planning / Civil dept(Bandhkaamshakha)	Check with record maintained by ULB. The value either remain same as previous year or increased, if new roads laid in the reporting period	ULB office
10.2	Total length of pucca covered drains	Kilometer	▪ Record maintained by ULB; Town planning / Civil dept (Bandhkaamshakha)	Check with record maintained by ULB. The value either remains same as previous year or increased, if new roads laid in the reporting period	ULB office
	Incidence of water logging/flooding				
10.3	Number of flood prone points in the city	Number	▪ Record maintained by ULB;	Check with record maintained by ULB regarding number of flood	ULB office

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (Order in preference)*	Data validation rules	Data validation level
			Town planning / Civil dept(Bandhkaamshakha)	prone areas in the ULB where water stagnated for more than four hours and at a depth of more than six inches. If records are not maintained, ask for the basis of estimation or assumption	
10.4	Average frequency of flooding	Number	▪ Record maintained by ULB; Town planning / Civil dept (Bandhkaamshakha)	Check with record maintained by ULB regarding number of times (frequency) of occurrence of flooding in the ULB. This is dependent upon number of rainy days in a year If records are not maintained, ask for the basis of estimation or assumption	ULB office

D. Solid Waste Management

In this section, following are the major data elements that should be checked. These are as mentioned below:

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (In order of preference)*	Data validation rules	Data validation level
1.0	**Household level coverage of SWM services -**				
1.1	Number of Households covered	Number	▪ Manual register maintained by ULB ▪ Bill raised by outsourced/contract agency ▪ Work order of engaged agency	Verify the records maintained by ULB. If records are not maintained, then ask for the basis of estimates. However, the number should not be less than the previous year, unless, the service had been withdrawn from some areas / pockets	ULB office
1.2	Number of Hotels and Restaurants covered	Number	▪ Manual register maintained by ULB ▪ Bill raised by outsourced/contract agency ▪ Work order of engaged agency	Same as above	ULB office
1.3	Number of commercial establishments covered	Number	▪ Manual register maintained by ULB ▪ Bill raised by out sourced/contract agency ▪ Work order of engaged agency	Same as above	ULB office
1.4	Number of any other establishment	Number	▪ Manual register	Same as above	ULB office

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (In order of preference)*	Data validation rules	Data validation level
			maintained by ULB ▪ Bill raised by out sourced/contract agency ▪ Work order of engaged agency		
1.5	Total number of establishment covered	Number		This is applicable only if the break-up of commercial establishment such as market, institutions, offices, etc covered is not available. The number of household covered should not be included in this cell. Otherwise that number will be counted twice.	ULB office
2.0	**Efficiency of collection of municipal solid waste**				
2.1	Waste generated by households	MT/Month	▪ Standard norms of Per Capita Generation ▪ Based on no. of trips	Generally ULBs , except a few municipal corporations do not have type wise break up of waste generation Verify the figures with records maintained by ULB. If records are not maintained, ask for the basis of estimation. The quantity should not be less than the previous year, if the number of households increased.	ULB office / Audit (actual measurement)
2.2	Waste generated by street sweeping	MT/Month	▪ Based on no. of trips	Verify the figures with records maintained by ULB. If records are not maintained, ask for the basis of estimation.	ULB office / Audit (actual measurement)
2.3	Waste generated by hotels and restaurants	MT/Month	▪ Based on no. of trips	Same as above	ULB office / Audit (actual measurement)

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (In order of preference)*	Data validation rules	Data validation level
2.4	Waste generated by markets (vegetable market, mandi, etc).	MT/Month	▪ Based on no. of trips	Same as above	ULB office / Audit (actual measurement)
2.5	Waste generated by commercial establishments	MT/Month	▪ Based on no. of trips	Same as above	ULB office / Audit (actual measurement)
2.6	Waste generated by other sources (construction debris)	MT/Month	▪ Based on no. of trips	Same as above	ULB office / Audit (actual measurement)
2.7	Total waste generated (if, type wise generation is not available)	MT/Month	▪ Standard norms of Per Capita Generation ▪ Based on no. of trips	Generally ULBs , except few municipal corporations do not have type wise break up of waste generation The total quantity should not be less than the previous year.	
	Waste collection and transportation				
2.8	Quantity of waste received at processing and recycling facilities	MT/Month	▪ Based on no. of trips		Onsite / Audit (actual measurement)
2.9	Quantity of waste received at disposal site	MT/Month	▪ Based on no. of trips		Onsite / Audit (actual measurement)
3.0	**Extent of segregation of municipal solid waste**				
3.1	Quantity of waste arriving at processing/disposal facility in segregated manner	MT/Month	▪ Based on no. of trips		Onsite / Audit (actual measurement)
3.2	Quantity of waste taken away by recycler from intermediate points	MT/Month	▪ Based on no. of trips		Onsite / Audit (actual measurement)
4.0	**Extent of municipal solid waste recovered**				
4.1	Installed capacity of treatment plant(s)	MT/Month	▪		ULB office / Onsite / Audit (actual measurement)
4.2	Waste quantity input at plant(s)	MT/Month	▪ Based on no. of trips		

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (In order of preference)*	Data validation rules	Data validation level
4.11	Quantity of waste rejected by processing facilities at intake point	MT/ Month	▪		Onsite / Audit (actual measurement)
4.12	Quantity of post processing rejects sent to dumpsite/landfills	MT/ Month	▪ Based on no. of trips		Onsite / Audit (actual measurement)
5.0	**Extent of scientific disposal of municipal solid waste**				
5.1	Quantity of waste disposed in compliant landfill sites	MT/ Month	▪ Based on no. of trips		ULB office / Audit (actual measurement)
5.2	Quantity of waste disposed in open dumpsites	MT/ Month	▪ Based on no. of trips		ULB office / Audit (actual measurement)
6.0	**Efficiency in redressal of customer complaints**				
6.1	Complaints received during the year	Number	▪ Computerised record ▪ Manual record	Verify with the record maintained by ULB. In absence of records, ask ULB the basis of estimates	ULB office
6.2	Complaints resolved within 24 hours during the year	Number	▪ Computerised record ▪ Manual record	Verify with the record maintained by ULB. In absence of records, ask ULB the basis of estimates	ULB office
7.0	**Extent of cost recovery in SWM services**				
	Annual operating expenses			Generally, ULBs consider sewerage and solid waste together as "Conservancy". Cross check with data source and extract solid waste related expenses separately	
7.1 to 7.7	• Regular staff and Administration • Outsources/contracted staff costs • Electricity charges/Fuel costs • Chemical costs • Repair/Maintenance costs • Contracted services costs • Other costs	Rs. In Lakh	▪ Budget document ▪ Annual accounts ▪ Finance register/patrak	Verify the figures from budget document maintained by ULB. The figure should not be same as previous year; either increase or decrease If value is taken from budget document, it should be converted from Rs. Thousand to Lakh If value is taken from finance patrak, then It should be converted from	ULB office

S.No	Description of data elements	Unit	Data Source *Verify the data from the respective sources (In order of preference)*	Data validation rules	Data validation level
	(specify)			Rupees to Lakh	
	Annual operating revenues				
7.8 to 7.15	• Arrears at the beginning of the year • Tax /Cess- solid waste only • User charges • Fixed charges based on property tax / state taxes/ Cess / Surcharges • Sale of Recyclables • Sale from processing – compost / energy • Royalty • Others (specify)	Rs. In Lakh	▪ DCB tables (Demand, Collection and Balance Statement) from Property tax software. ▪ Finance register/patrak	Verify the figures from DCB statement maintained by ULB. The value should not be same as previous year; either increase or decrease If figure is taken from DCB table, the value should be converted from Rs. Thousand to Lakh If figure is taken from finance patrak, then the value should be converted from Rupees to Lakh	ULBoffice
8.0	**Efficiency in collection of SWM charges**				
8.1 to 8.2	• Collection against arrears • Collection against current demand	Rs. In Lakh	▪ DCB tables (Demand, Collection and Balance Statement) from Property tax software. ▪ Finance register/patrak	Verify the figures from DCB statement maintained by ULB. The value should not be same as previous year; either increase or decrease If figure is taken from DCB table, the value should be converted from Rs. Thousand to Lakh If figure is taken from finance patrak, then the value should be converted from Rupees to Lakh	ULB office

E. Equity Related Information

In this section, following are the major data elements that should be checked. These are as mentioned below:

- Number of individual water connections in slum (cell 1.21)
- Number of individual toilets in slum (cell 1.26)
- Number of sewerage connection in slums (cell 1.31)
- Number of slum households served by door to door collection of MSW (1.33)

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
1.0	**General details**		**Verify the data from the respective sources (In order of preference)**		
Slum population					
1.2	Population in slums	Number	▪ Census 2011 ▪ BPL/RAY survey ▪ Manual record maintained by ULB ▪ UMC survey	Verify the figure with record maintained by ULB. If record is not maintained, ask for the basis of estimation of population. Check, if slum settlement number is less or more than previous year, then the population will be less or more. If the number of slum settlements remain the same from previous year then the population will be more or same, but not less unless slum resettlement scheme has made alternative accommodations available. Check is families have benefited form slum resettlement schemes.	ULB office
Services in slums at city level					
1.20	Number of settlements which have an internal water supply network	Number	▪ Manual register /record maintained by ULB	Check with the record maintained at ULB	ULB office
1.21	Number of individual water connections in slum	Number	▪ Property Tax Software ▪ Water Connection Register	Check against figures for last year. Generally, the number should be more than previous years except if the total number of households in slums reported less in present year. It is also possible if ULB has closed connections in the reporting year.	ULB office/ Onsite / Audit (actual measurement)

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
				For validation, ask for report from property tax software or manual register.	
1.22	Number of new connections given in slums in the current year	Number	▪ Manual register /record maintained by ULB	Verify with the report from property tax software or manual register.	ULB office/ Onsite / Audit (actual measurement)
1.24	Number of functional stand posts in slums	Number	▪ Manual register /record maintained by ULB	Check with the record maintained by ULB	ULB office
1.26	Number of individual toilets in slums	Number	▪ Manual register /record maintained by ULB	Check against figures for last year. Generally, the number should be more than previous years except if the total number of households in slums reported less in present year.	ULB office/ Onsite / Audit(actual measurement)
1.27	Number of individual toilets constructed in slums in current year	Number	▪ Manual register /record maintained by ULB	Verify with the progress report from sanitation department or manual register maintained by ULB	ULB office/ Onsite / Audit (actual measurement)
1.28	Number of seats in pay-n-use toilets (functional toilets) in slums	Number	▪ Manual register /record maintained by ULB	Check with the record maintained by ULB	ULB office/ Onsite / Audit (actual measurement)
1.29	Number of seats in community toilet (functional toilets) in slums	Number	▪ Manual register /record maintained by ULB	Check with the record maintained by ULB	ULB office/ Onsite / Audit (actual measurement)
1.30	Number of settlements which have an internal underground sewerage network	Number	▪ Manual register /record maintained by ULB	Check with the record maintained by ULB	ULB office/ Onsite / Audit (actual measurement

S.No	Description of data elements	Unit	Data Source	Data validation rules	Data validation level
1.31	Number of sewerage connections in slums	Number	▪ Manual register /record maintained by ULB	Verify with the report from property tax software or manual register.	ULB office/ Onsite / Audit (actual measurement)
1.32	Number of community and pay-n-use toilets without access to safe disposal systems	Number	▪ Manual register /record maintained by ULB	Check with the record maintained by ULB	ULB office/ Onsite / Audit (actual measurement)
1.33	Number of slum households served by door to door collection of Municipal solid Waste (MSW)	Number	▪ Manual register maintained by ULB ▪ Bill raised by out sourced/contract agency ▪ Work order of engaged agency	Verify the records maintained by ULB. If records are not maintained, then ask for the basis of estimates. However, the number should not be less than the previous year, only in case, if the service with drawl from some settlements / pockets	ULB office/ Onsite / Audit (actual measurement)

Annexure-I
Reliability of SLB /PAS data

Following are the data/information obtained from ULBs in SLB / PAS checklist with backup support/evidence (fully reliable).

General Information:

- Population for year 2001/2011 from census.
- Number of Household for year 2001/2011,as per census.
- Number of election wards for year 2001/20011 and present years
- Town/City area (2001) as per census
- Data pertaining to the number of properties (residential and non residential) are available through property tax software.

Water Supply:

- Number of connections and number of households served are available through property tax software.
- Days and hours of supply.
- Number and Capacity of WTP/ESRs and sumps
- Quantity of water produced
- Charges for new water connection and water tariff/taxes
- Quantity of water purchased (Raw/ treated) based on water bill issued by respective agency

Waste Water:

- Properties/Households with sewerage connection
- Installed capacity of Secondary Treatment Plant (STP)
- Volume of waste water treated
- Number of pumping stations
- Charges for new sewerage connection and tariff/taxes
- Length of road network

Solid Waste:

- Quantity of waste generated
- Installed capacity of treatment plants
- Quantity of waste disposed in complaint landfill site (wherever, it is applicable).
- User charges/ Sanitation tax (*Safaivero*)

Equity Related Information:

Data pertaining to slum are not available with ULBs,

Finance related data of all the three sectors:

- Information pertaining to operating expenses and revenue (Cost recovery and collection efficiency), as per budget (Classified) documents, Cash base accounting system and Demand Collection & Balance (DCB) table, generated through property tax software.
- Information pertaining to Capital income and expenditure ,as per budget (Classified) documents, Cash base accounting system and Demand Collection & Balance (DCB) table.
- Information pertaining to dues on electricity outstanding bills and penalties, as per GEB statement.
- Information pertaining to dues on bulk water purchased outstanding bills and penalties, as per bill raised by GWIL/GWSSB

Rest all the data are either estimated based on some assumptions or asadvised by municipal staff based on their experiences.

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