



Data systems strengthening for improving municipal WASH services

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Guide- Dhruv Bhavsar, Jay Shah

Municipal data record keeping system...



Paper based data recording practices in Bareja....



Lack of on site data recording systems



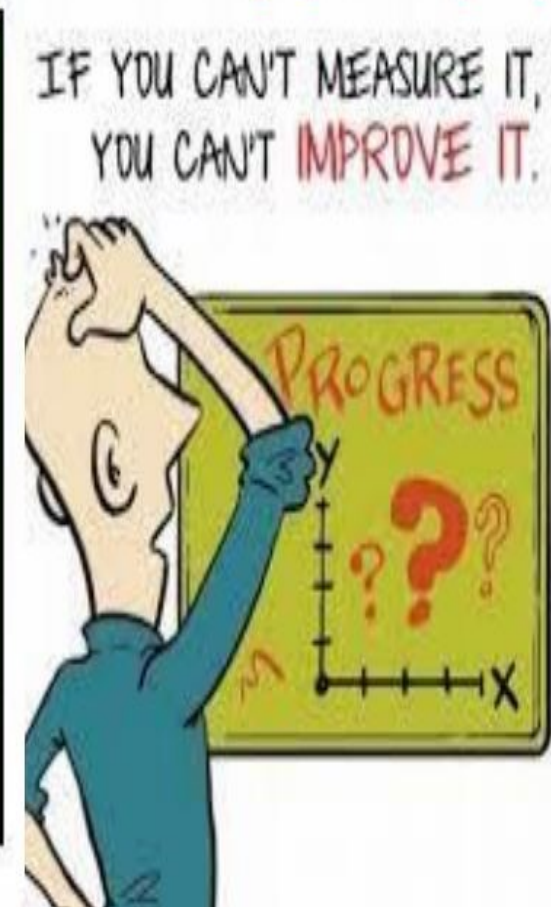
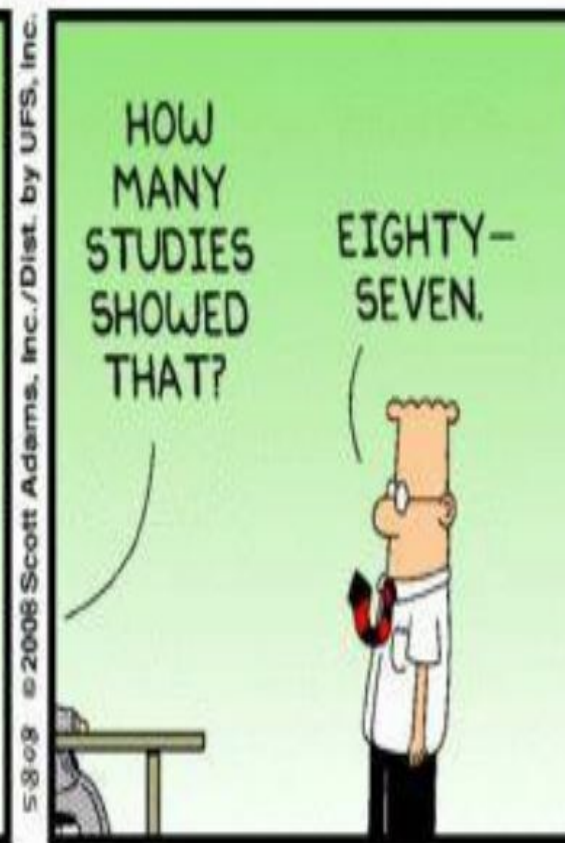
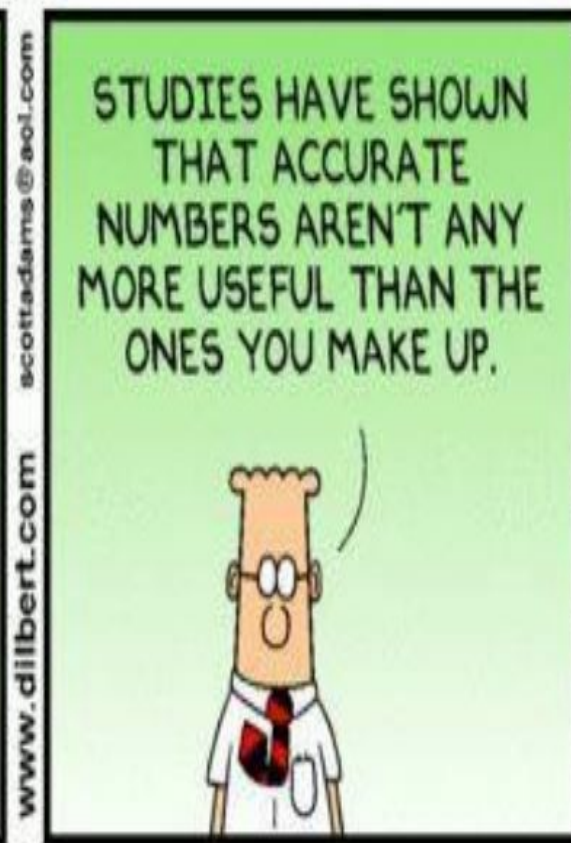
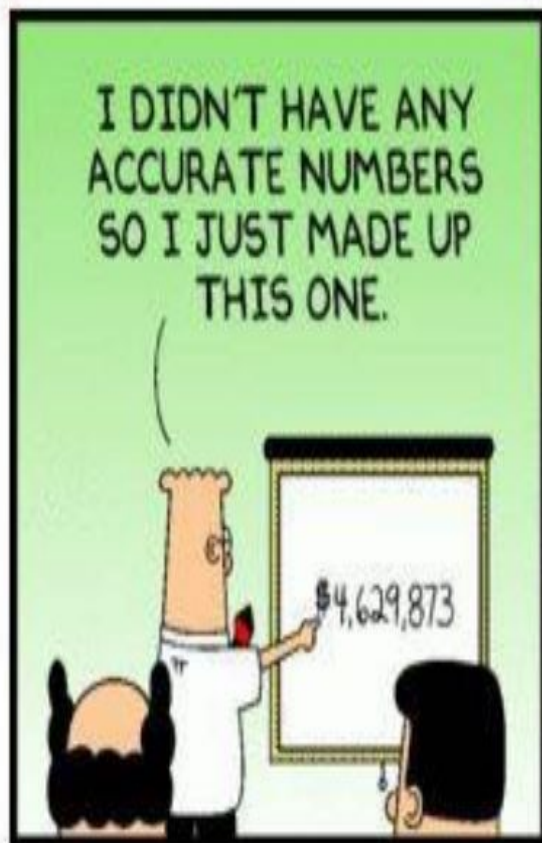
Fragmentation of data in digital and manual records.. Sanand



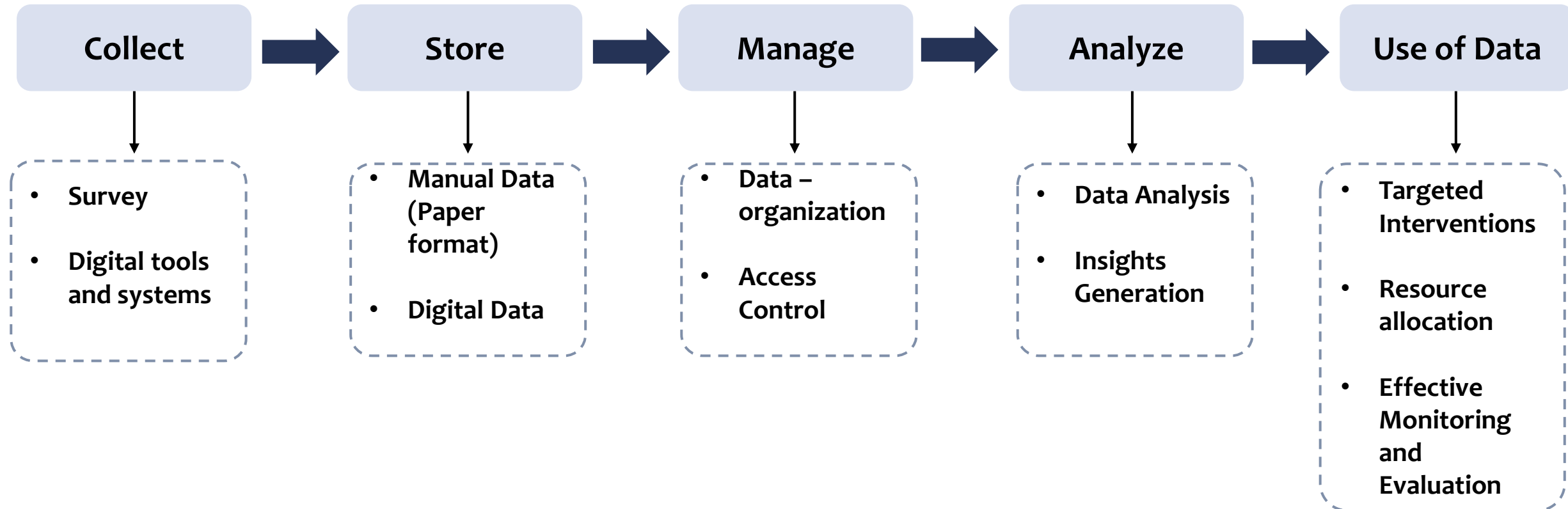
Inadequate data management procedures and inadequate staffing capacity Sanand



Guess based data reporting- Impacting reliability of data



What is Data system ?



A photograph of an office environment. On the left, a filing cabinet is filled with numerous papers and folders. One folder is labeled 'Rsp OFFICE FILE BOMAK'. In the center, a person is seated at a desk, viewed from behind, working on a computer. The desk has a monitor displaying a website, a keyboard, and a mouse. To the right, another person is partially visible, also working at a desk with a computer monitor. A large window in the background provides a view of the outdoors. A semi-transparent blue overlay covers the left and center portions of the image, containing the title and list.

Literature Review

- Government Initiatives
- Studies conducted by Research Institutes and sector experts

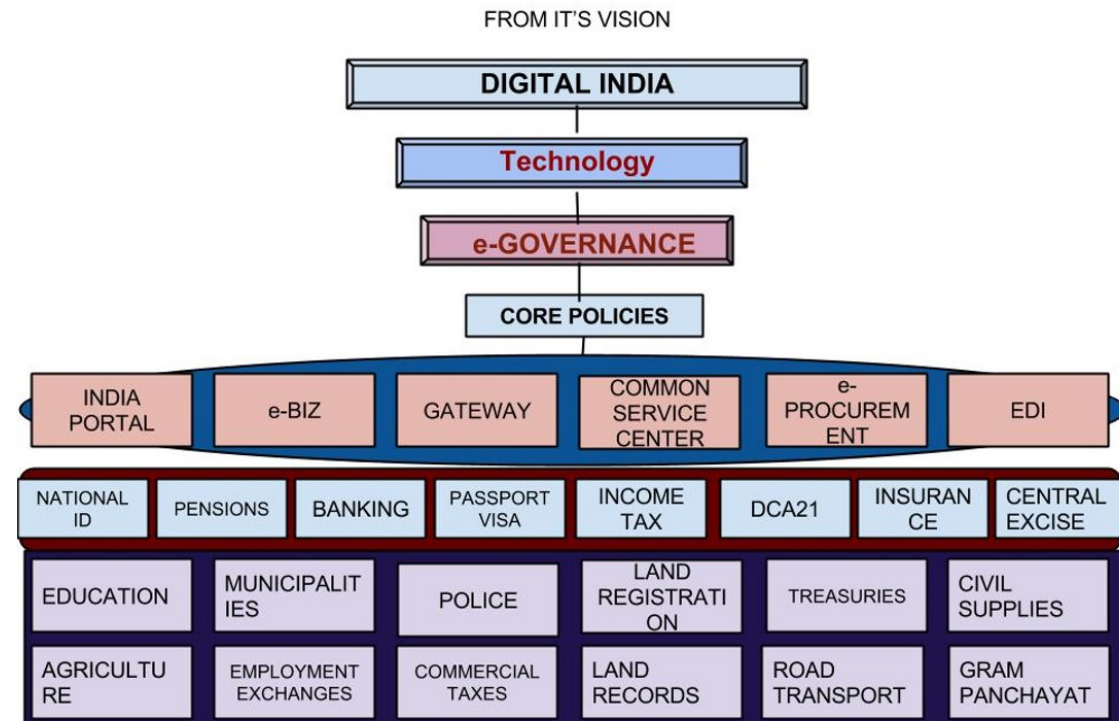
National E- governance plan 2006



Aim

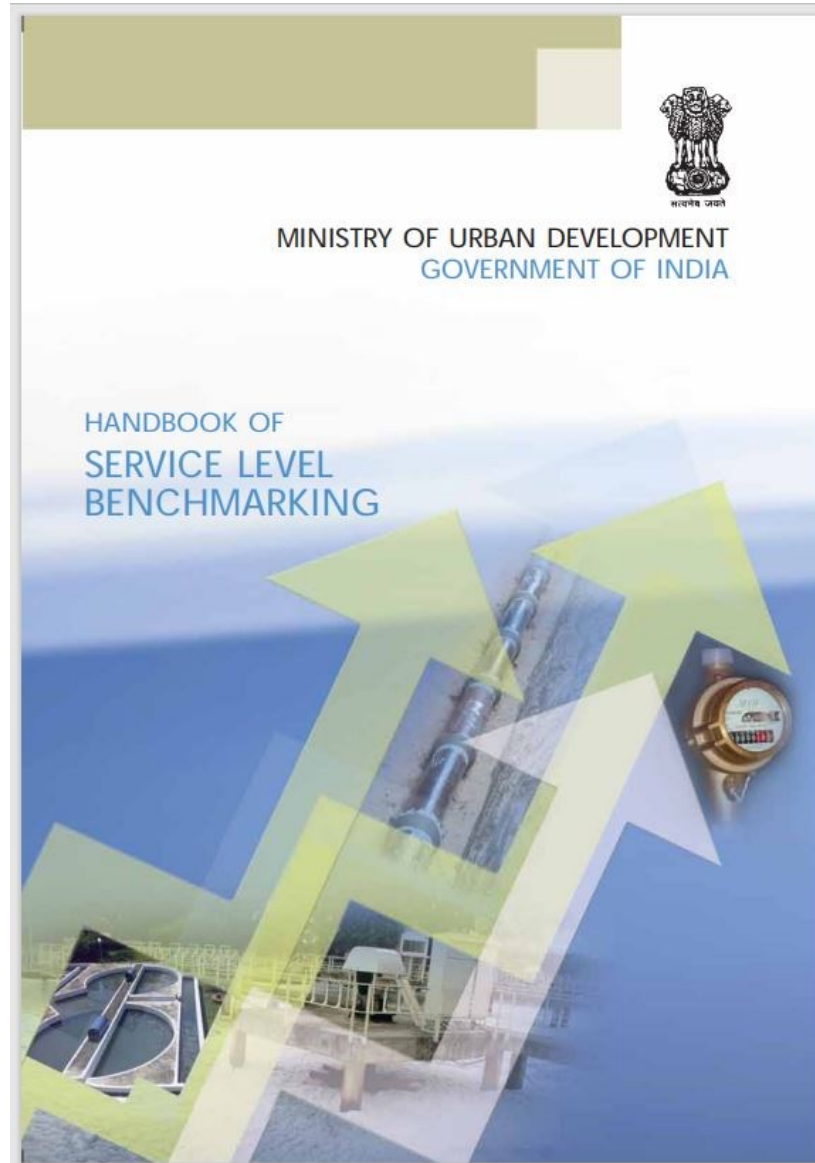
- Enhancing Service Delivery: The National e-Governance Plan aims to improve the delivery of government services by leveraging information and communication technologies (ICTs) to make services more accessible, efficient, and citizen-centric through digital channels such as online portals and mobile applications..

COMPLETE e-GOVERNANCE PLAN



Handbook on Service Level Benchmarks (CPHEEO) 2009

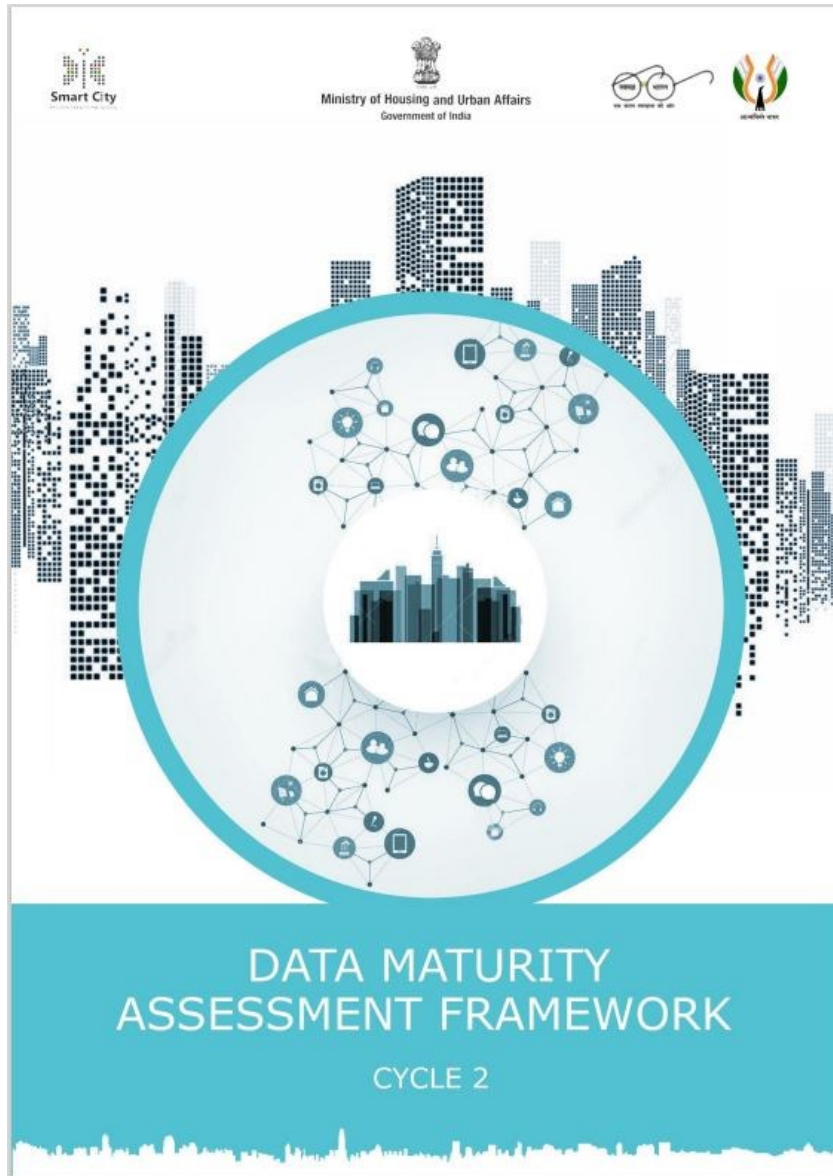
A tool that helps ULBs to implement systems for measuring, reporting, and monitoring SLBs.



2.1 Water Supply Services		
S. No.	Proposed Indicator	Benchmark
2.1.1	Coverage of water supply connections	100%
2.1.2	Per capita supply of water	135 lpcd
2.1.3	Extent of metering of water connections	100%
2.1.4	Extent of non-revenue water (NRW)	20%
2.1.5	Continuity of water supply	24 hours
2.1.6	Quality of water supplied	100%
2.1.7	Efficiency in redressal of customer complaints	80%
2.1.8	Cost recovery in water supply services	100%
2.1.9	Efficiency in collection of water supply-related charges	90%
2.2 Sewage Management (Sewerage and Sanitation)		
S. No.	Proposed Indicator	Benchmark
2.2.1	Coverage of toilets	100%
2.2.2	Coverage of sewage network services	100%
2.2.3	Collection efficiency of the sewage network	100%
2.2.4	Adequacy of sewage treatment capacity	100%
2.2.5	Quality of sewage treatment	100%
2.2.6	Extent of reuse and recycling of sewage	20%
2.2.7	Efficiency in redressal of customer complaints	80%
2.2.8	Extent of cost recovery in sewage management	100%
2.2.9	Efficiency in collection of sewage charges	90%
2.3 Solid Waste Management		
S. No.	Proposed Indicator	Benchmark
2.3.1	Household level coverage of solid waste management services	100%
2.3.2	Efficiency of collection of municipal solid waste	100%
2.3.3	Extent of segregation of municipal solid waste	100%
2.3.4	Extent of municipal solid waste recovered	80%
2.3.5	Extent of scientific disposal of municipal solid waste	100%
2.3.6	Efficiency in redressal of customer complaints	80%
2.3.7	Extent of cost recovery in SWM services	100%
2.3.8	Efficiency in collection of SWM charges	90%
2.4 Storm Water Drainage		
S. No.	Proposed Indicator	Benchmark
2.4.1	Coverage of storm water drainage network	100%
2.4.2	Incidence of water logging/flooding	0

Reliability of Measurement			
Reliability scale		Description of method	
Lowest level of reliability (D)		Estimation of households covered on the basis of geographical area of the city covered with the pipeline network, as a surrogate indicator for water supply coverage.	
Intermediate level (C)		Estimation of households covered on the basis of road length in the city covered by the pipeline network, as a surrogate indicator for water supply coverage.	
Intermediate level (B)		Estimation of households covered computed as the total number of connections (for which data are maintained) as a percentage of the estimated number of households on the basis of population (total population divided by average household size).	
Highest/preferred level of reliability (A)		Calculation based on the actual number of households with direct service connections (for which data are maintained); and the total number of households as revealed in ground level surveys. Data are periodically updated on the basis of building units approved, and new household level water connections provided.	
Minimum frequency of measurement of performance indicator		Smallest geographical jurisdiction for measurement of performance	
Measurement	Quarterly	Measurement	Zone/DMA level

Data maturity assessment framework 2020



Aim- The framework aims to provide a comprehensive assessment of the organization's current data management practices, including data governance, data quality, data infrastructure, and data analytics capabilities. By understanding where the organization stands in terms of data maturity, stakeholders can identify areas for improvement and prioritize initiatives accordingly.

- ↑
- Assessing Current State of data management of the city
- Identifying Strengths and Weaknesses for city data system
- Setting Roadmap for Improvement data collection and management
- ◆

Data maturity assessment framework

Policy

- Approval of City Data Policy
- City Data Policy Components
- Budgets for data-related initiatives

People

- City Data Officer
- Appointment of Data Coordinators
- Data Team
- Capacity Building Ministry Initiative
- Capacity building City Initiative

Process

- City Data Alliances
- Data Hackathons / Data Challenges
- Solving Urban Challenges using available datasets
- Analytics capability

Technology

- Sensors for collection of data
- Number of datasets on Smart Cities Open Data Portal
- Number of APIs on Smart Cities Open Data Portal
- Spatial Readiness

Outcomes

- Data Stories/Blogs
- Data-related Use Cases
- Development of Portals / Applications
- Alerts & Notifications

Engagement

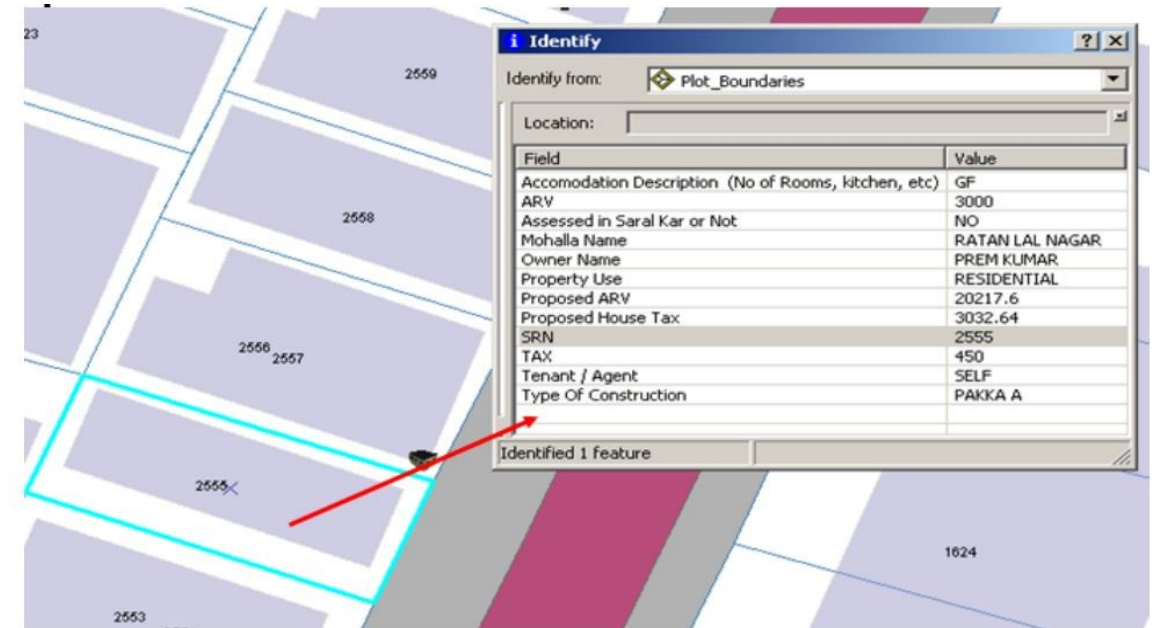
- Engagement with IUDX
- Performing during Tata Trust Training
- Presence and utilization of ICCC
- Engagement with Ministry data initiatives

SCADA and GIS based property monitoring

Aim- The aim of implementing SCADA (Supervisory Control and Data Acquisition) and GIS (Geographic Information System) based property tax systems is to improve data management, increase operational efficiency, and enhance decision-making capabilities for municipal authorities

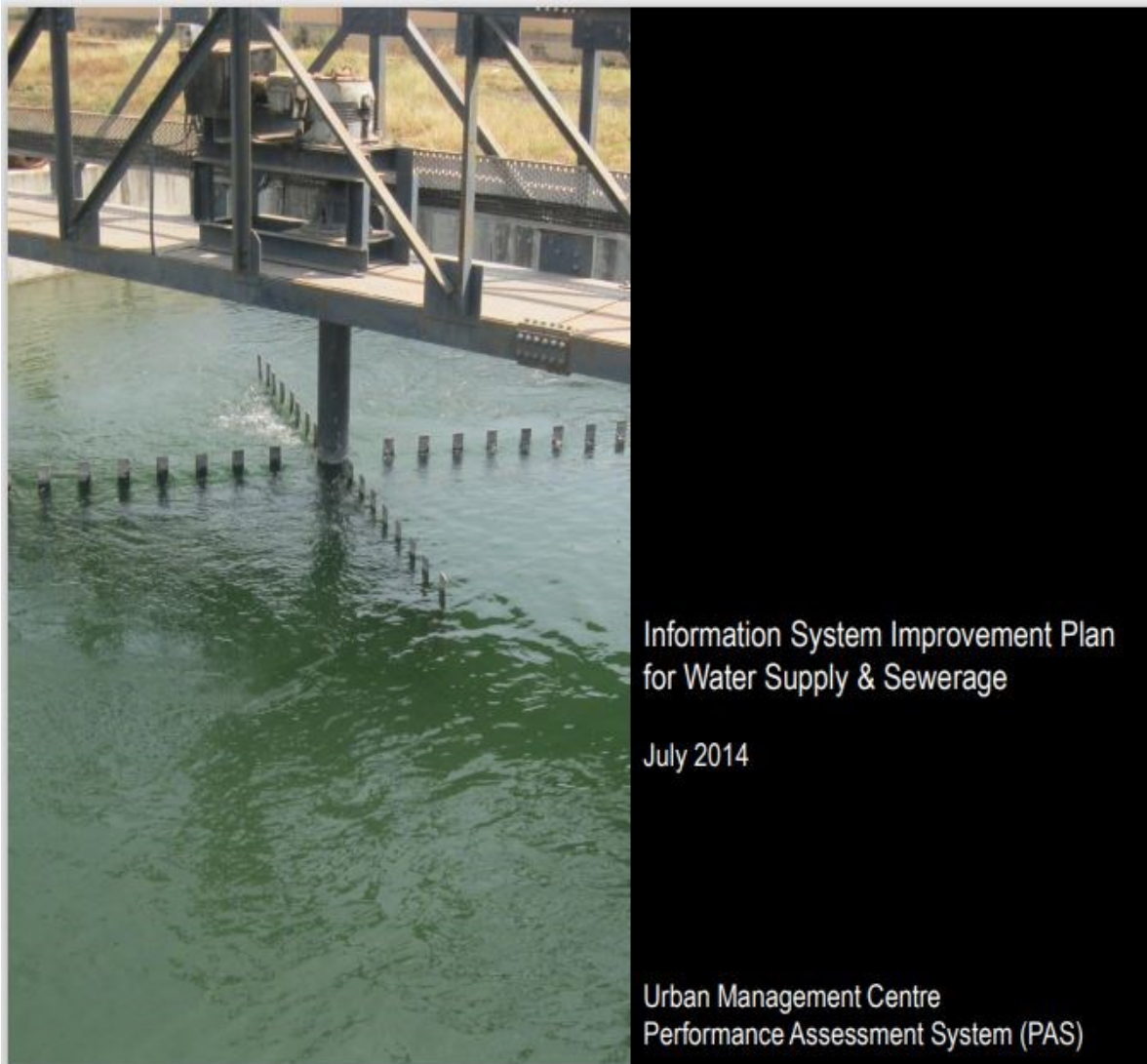


SCADA system for water and wastewater sector



GIS based property tax system

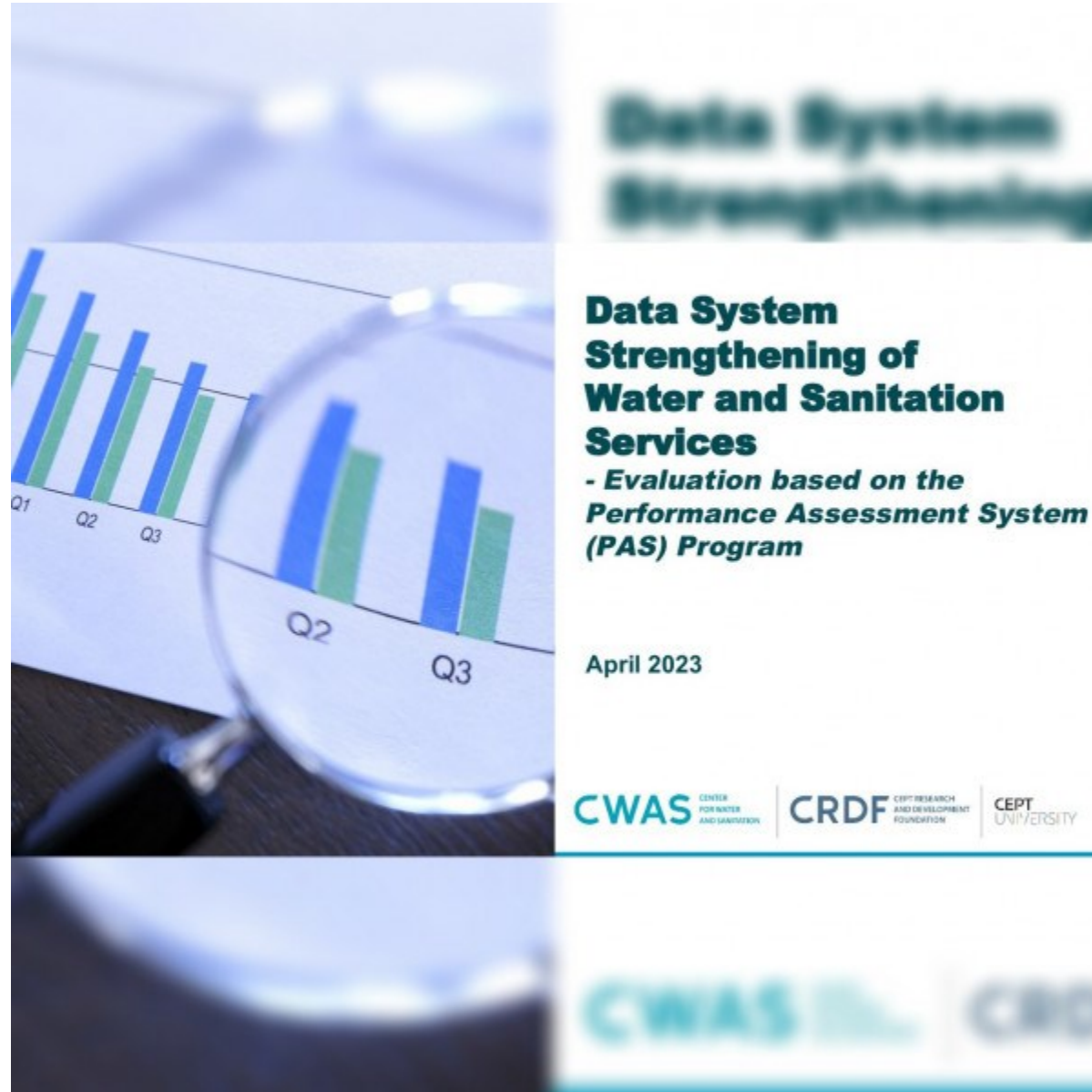
Information System Improvement Plan (ISIP) Vadodara



Aim -

- Improve data recording, processing/usage and reporting
 - Improve data reliability as per SLB definitions
 - Implement innovative tech-solutions for information system
- Review existing formats
 - Data recording
 - Processing/usage
 - Reporting
 - Assessment of use of data gathering System at site
 - Measuring devices
 - Equipment for measuring data
 - Assessment of field facilities
 - Availability of computers
 - Availability of connectivity to VMSS head office
 - Availability of staff trained in basic use of computer application
 - Understanding departments in VMSS
 - Organisation Structure
 - Relevant SLB data provided by each department/ officer
 - Identifying Reliability of all the sector
 - Recommending interventions in three categories
 - Design of existing and new forms for gathering data; including surveys wherever required
 - Installation of measuring equipment at various locations at appropriate
 - Training and capacity building of staff for implementation of ISIP

Data System Strengthening of Water and Sanitation Services



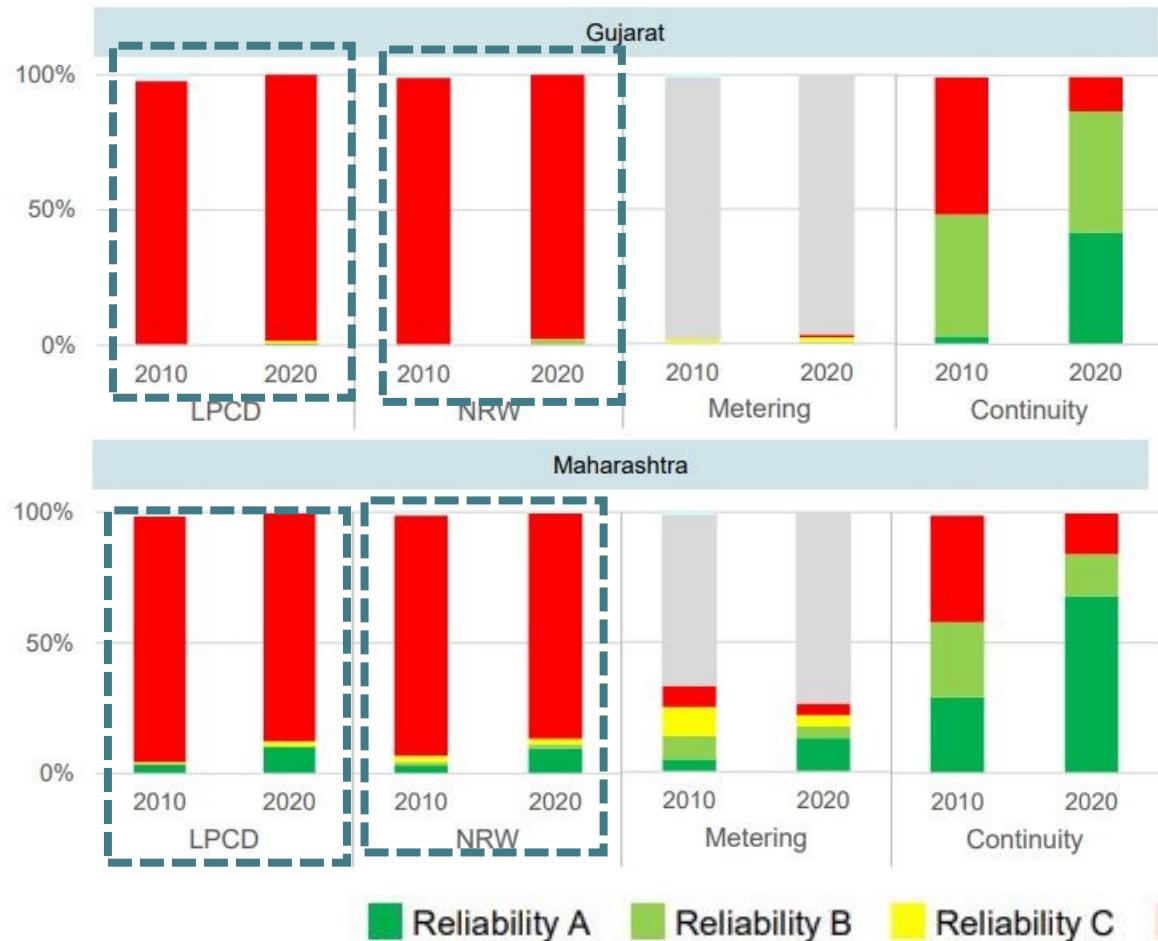
Aim -

- Enhance the effectiveness and efficiency of water and sanitation services through evaluation and improvement strategies with data system strengthening

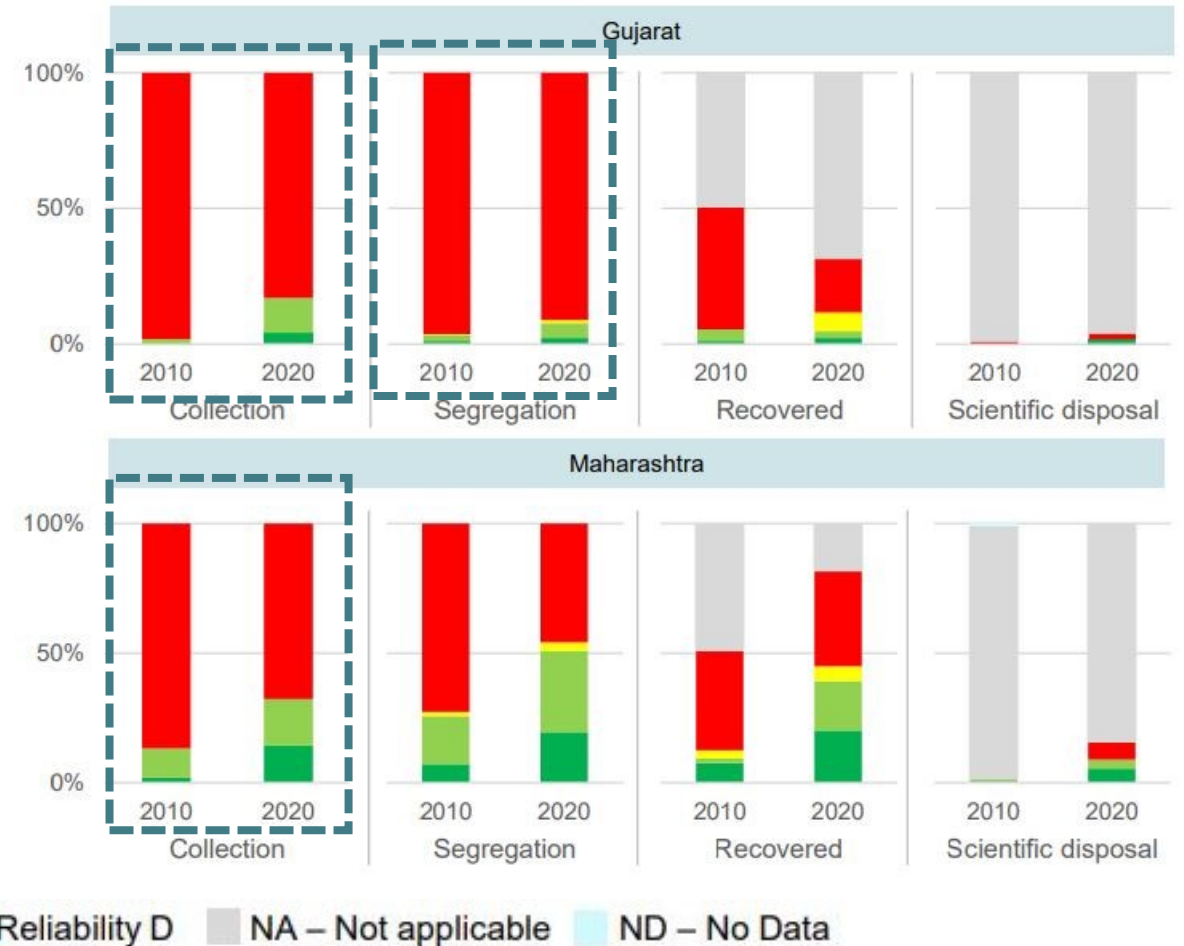
- Overview of Water and Sanitation Data Management Practices
 - Data Collection
 - Storage of Data
 - Management
- Data System Strengthening Approach
 - Linear approach
 - System approach
- Data System Analysis using Reliability of Service Level Indicators
 - State-wise Data Reliability Assessment
 - Class-wise Data Reliability Assessment
- Data System Strengthening in Pilot Cities
 - Process Mapping of Water Supply and Sanitation at Local Level
 - Mapping of City's E-governance System for SLB Integration

Data System Strengthening of Water and Sanitation Services

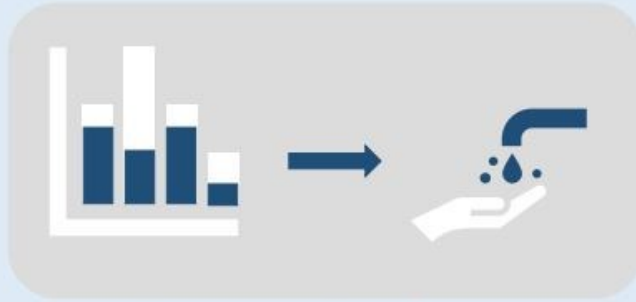
Assessment of Reliability Improvements – Water Supply Operation Indicators



Assessment of Reliability Improvements – Solid Waste Management Operation Indicators



Data to Action: Strengthening data practices to improve WASH services



Data to Action: Strengthening data practices to improve WASH services

A briefing note from the Safe Water Partnership 'Data to Action' E-Learning event on March 6, 2022

The **Safe Water Partnership** (SWP) held an E-Learning session on 6 March 2022, titled 'Data to Action: Strengthening data practices to improve WASH services.'

The goal of this interactive session was to harness lessons learned by project partners over the course of their Conrad N. Hilton Foundation supported projects to identify ways to 1) enhance the use of data for planning and implementing responsive, sustainable programs, and 2) ensure that all stakeholders have access to usable and useful data systems. The session included plenary presentations from partners across the SWP as well as small-group discussions that allowed all participants to discuss their experience using data within the partnership.

This briefing note outlines highlights of best practices and key challenges shared during these plenary presentations and small group discussions.

Objective and Approach

- The document aims to strengthen data practices and systems to enhance the delivery of Water, Sanitation, and Hygiene (WASH) services.

Assessment of Current Data Practices

- Review of existing formats and processes for data recording, processing, usage, and reporting.
- Evaluation of data gathering systems at field sites, including measuring devices and equipment.
- Assessment of field facilities, such as availability of computers, connectivity, and trained staff.

Understanding Organizational Structure and Data Flows

- Mapping the organizational structure and departments within the concerned authority
- Identifying relevant data sources and stakeholders responsible for data provision within each department or by designated officers

Capacity Building and Training

- Recognizing the importance of skilled personnel for effective data management.
- Recommending capacity building initiatives and training programs for staff to enhance their competencies in data collection, analysis, and utilization.

Interventions and Recommendations

- Design of new or improved forms and tools for data gathering, including surveys when necessary.
- Installation of measuring equipment and devices at strategic locations for accurate data collection.
- Training and capacity building programs for staff to implement the recommended interventions effectively.

Strengthening national data systems

Public Supply Chain Strengthening Guideline

Strengthening national data systems



Context:

Efficient supply chain systems require high-integrity and timely data to inform decisions resulting in greater operational efficiencies, improved customer experience and mitigated risks¹.

Considering that an information system is defined as a group of components interacting to produce actionable evidence², the ongoing trend to solely invest in the acquisition of softwares is bound to provide limited to no results.

Among other examples, UNICEF recently observed the limited gains obtained through this software-focused approach when a country A solely invested in an e-platform to increase the visibility of its health products and equipments across the national supply chain.

Country A utilising a software-based approach to increase product visibility

Challenges:

- Limited product and equipment visibility across all levels of the public supply chain.
- Facility-level personnel reluctant to report the real situation if it showed low performance levels.
- Unreliable paper-based information system and limited data integrity.

Approach:

- Invest in technology-based solutions which included:
 - Development of an e-LMIS and mobile apps.
 - Nation-wide deployment plan focused solely on transitioning from paper to electronic solution.

Results:

- Limited adoption levels caused by the low levels of computer literacy at the regional and health facility level.
- Limited deployment and utilisation caused by the unstable electricity, internet and other required resources.
- Limited government ownership caused by the lack of funds to ensure long-term sustainability.

Lessons Learned:

- A sole technology-focused solution will provide, at the most, limited and temporary gains.
- Data integrity and availability are not dependent on the medium used to report data but are rooted in the processes which govern the generation, registration and reporting of data.

Technical Background:

Information systems are a dynamic ecosystem formed by multiple areas which continuously interact with each other to generate, transmit and transform data into information to guide strategic and tactical decisions.

UNICEF recommends placing all these areas into three main groups which form the basis for strengthening the information system in a structured manner.



The **environment** provides the foundation of any information system and includes all the policies, regulations, personnel and efforts to ensure long-term technical and financial sustainability.

The **capability** refers to the technical know-how and all the different processes related to the generation, reporting, transformation, mining and harnessing of data to transform it into actionable evidence.

Aim:

- Increase in data collection frequency to inform decisions, resulting in greater operational efficiencies, improved customer experience

Analysis Phase

- Map the national supply chain to understand the data flow and inventory across all levels and stakeholders.
- Review the current status of the information system components, including policies, people, sustainability, technical know-how, processes, interoperability, software, and infrastructure.
- Validate the findings through interviews with staff at central, regional, and local levels.
- Quantify and monetize the characteristics and gaps of the information system to develop a business case.

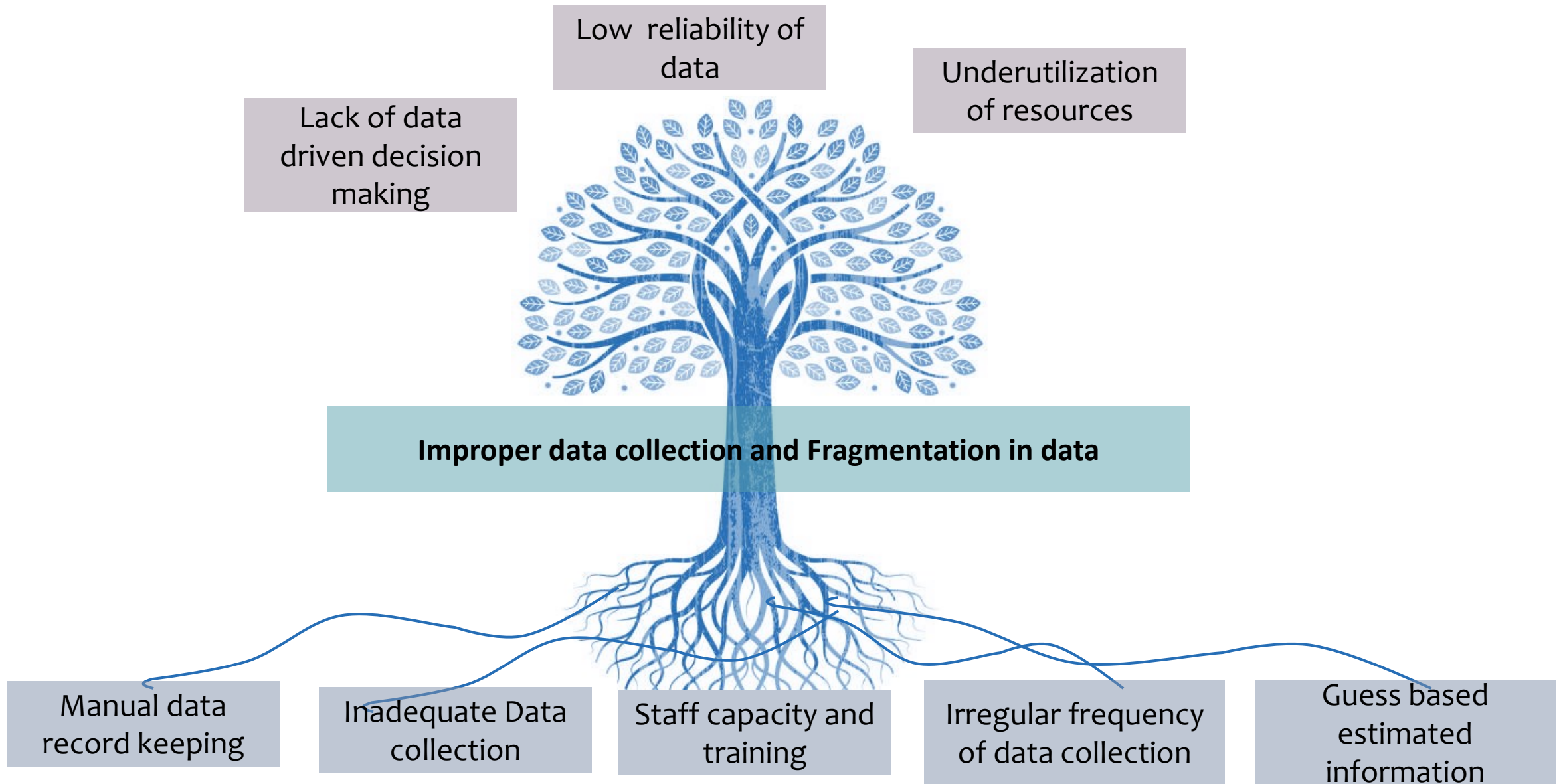
Strengthening Phase Recommendations

- Develop context-driven work plans, focusing on enhancing data-related processes before deploying software and technology.
- Coordinate with stakeholders, including donors, to align investments and integrate the efforts across different health programs.
- Enhance the government's capacity to implement supply chain data analytics and link supply chain indicators

¹ Md. Tahiduzzaman¹ et. al., "Big data and its impact on digitized supply chain management," *IBRO Journal of Business Management*, vol. 3, issue 9, Sept. 2017, pp 196-205

² Kroenke, David, et. al., "Experiencing Management Information System (MIS)", Pearson Australia, 2013, pp 9

Issues in current data system in cities



Aim and Objective

Aim - The aim is to understand the current data collection and management systems practice by the cities and ways to improve reliability of data.

Objective -

- To understand the existing data collection and data storing management tools and its reliability used by cities
- comparing cities data collection and management process
- Making the broader framework to provide a combination of solutions at different city levels.

Scope and Limitation

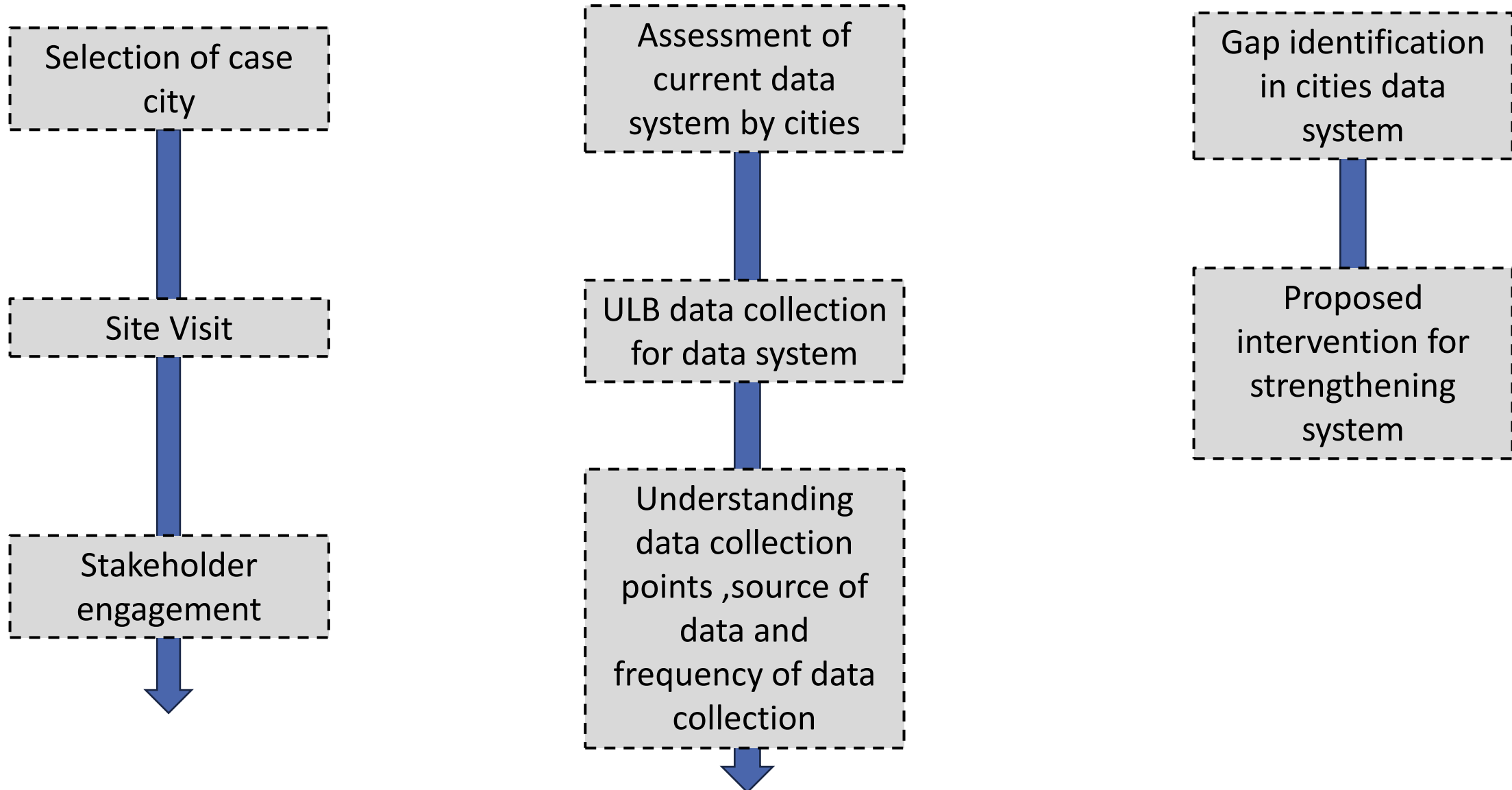
Scope

The scope of this DRP involves thorough analysis of the water sector to understand overall data system in the water sector with covering every stage from water service chain from source to end-use. This focus is because of the vital role that water plays in human life, another points is we identify much higher reliability seen in other sector as compared to water.

Limitation

The research will specifically explore the limitations and challenges encountered across different stages of the water service chain. This includes issues related to data system in water sector form source to end user.

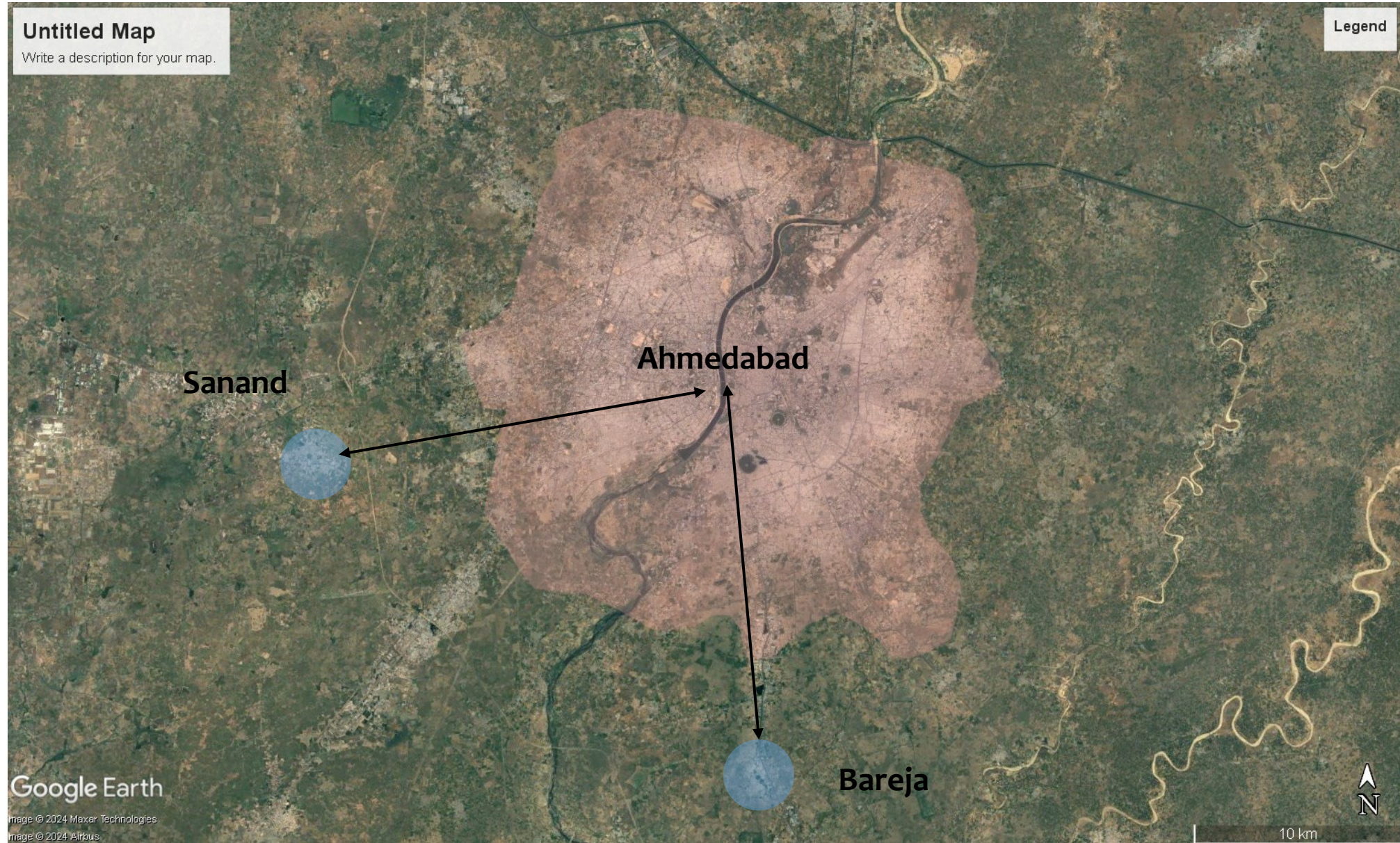
Methodology and Process mapping





Site selection

Site Selection



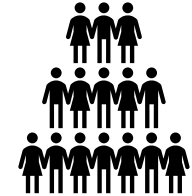
Sanand Demography



Sanand is located in Gujarat 25 km toward east of Ahmedabad



Sanand is a class C city



32,000 (census 2011)
80,220 now



24,906 Total house hold



40.41 Sq. km. city area

Sanand data system overview

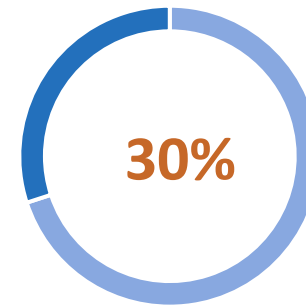


Very less manual to digital data conversion

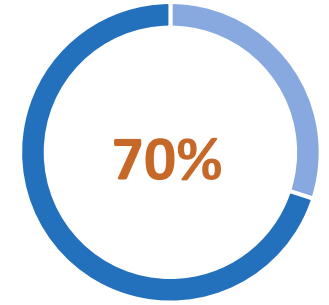


Majority of data in paper format

Data format

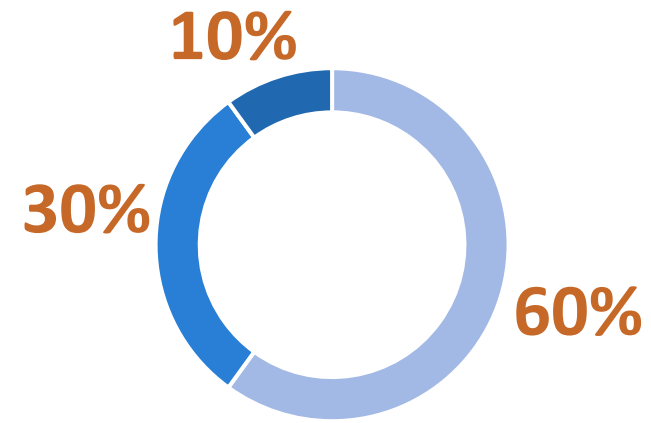


Digital Data



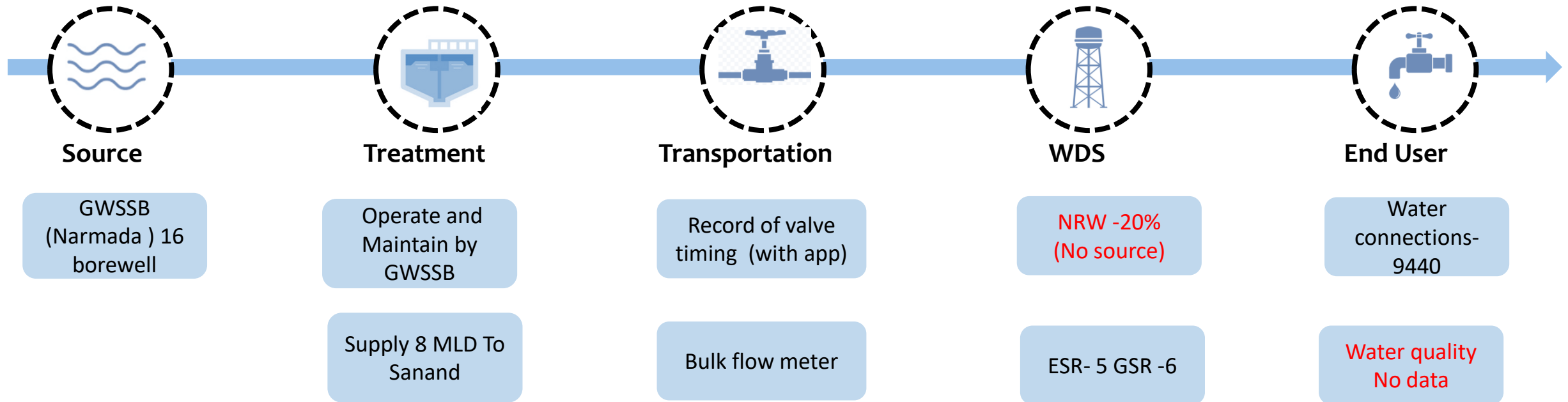
Manual Data

Data collection source

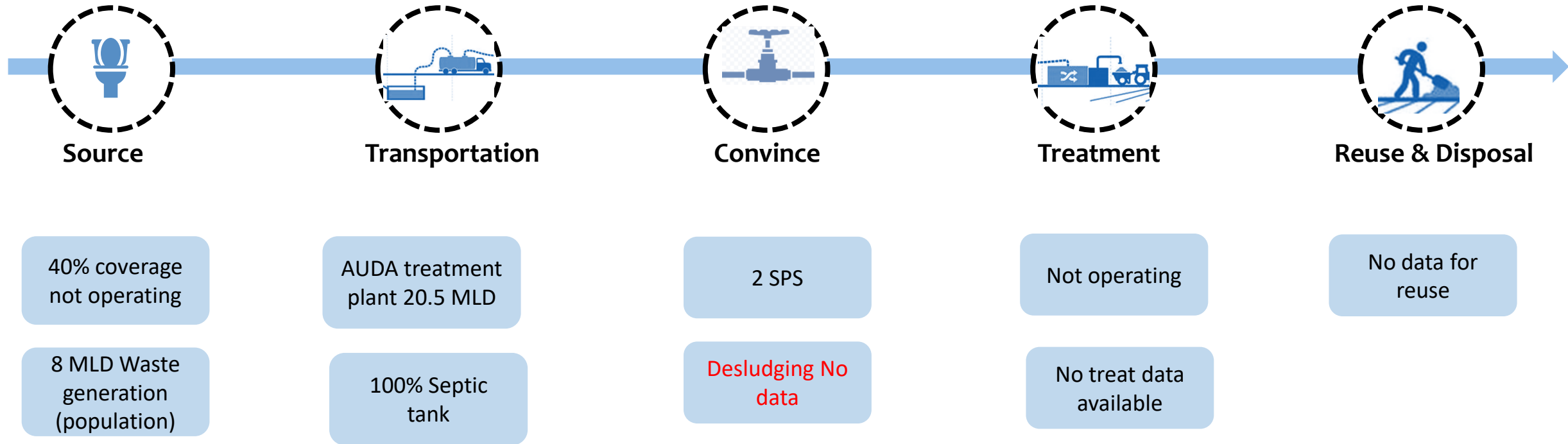


■ Survey ■ Tax Billing record ■ Complaint

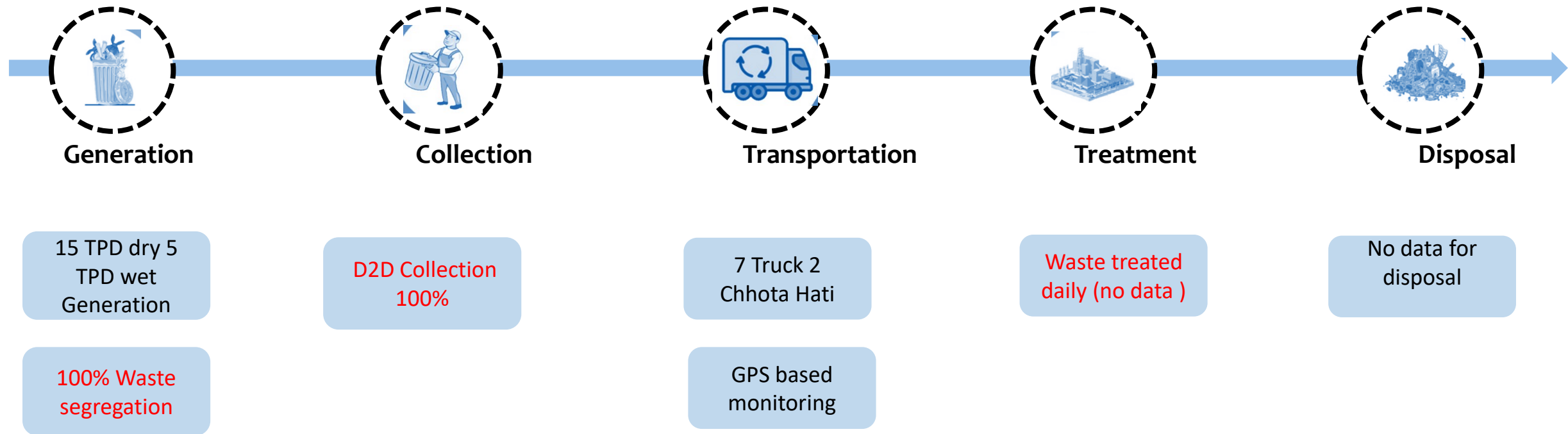
Water in Sanand



Sanitation in Sanand



SWM in Sanand



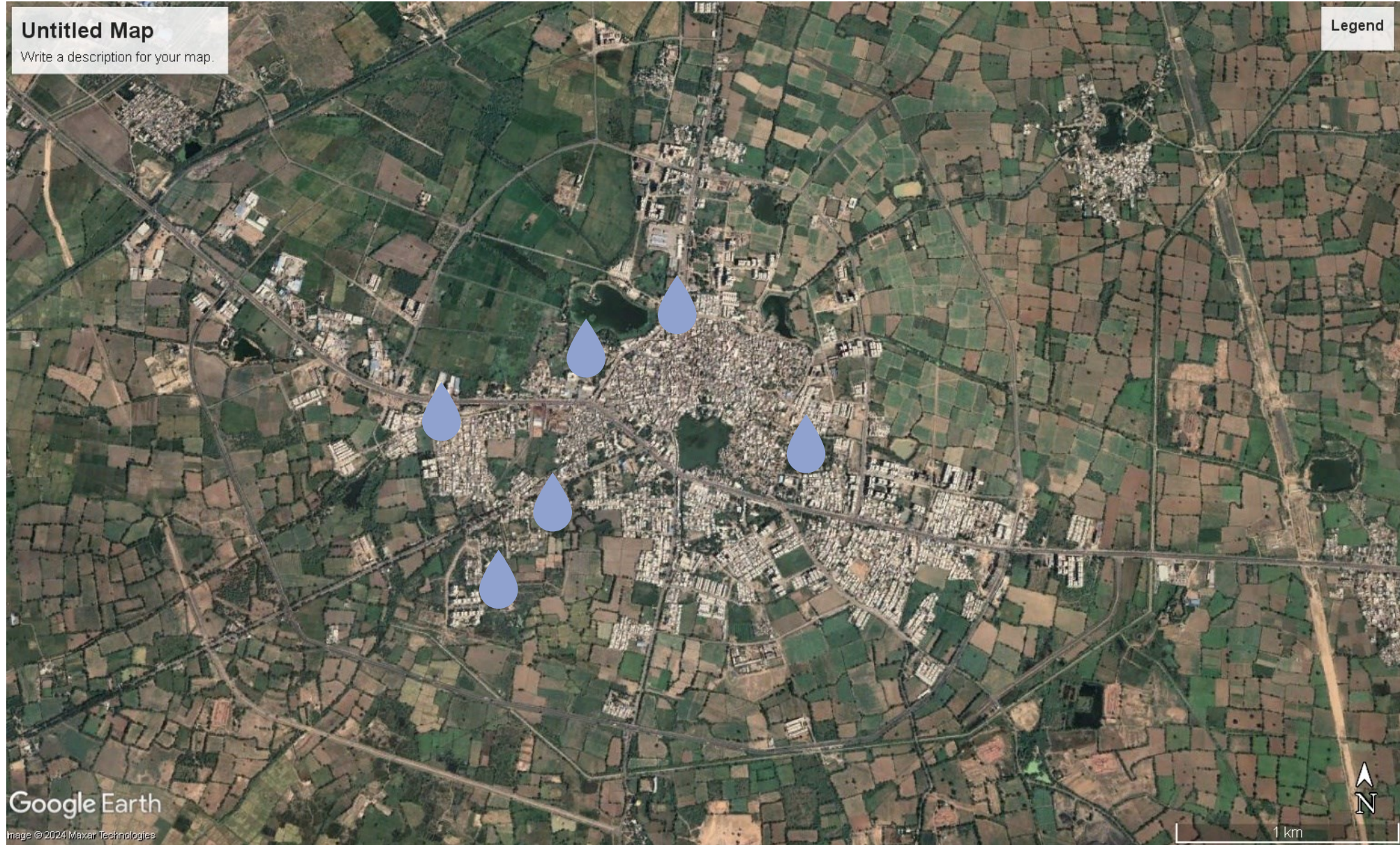
Visit to WTP operated by Gujarat Water Supply and Sewerage board



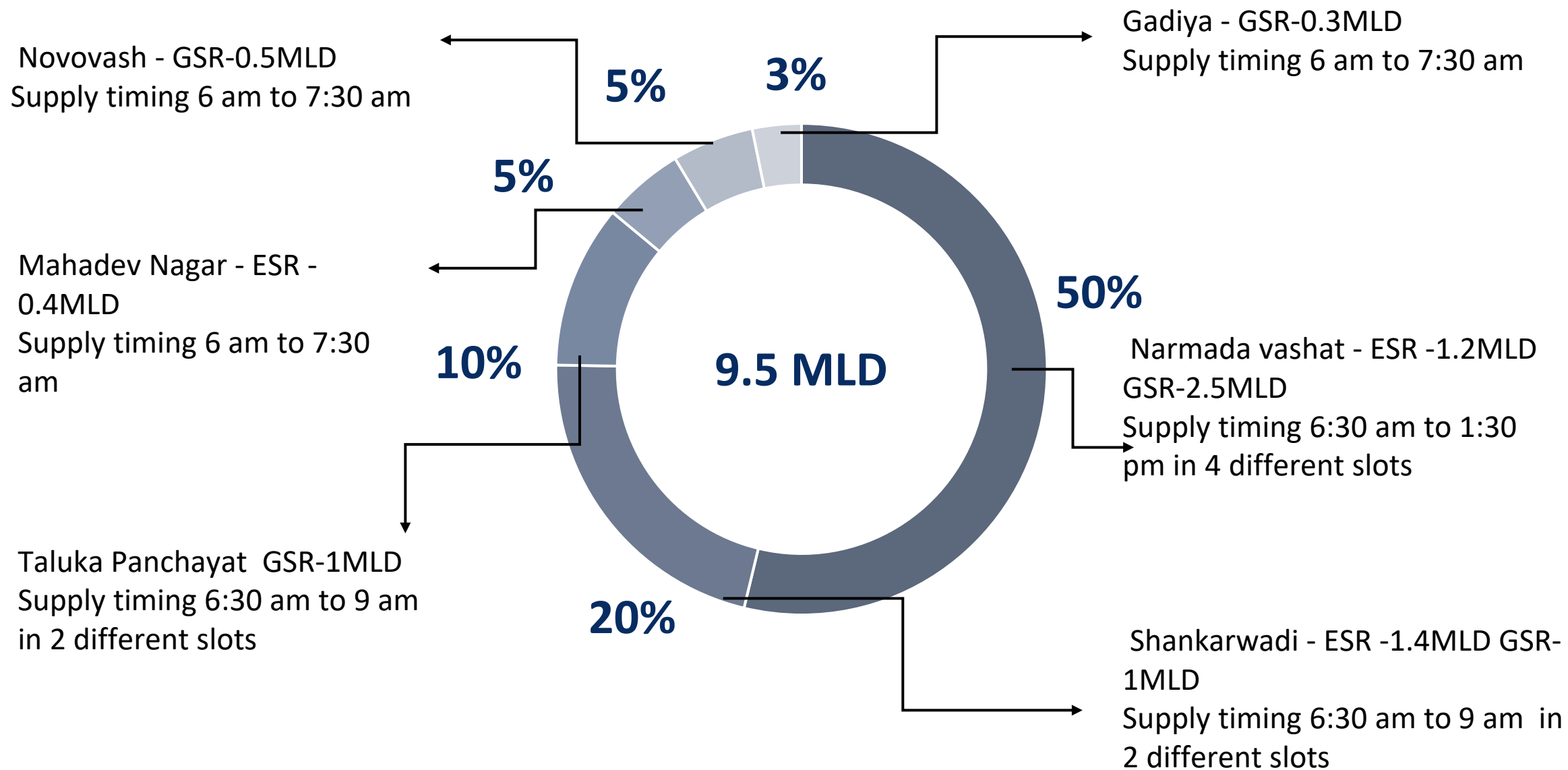
Visit to WDS in Sanand



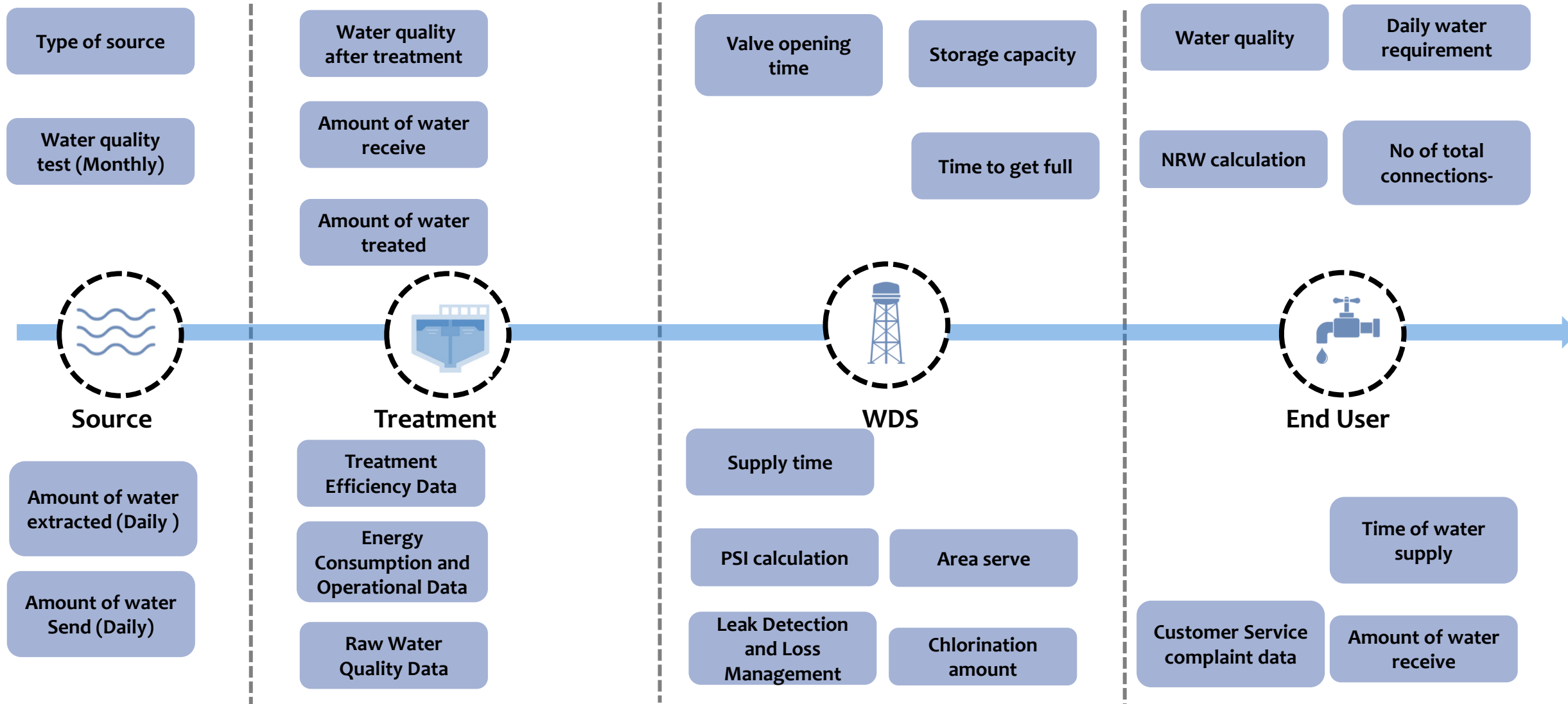
Sanand Water Conveyance and Storage Data



Sanand Water Distribution Data



Data collection points in Water Service chain



Water source and treatment - Sanand

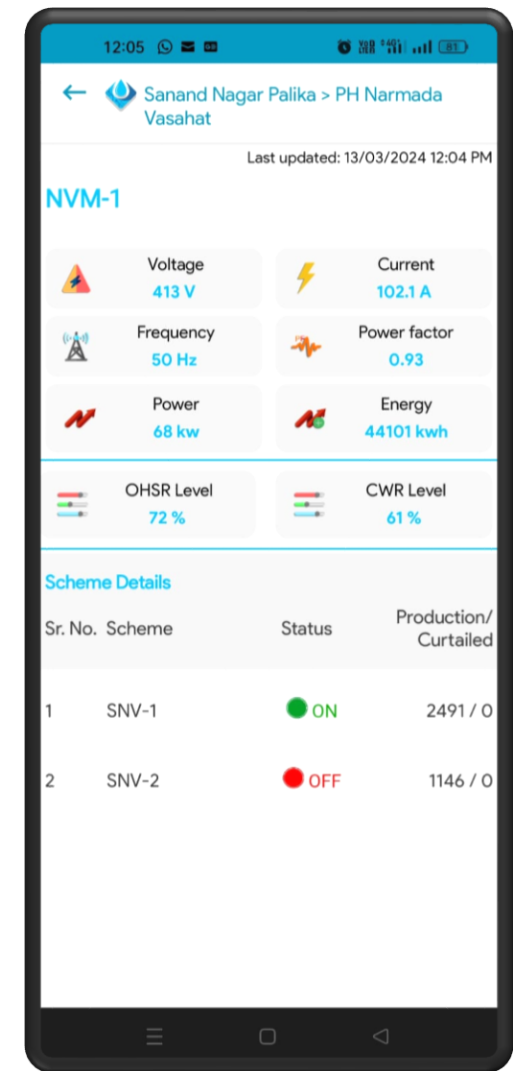
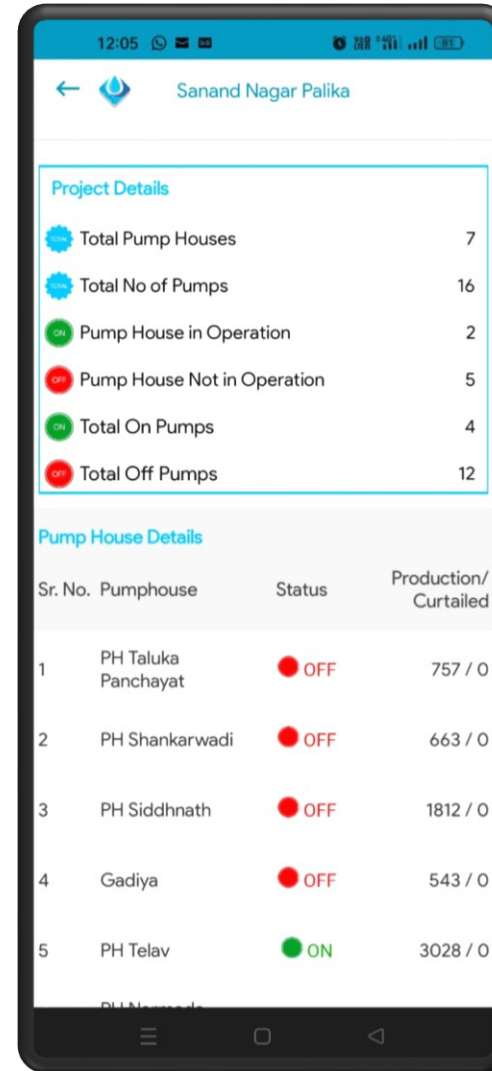
Data Points	Data	Data Source	Data Recording	Data Frequency
Type of source	Narmada , 16 Borewell	GWSSB and Sanand Nagarpalika	Digital and Manual	Not known
Water quality test	12 test parameters	Jalbhawan GWSSB	Digital	Monthly
Amount of Water treatment	25 MLD	Bulk flow meter	Digital	Daily
Energy Consumption and Operational Data	Electric meter	Electric meter	Digital	Monthly
Amount of water extracted (Daily)	No data	(Bulk flow meter, SCADA)	Digital	No data
Amount of water Send (Daily)	8 MLD (Sanand)	Flow meter	Digital	Daily

Water Distribution System Sanand

Data Points	Data	Data Source	Data Recording	Data Frequency
Valve opening time	1:30 PM WTP 6:30 AM	Aqualicious app (valve operator)	Digital format (Excel)	Daily
Storage capacity	Total storage capacity of ESR and GSR– 8.7 MLD	Digital system and level meter	Digital format (Excel)	Daily
Time to get full	9 hour – 10 hour	Level meter Aqualicious app	Digital format (Excel	Daily
Supply time	6:30 AM – 1:30 PM	Valve operator	Not maintained	Manually operated daily
Pressure calculation	Bulk Flow meter (digital app for monitoring)	Flow meter with aqualicious app	Digital	Daily
Area serve	Different ESR GSR serve different area	Aqualicious aap	Digital	Daily
NRW	20%(no source)	Not known	Not maintained	Daily
Chlorination amount	6l for 3.7 MLD	Valve operator	Not maintained	Daily

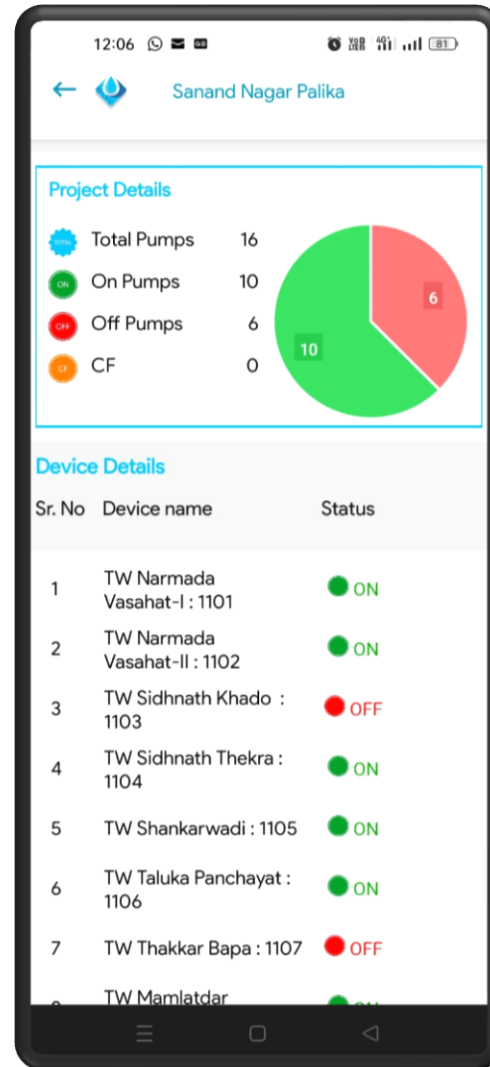
Sanand Water Distribution monitoring by Aqualicious app

- App developed and in use since 2020
- Installed bulk flow meter at WDS
- Cost for 5 years- 3.10 Cr –(App development , bulk flow meter installation, O&M ,refurbishment of bulk flow meter and SIM integration)
- Similar app use in Mehsana and Deesa

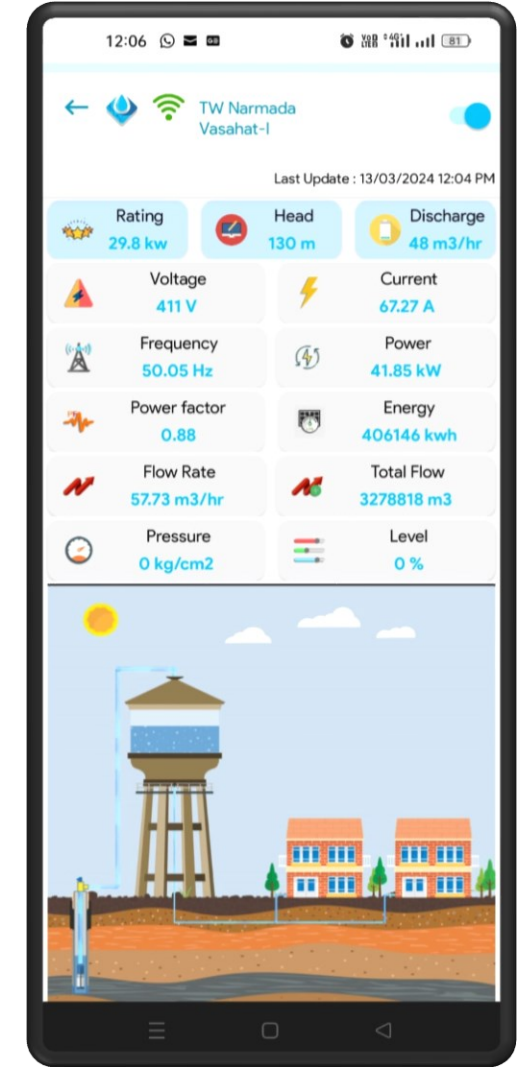


Features of the App used by Sanand at WDS

- Real time monitoring
- Water pump in operation
- Water pump not operational
- Amount of water receive daily
- Amount of water discharge daily
- Works with a help of Sim in Bulk flow meter



- Opening and closing time of valve
- All pumps can be control remotely by mobile
- Electricity consumption on daily basis
- Water storage level
- Frequency of data transmission
- Pressure calculation
- Flow rate calculation



Output generated by App

1. Shows daily water receive
2. Daily water disperse
3. Daily electrical consumption

Possible use of App data

- Calculation of NRW on WDS level from WTP
- Calculation of LPCD as per the distribution in the WDS water zone
- Water consumption pattern (weekly , seasonal)
- Electricity usage fluctuation
- Water pump repair and maintenance schedule as per its use
- Budgetary allocation

Narmada Vasahat Pump House								
Sr. No.	Date		Opening KL	Closing KL	Scheme Production	Opening KWH	Closing KWH	Total KWH
1	01-Jan-24	SNV-1	5489864	5493213	3349	0	620	620
2	02-Jan-24	SNV-1	5493213	5496615	3402			
3	03-Jan-24	SNV-1	5496615	5500279	3664	620	1247	627
4	04-Jan-24	SNV-1	5500279	5503560	3281	1247	1906	659
5	05-Jan-24	SNV-1	5503560	5507022	3462	1906	2503	597
6	06-Jan-24	SNV-1	5507022	5510386	3364	2503	3130	627
7	07-Jan-24	SNV-1	5510386	5513752	3366	3130	3726	596
8	08-Jan-24	SNV-1	5513752	5517050	3298	3726	4342	616
9	09-Jan-24	SNV-1	5517050	5520411	3361	4342	4932	590
10	10-Jan-24	SNV-1	5520411	5523921	3510	4932	5517	585
11	11-Jan-24	SNV-1	5523921	5527162	3241	5517	6138	621
12	12-Jan-24	SNV-1	5527162	5530612	3450	6138	6702	564
13	13-Jan-24	SNV-1	5530612	5533961	3349	6702	7312	610
14	14-Jan-24	SNV-1	5533961	5537316	3355	7312	7914	602
15	15-Jan-24	SNV-1	5537316	5540907	3591	7914	8552	638
16	16-Jan-24	SNV-1	5540907	5544139	3232	8552	9215	663
17	17-Jan-24	SNV-1	5544139	5547646	3507	9215	9799	584
18	18-Jan-24	SNV-1	5547646	5550947	3301	9799	10432	633
19	19-Jan-24	SNV-1	5550947	5554311	3364	10432	11006	574
20	20-Jan-24	SNV-1	5554311	5557692	3381	11006	11615	609
21	21-Jan-24	SNV-1	5557692	5561009	3317	11615	12232	617
22	22-Jan-24	SNV-1	5561009	5564245	3236	12232	12842	610
23	23-Jan-24	SNV-1	5564245	5567442	3197	12842	13416	574
24	24-Jan-24	SNV-1	5567442	5569867	2425	13416	14036	620
25	25-Jan-24	SNV-1	5569867	5572706	2839	14036	14474	438
26	26-Jan-24	SNV-1	5572706	5576070	3364	14474	15007	533
27	27-Jan-24	SNV-1	5576070	5579334	3264	15007	15652	645
28	28-Jan-24	SNV-1	5579334	5582636	3302	15652	16270	618
29	29-Jan-24	SNV-1	5582636	5584980	2344	16270	16872	602
30	30-Jan-24	SNV-1	5584980	5588075	3095	16872	17242	370
31	31-Jan-24	SNV-1	5588075	5591476	3401	17242	17830	588
			5540230	5543507.8	3277.806452	17830	18458	628
								18458

Sanand Water End user Data

Data Points	Data	Data Source	Data Recording	Data Frequency
No of total connections-	9420	E- Nagar tax and billing	Digital	Monthly
Water quality test	TDS and PPM	Water quality check	Manual	Once in 2 year
NRW calculation	20%	Estimated data	Not maintained	Not maintained
LPCD	150 LPCD	Sanand Nagarpalaika	Not maintained	Not maintained
Time of water supply	6:30 AM to 1:30 PM	Valve operator	Digital	Not maintained
Customer Service complaint data	Complaint on phone and in person	Sanand Nagakpalika	Manual	Not Aplicable
Daily water requirement of city	12 MLD	Amount of water deliver and population	Not maintained	Not Maintained

Water quality test



Water quality test at WTP

Water quality test at WDS

DISTRICT LABORATORY
5TH Floor, Jalbhavan G.W.S.S.B.Ahmedabad. PIN-380006.
E-mail - jalbhavn.lab@gmail.com.

REPORT ON SHORT CHEMICAL EXAMINATION OF WATER

Name & Address: The Deputy Executive Engineer, P.H. Sami Sub. Div. G.W.S.S.B. Bavla, Ahmedabad

Sender's Ref. No. Ref. Date Lab Ref. No. - : 044
Date of Collection: 03/09/2022
Date of Arrival: 03/09/2022
Sample Collected By: Lab

Source of water Sample :-
Telav H.W.

Village: TELAV, Taluka-SANAND, District AHMEDABAD

Sr. No. CHARACTERISTIC	Value as per IS 10500 : 2012 (2 nd Revision)		Analytical Value
	Requirement [Acceptable Limit]	Permissible Limit in the absence of Alternate Source	
1 Colour - (Hazen Units) Max	5	15	0.21
2 Odour	Agreeable	Agreeable	Agreeable
3 Turbidity - (NTU) Max	1	5	2.41
4 Dissolve Solids - mg/l. Max	500	2000	276
5 pH Value	6.5 to 8.5	No Relaxation	7.95
6 Total Hardness (as CaCO ₃) mg/l Max	200	600	116
7 Calcium (as Ca ⁺⁺) mg/l. Max	75	200	22
8 Magnesium (as Mg ⁺⁺) mg/l. Max	30	100	15
9 Chloride (as Cl ⁻) mg/l. Max	250	1000	40
10 Sulphate (as SO ₄ ⁻²) mg/l. Max	200	400	15
11 Nitrate (as NO ₃ ⁻) mg/l. Max	45	No Relaxation	2.20
12 Fluoride (as F ⁻) mg/l. Max	1.0	1.5	0.25
13 Alkalinity (as CaCO ₃) mg/l. Max	200	600	100
			FIT

Opinion for Potability is given as per Analysed test parameters only.

Note: * It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under "acceptable" render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under "permissible limit in the absence of alternate source" above which the sources will have to be rejected.

1. Test Report is issued for assessing Chemical Fitness as per the BIS 10500 2012 for the given Drinking Water Sample only.
2. This Report should not be taken as a basis to getting license from any Government authority.
3. Chemical Sample must be submitted within 72 hours to laboratory from time of collecting sample.
4. Excessive Turbidity, if any may be removed before use.

Outward No. CAR / _____ of 2022, Date _____ / _____ / 2022

D.B. Sharma
Chief Scientific Officer

આમદાં નગરપાલિકા
હલોરીનેશન ટેસ્ટીંગનો રીપોર્ટ તારીખ : ૨૩/૧/૨૩

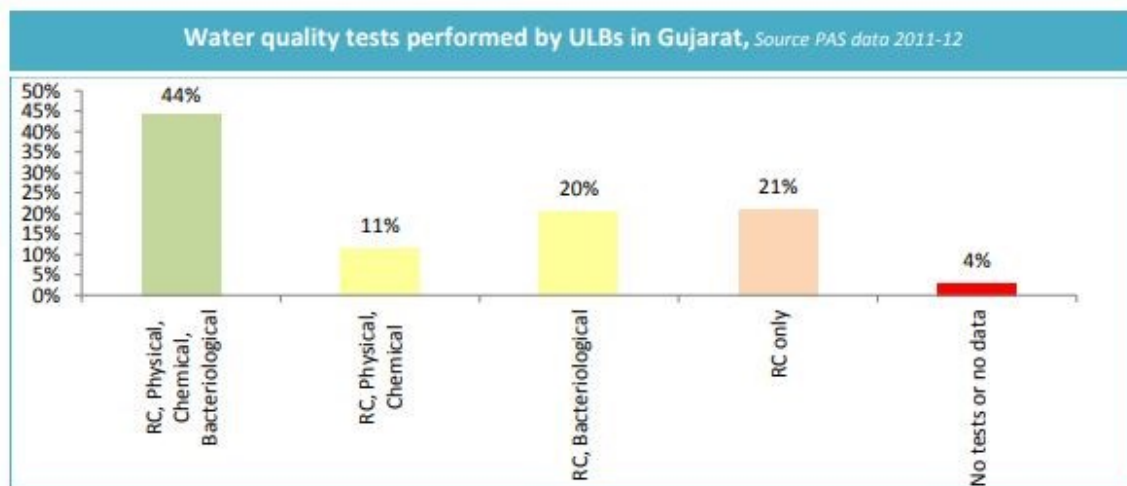
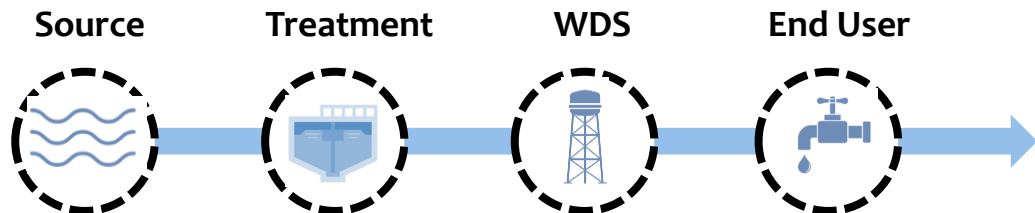
સ્ર.નં.	સમય	ટેસ્ટીંગનું સ્થળ	સપ્લાય વિસ્તારનાં બોરનું નામ	પરિણામની વિગત (PPM)	લોક પ્રતિનિધિની સહી	રીમાર્ક્સ
૧.	૭-૦૦	કોળાપાલિકા	ગાંધીયા બોર	૦.૩	સુદામાઈ બે.વણી	
૨.	૭-૧૬	સુભાઈ પાલ	ગાંધીયા બોર	૦.૩	ગુરુભાઈ ભોજાવણી	
૩.	૭-૩૦	લોગાંધીયાબોર	ગાંધીયા બોર	૦.૩	સુભાષી.જોષી	
૪.	૮-૦૦	લાખાપાલિકા	ગાંધીયા બોર	૦.૪	હાઈદરલી.જોષી	
૫.	૮-૧૬	ગોરાપાલિકા	ગાંધીયા બોર	૦.૨	SHREYAS	
૬.						
૭.						
૮.						
૯.						
૧૦.						

પ્રિપોઝન ટેસ્ટીંગ અમોગે રૂબરૂમાં કરેલ છે અને જે-તે ટેસ્ટીંગ હસ્ત્યાન હાથર લોકપ્રતિનિધિની સહી કરાવેલ છે.

ગાંધીયા
ઉમિયા કેમીકલ્સ વતી
(પ્રતિનિધિનું પૂરું નામ અને સહી)

No water quality test at user end

Water sample to be taken for water quality testing



	Frequency of Required Tests				Minimum number of Samples
	Physical	Residual Chlorine	Bacteriological	Chemical	
At source					
Ground water					
Tube well/ French well/ dug well (If drinking water is directly supplied to consumer end, chlorine dosage needs to be added)	Quarterly	Daily	Monthly	Quarterly	At each well
Hand pumps	Twice a year	-	Twice a year	Twice a year (in summers and rainy season)	At each hand pump
Surface water					
Raw Water: Rivers/ Infiltration wells/Lakes/Dams/Canal	Daily	-	Weekly	Daily	One per source
At Water Treatment Plant					
Outlet of WTP	Daily (Turbidity Only)	Hourly during supply time	Weekly	Daily	One per source
At Water Distribution System					
Inlet of main sump/ Ground level Storage Reservoir/Elevated Service Reservoir	Daily	Daily	Weekly	Monthly	Each WDS
At Consumer End					
Standpost	Daily (Turbidity only)	Daily	Monthly	Once an year	At 5-10 locations from each WDS zone for municipalities and 1 per 2500 households in municipal corporations. During monsoons or a disease outbreak, number of samples should be increased
Consumer End	Daily (Turbidity only)	Daily	Monthly	Once an year	

Tool for formulate drinking water quality surveillance regime for Sanand

Frequency of Required Tests								
City:	Sanand						Year: 2023-2024	
	Physical Tests		Residual Chlorine		Bacteriological Tests		Chemical Tests	
	Numbers	Frequency	Numbers	Frequency	Numbers	Frequency	Numbers	Frequency
At source								
Ground water								
Tube well/ French well/ dug well (If drinking water is directly supplied to consumer end, chlorine dosage needs to be added)	0	Quarterly	0	Daily	0	Monthly	0	Quarterly
Hand pumps	0	Yearly	-	-	0	Yearly	0	Yearly
Surface water								
Raw Water: Rivers/ Infiltration wells/Lakes/Dams/Canal	0	Daily	-	-	0	Weekly	0	Daily
At Water Treatment Plant								
Outlet of WTP	0	Daily (Turbidity Only)	0	Daily	0	Weekly	0	Daily
At Water Distribution System								
Inlet of main sump/ Ground level Storage Reservoir/Elevated Service Reservoir	6	Daily	6	Daily	6	Weekly	6	Monthly
At Consumer End								
Consumer End	30	Daily (Turbidity Only)	30	Daily	30	Monthly	30	Yearly

Total test to be conducted monthly – 2328

Total test to be conducted daily – 72

1 test in a 2 years at WDS

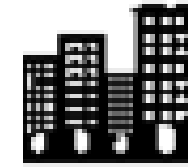
No tests conducted at end user



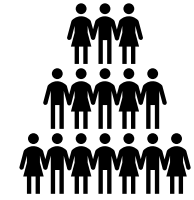
વિકાસ દાનદાતા સંપાદનાય ભવન
ભારતીય નગરપાલિકા
સ્થાપના વર્ષ - ૨૦૦૫

Bareja

Bareja Demography



Bareja is a class D city



18,903 (census 2011)
45,000 now approx.



7782 Total house hold



16 Sq. km. city area

Bareja is located in Gujarat 29 km toward south of Ahmedabad

Bareja data system overview

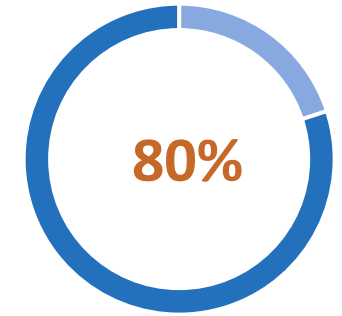
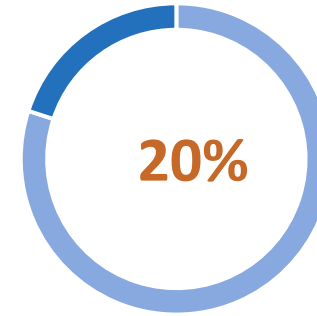


Digital Infrastructure is available



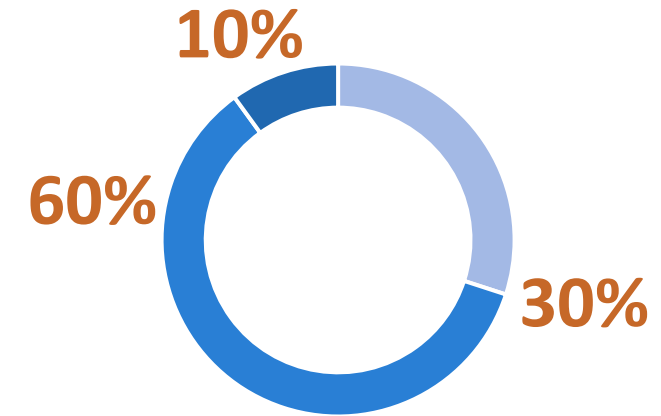
Majority of complaint and survey data in manual

Data format



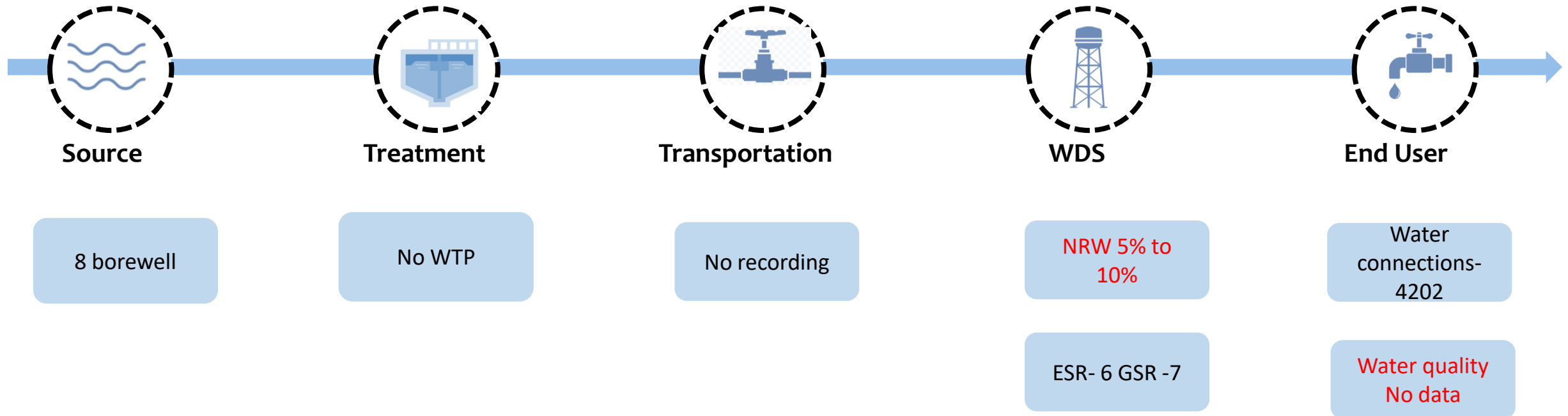
Manual Data

Data collection source

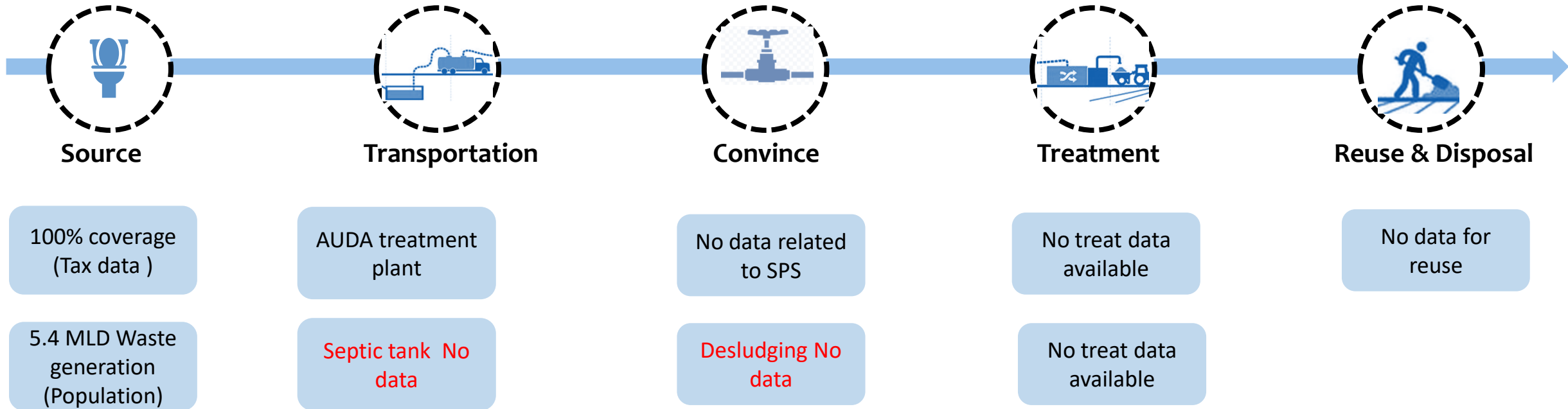


■ Survey ■ Tax Billing record ■ Complaint

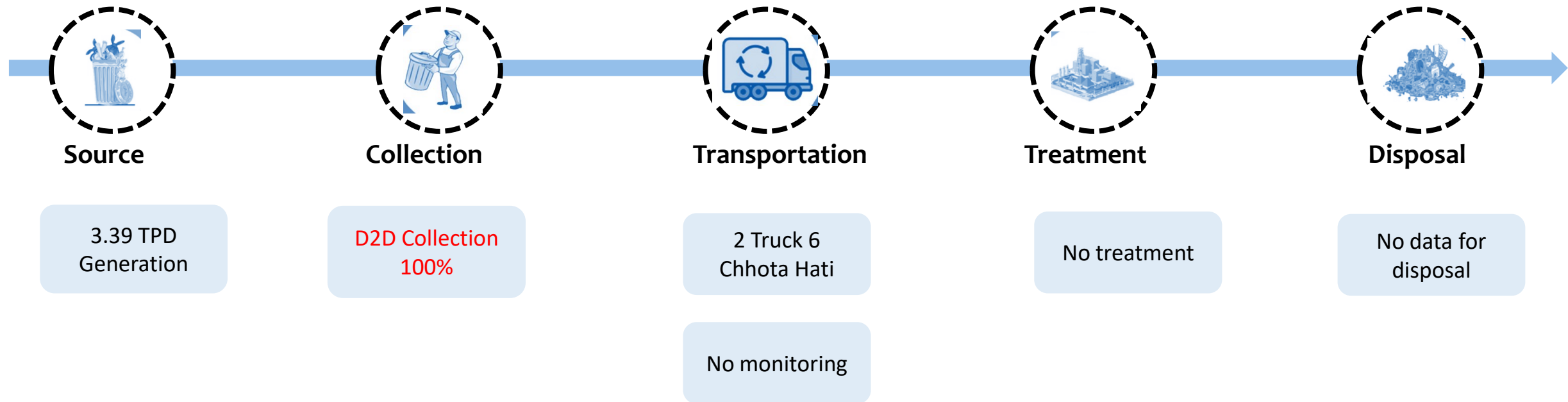
Water in Bareja



Sanitation in Bareja



SWM in Bareja



Water source and treatment – Bareja

Data Points	Data	Data Source	Data Recording	Data Frequency
Type of source	8 Borewell	ULB officials	Manul	Not maintained
Water quality test	Only TDS and PPM calculation (2years)	Gujarat aqua Geo service	Manual	2 year
Amount of Water treatment	Bareja don't have a WTP	Not known	Not maintained	Not maintained
Energy Consumption and Operational Data	Electric meter	Electric meter	Manul	Monthly
Amount of water extracted (Daily)	4 MLD	Calculate on the basis of underground sump size	Not maintained	Not Known
Amount of water Send (Daily)	3.5 MLD estimated	calculated on the basis of ESR gets empty	Not maintained	Not Known

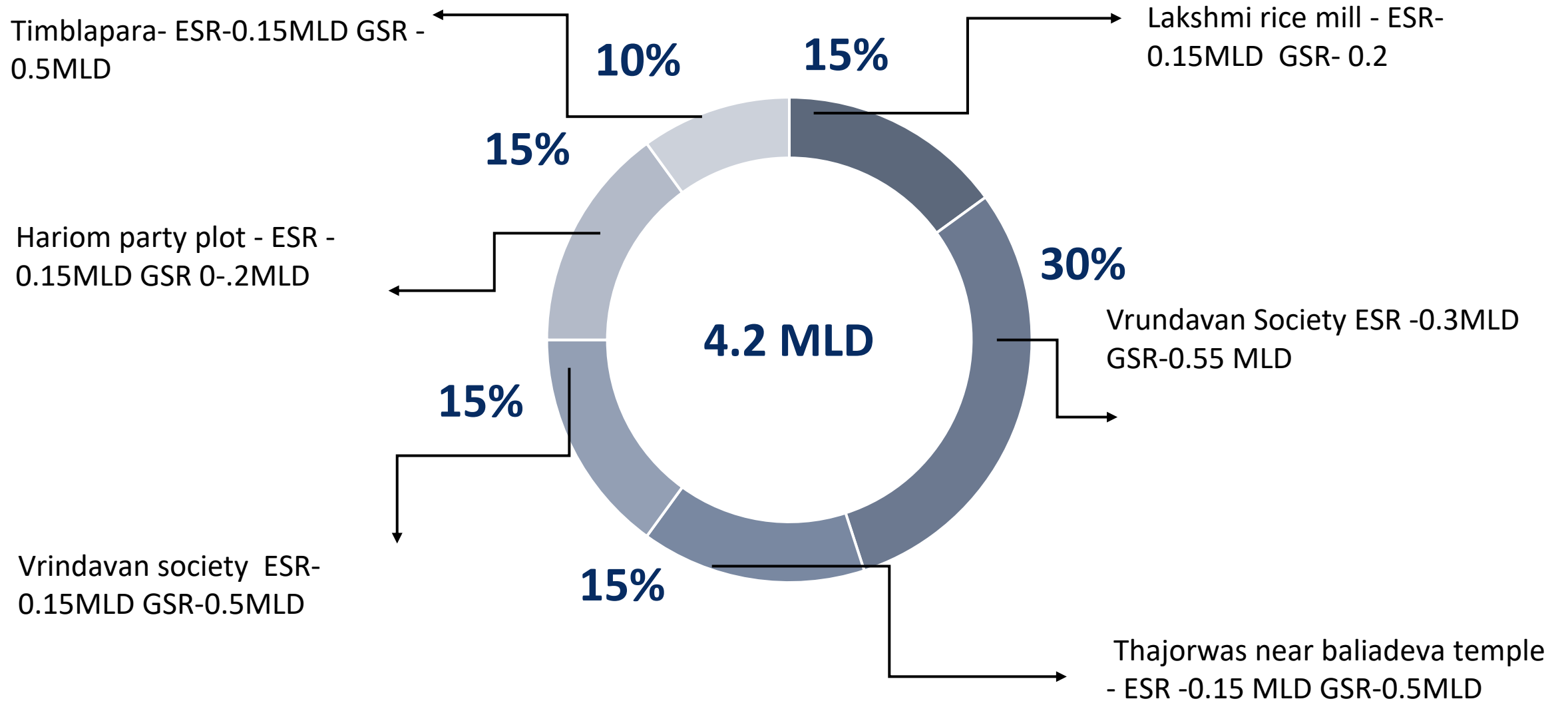
Water Distribution System Sanand

Data Points	Data	Data Source	Data Recording	Data Frequency
Valve opening time	12 PM Borewell 6 AM	(valve operator)	Not maintained	Not maintained
Storage capacity	Total storage capacity of ESR and GSR – 4.2 MLD	Capacity of sump and ESR	Not maintained	Not maintained
Time to get full	Whole night to fill ESR	Inbuilt level measurement at ESR	Manual data	Daily
Supply time	7 AM – 11:30 AM	Valve operator	Not maintained	Not maintained
Pressure calculation	Not calculated	Not known	Not maintained	Not maintained
Area serve	Different ESR GSR serve different area	Estimated	Not maintained	Not maintained
NRW	5% -10%	Estimated	Not maintained	Daily
Chlorination amount	Not done	Not maintain	Not maintained	Not maintained

Bareja Water Distribution System



Bareja Water Conveyance and Storage Data



Bareja- Water End user Data

Data Points	Data	Data Source	Data Recording	Data Frequency
No of total connections-	4220	E- Nagar tax and billing	Digital	Monthly
Water quality test	TDS and PPM check	ULB officials	Manual	Once in 2 year
NRW calculation	5% to 10%	Estimated by ULB official	Not maintained	Not maintained
LPCD	120 LPCD	ULB officials	Not maintained	Not maintained
Time of water supply	7 AM to 12 PM	ULB officials	Not maintained	Not maintained
Customer Service complaint data	Complaint on phone and in person	ULB officials	Manual	Not Applicable
Daily water requirement of city	6.7 MLD (as per population)	Estimated	Not maintained	Not applicable

Tool for formulate drinking water quality surveillance regime for Bareja

Frequency of Required Tests								
City:	Bareja						Year: 2023-2024	
	Physical Tests		Residual Chlorine		Bacteriological Tests		Chemical Tests	
	Numbers	Frequency	Numbers	Frequency	Numbers	Frequency	Numbers	Frequency
At source								
Ground water								
Tube well/ French well/ dug well (If drinking water is directly supplied to consumer end, chlorine dosage needs to be added)	8	Quarterly	8	Daily	8	Monthly	8	Quarterly
Hand pumps	0	Yearly	-	-	0	Yearly	0	Yearly
Surface water								
Raw Water: Rivers/ Infiltration wells/Lakes/Dams/Canal	0	Daily	-	-	0	Weekly	0	Daily
At Water Treatment Plant								
Outlet of WTP	0	Daily (Turbidity Only)	0	Daily	0	Weekly	0	Daily
At Water Distribution System								
Inlet of main sump/ Ground level Storage Reservoir/Elevated Service Reservoir	6	Daily	6	Daily	6	Weekly	6	Monthly
At Consumer End								
Consumer End	30	Daily (Turbidity Only)	30	Daily	30	Monthly	30	Yearly

Total test to be conducted monthly – 2600

1 test in a 2 years at WDS

Total test to be conducted daily – 80

No tests conducted at end user

Gap Identification

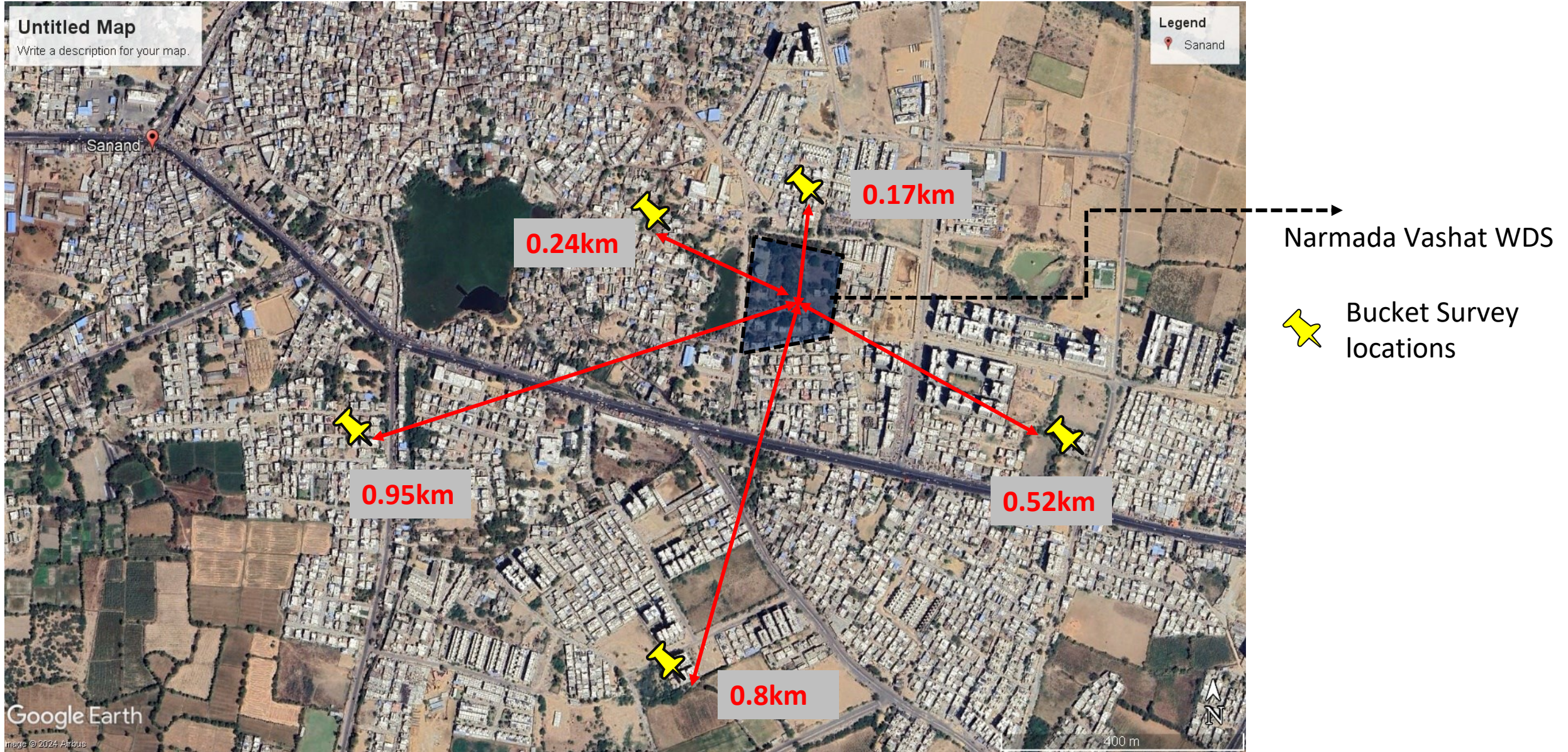
What to do

- **Data collection across the services change**
- **Increase in frequency of data collection**
- **Where to do water quality check**
- **Collection of data at user end**

How to do

- **Insufficient water quality monitoring as per requirement and frequency**
- **Underutilization of current resources**
- **Utilization of Data to identify gaps in the service**

Intervention Bucket Survey Per capita water Supply at consumer end



Bucket Survey in Sanand



Bucket Survey in 2 Apartments and 3 individual households

Time to fill a 10 L bucket (Error margin +-20%)



Narmada vashat Area

House hold size – 7
Water supply as per ULB – 150 LPCD
Survey reading = 10 L in 1.10 minutes
60 minutes of water supply = 545.5 L
Daily water supply = 654 L LPCD =93L
Losses during the conveyance = 34%



Shyam Hills apartment

House Hold Size 16 apartments = 72 people
Water supply as per ULB – 150 LPCD
Survey reading = 10 L in 1.20 minutes
60 minutes of water supply = 500 L
Daily water supply = 600 L LPCD =8.7L
Losses during the conveyance = 90%



Narmada vashat Area

House hold size – 5
Water supply as per ULB – 150 LPCD
Survey reading = 10 L in 2 minutes
60 minutes of water supply = 300 L
Daily water supply = 360 L LPCD =72L
Losses during the conveyance = 52%



Radhe skyline

House Hold size 20 Apartments = 90 people
Water supply as pe ULB – 150 LPCD
Survey reading = 10 L in 1.15 min
60 minutes of water supply = 521 L
Daily water supply = 625 L LPCD =6.9L
Losses during the conveyance = 85%



Bhagyoday Society

House hold size – 6
Water supply as per ULB – 150 LPCD
Survey reading = 10 L in 4 minutes
60 minutes of water supply = 120 L Daily
water supply = 148L LPCD =24.5L
Losses during the conveyance = 83%

Bucket Survey analysis

સાણંદ નગરપાલિકા
Tapal Chowk, Sanand

ગુજરાત નગરપાલિકા અધિનિયમ ૧૯૬૩ ની કલમ ૧૩૨ અનુસાર

મોનકામ નંબર: 8275513013

નાણાકીય વર્ષ: 2024-25

મિલકતી તારીખ: 18/04/2024

વિલકતનું સરનામું: 31/07/2024

બાંધપાત્ર, , , ની: 30/09/2024

ભવનના કાનાનામાં જગમલભાઈ

ક્રમ નં.	વોલ નં.	જુઓ વિલકત નંબર	નવો વિલકત નંબર	ULB Identifier No.	વિભ નં.	વોટર ઝોન
1	1/144	10021/144	10021/144	N3740242	0112425002272	NO

વિલકતની પ્રકાર: મા સેડન્ટિયલ પ્રોપર્ટી

કચરા પ્રકાર	પાકળી બાકી (₹)	ચાલુ બાકી (₹)	કુલ બાકી (₹)
મિલકત વેરો	297	169	466
સિકાર ઉપકર	0	0	0
પાણી વેરો	1800	1000	2800
રક્ષા વેરો	550	350	900
વિચાલતી વેરો	400	250	650
આર: સ્વચ્છ ઉપકર	175	100	275
અગાઉના જમા	0	0	0
નોટીસ ફી	0	0	0
Agry Rebate	0	0	0
નોટીસ ફી	0	0	0
વોટર ફી સનેક્શન	0	0	0
કુલ ચુકવવા પાત્ર રકમ(વિદેહ તારીખ બાક)	3222	1869	5091
Rebate	0	-187	-187
કુલ ચુકવવા પાત્ર રકમ(વિદેહ તારીખ ચુકવી)	3222	1682	4904

કુલ ચુકવવાપાત્ર રકમ રાશીઓમાં: $(A1 \times R \times F1 \times F2 \times F3 \times F4) + (A2 \times R \times F1 \times F2 \times F3 \times F4) \dots =$ કુલ મિલકત વેરો

કોમ્પનું વર્ણન	કુલ વિસ્તાર(ચો.મી.)	વોલિયમ ટેર R	રચના પરિબલ F1	વિલકતનું આધુનિક પરિબલ F2	વિલકતની ભોગવટી પરિબલ F3	વિલકતની પ્રકાર પરિબલ F4	પાણી કનેક્શન	ગટર કનેક્શન
બાંધકામ(A2)	25.08	8.0	1.25	1.0	1.0	0.75	1/2 inch (1)	-
પુણી પ્યોટ(A1)	0	8.0	1.25	1.0	1.0	-	-	-

શેષ 105 (2) 2007 મુજબ અને કલમ 7 (2) માં અનુદેશ અને બાકી ના ૧૦% ઘટાટા પાણી ના મિલકતવેરો ની રકમ 169 ₹

નોંધ: ઉપર જણાવેલ બાકીની રકમ વિલકત રીવેટ તારીખ 31/07/2024 પહેલાં ચુકવવામાં આવે, તો ચાલુ વર્ષ ના માંગણીની રકમ પર નગરપાલિકાના નિયમ મુજબ 10% રીવેટ લાગુ થશે. પણ વિન-ચુકવણીના કિસ્સા માં વિલકત નીમત તારીખ 30/09/2024 પછી વાલિય 18% આજ વાગુ થશે. આ વિલકતી રીવેટ માત્ર રકમના નુકસાન પુરતો મર્યાદિત છે. આ વિલકતી ઉપલેખ વિલકત ની માલિકી બાબતે હાથેહાથે કરવા સોંપાવેલ કરે છે. સકારો નહીં.

ઓનલાઈન વેરો ભરવા માટે: www.enagar.gujarat.gov.in પર જઈ અથવા વિલકત કોલેક્ટર કોલેક્ટર કરવો



Narmada vashat Area

House hold size – 7
 Water supply as per ULB – 150 LPCD
 Survey reading = 10 L in 1.10 minutes
 60 minutes of water supply = 545.5 L
 Daily water supply = 654 L LPCD =93L
 Losses during the conveyance = 34%



Bhagyoday Society

House hold size – 6
 Water supply as per ULB – 150 LPCD
 Survey reading = 10 L in 4 minutes
 60 minutes of water supply = 120 L Daily water supply = 148L LPCD =24.5L
 Losses during the conveyance = 83%

Residential water tax is 1000 Rs



Approx. average water loss in WDS to

End user is 68%

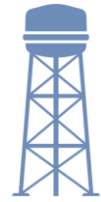
Maybe ULB supply less amount of water in that area or due to low pressure water is not reaching



Intervention Calculating NRW from WTP to WDS



Total water treated – 25 MLD
Total water supplied to Sanand 8 MLD



Narmada vashat

Water supplied to Narmada Vasahat Pump House – 5 MLD
Water received at Narmada Vasahat Pump house- 3.27 MLD (Aqualicous app)
Loss – 1.73 MLD 34.6%



Shankarwadi

Water supplied to Shankarwadi Pump House – 1.6 MLD
Water receive at Shankarwadi Pump house- 0.75 MLD (Aqualicous app)
Loss – 0.85MLD 52.7%



Gadiya

Water supplied to Ghadiya Pump House – 0.24 MLD
Water receive at Ghadiya Pump house- 0.16 MLD (Aqualicous app)
Loss – 0.08MLD 33.5%



Novovash

Water supplied to Novovash Pump House – 0.4 MLD
Water receive at Novovash Pump house- 0.25 MLD (Aqualicous app)
Loss – 0.15MLD 37.5%



Mahadev Nagar

Water supplied to Mahadev Nagar Pump House – 0.4MLD
Water receive at Madadev Nagar Pump house- 0.36 MLD (Aqualicous app)
Loss – 0.04MLD 10%



Taluka Panchayat

Water supplied to Taluka Panchayat Pump House – 0.8 MLD
Water receive at Taluka Panchayat Pump house- 0.31 MLD (Aqualicous app)
Loss – 0.49MLD 61%

NRW from WTP to WDS for Sanand



Total water treated – **25 MLD**

Total water supplied to Sanand is **8 MLD**

As per SLB data of FY 2022-23

NRW reported is 19.2%



losses during the transportation from WTP to
WDS

Supply is 8 MLD – 4.66 MLD = 3.34MLD


NRW – 41.75% (as per the calculation)



Water received at Sanand all 6 Pump house- **4.66MLD** (average from app data) and losses are **3.34 MLD i.e. 41.75%**


Cost analysis for NRW from WTP to WDS for Sanand

Outward No.: AHM/MN/1581-31052023-221



GUJARAT WATER SUPPLY & SEWERAGE BOARD
 Office of the Executive Engineer, Public Health Work Division
 Jalbhavan, 1st Floor, Bhd. Town Hall, Ellis Bridge, Ahmedabad - 380 006
 Phone: 079-26578747 Mob.: 9978440619
 Email: gwseecamd1@gmail.com Website: www.gwssb.gujarat.gov.in

PAY ONLINE



INVOICE (WATER BILL) FOR THE MONTH OF DECEMBER-23	
Consumer Code:	AHM/MN/1581
Consumer Name:	Sanand Nagarpalika
Address:	Tapal Chok, Sanand, Taluka-Sanand Dist-Ahmedabad
Email:	np_sanand@yahoo.co.in
Project Name:	SSW A-2 PACKAGE
Connection Type:	Available Deposit: 0
Air Valve No.:	Agreement Date:
Bill No.:	Agreement Exp Date:
Bill Date:	Meter Number:
Due Date:	Calibration Date:
	Bill Amount: 84693523.00

September - 2023		October - 2023		November - 2023	
Bill Rs.	Payment Rs.	Bill Rs.	Payment Rs.	Bill Rs.	Payment Rs.
81783600.00	0.00	82732488.00	0.00	83713005.00	0.00

Water Consumption Details			Water Consumption Charges	
San. KL/Month	Min. KL/Month	Max. KL/Month	(i) Normal Rate-Rs./KL	(ii) Charge Beyond Max. Rs./KL
155000.000	124000.000	170500.000	4.00	8.00
Initial Reading		0.0000	Current Month Invoice Amount	980517.60
Final Reading		245129.4000	Previous Outstanding Amount	83713005.40
Actual Water Consumption		245129.4000	Total Payable Amount	84693523.00
Normal Billing Quantity		245129.4000	Adjustment In Normal Amount	0.00
Consumption beyond maximum of Qty. in KL (110% of San. Qty)		0.0000	Adjustment In Interest Amount	0.00
Meter Charges		0.00	Delay Payment Charges	0.00
Charge in Normal Rate		980517.60	Round Up	0.00
Charge Beyond Max		0.00	Net Total Payable Amount	84693523.00

In Words: Rupees Eight Crore Forty Six Lakh Ninety Three Thousand Five Hundreds Twenty Three Only

Recovery Detail: N/A

Payment Convenience

1) It is requested to deposit the Bill Amount before due date through RTGS/ NEFT in our below mentioned account

Account Title	Bank Name	Branch Name	Account No	IFSC Code
GWSSB - AHMEDABAD	ICICI Bank	MUMBAI	GW25010201581	ICIC0000104

2) Payment can be made through Cheque/ DD in favor of GWSSB - AHMEDABAD in concerned office.

Remarks: WATER METER

1. Initial Meter reading: It is meter reading taken on 1st Date of previous month. 2. Final Meter reading: It is meter reading taken on 1st Date of current month. 3. Water Consumption during the month: Difference of Final and Initial meter reading. 4. Charges of normal rate: These are the charges as decided by the Water Supply department for upto 110% of the sanctioned quantity of water consumed during the month or minimum water charges @ 80% of the contract demand. 5. Charges for drawing beyond maximum water demand: 110% of the contract demand is Maximum water demand, quantity beyond maximum water demand shall be charged at double the normal water charges. 6. Previous outstanding: It is outstanding against the payment of water charges at normal rates, minimum water charges or charges for excess draw beyond Maximum water demand. 7. Delay payment charges: Charges @ 15%/Annum for delay period beyond 14 days from the date of invoice, till the actual charges are paid. 8. Meter Charges: It is monthly charge in the case water meter is provided by the GWSSB/GWIL. 9. Billing information is also given through SMS on the registered mobile number and through registered e-mail address on the same date of invoice. 10. Consumer shall maintain the daily log sheet of water meter reading and shall intimate to the GWSSB on the same date regarding non functioning of water meter. 11. Safety and security of water meter is responsibility of the consumer.

Note: This is computer generated invoice and so does not require sign.

Deputy Executive Engineer / Executive Engineer

As pe the bill 02/01/2024

Water consumption reading **245129 KLD**

Cost = 4 Rs/KL

Bill amount = 980517 Rs



Daily water send 8170 KLD cost = **32,683 Rs**

Monthly cost is **9,80,517 Rs** for January 2024

As per the loss 3347 KLD cost = **13,388 Rs**

Average yearly loss **1,00,410 KLD cost =**

48,19,680 Rs

If the losses are reduced to 30% from 41% then approx. 34,56,000 can be saved yearly

Water quality test



DISTRICT LABORATORY
5TH Floor, Jalbhavan G.W.S.S.B.Ahmedabad,
PIN-380006.
E-mail:- jalbhavn.lab@gmail.com.



REPORT ON SHORT CHEMICAL EXAMINATION OF WATER

Name & Address
The Deputy Executive Engineer
P.H. Sani. Sub. Div. G.W.S.S.B. Bavia
Ahmedabad

Sender's Ref. No. :
Ref. Date : Lab
Date of Collection : 03/09/2022
Date of Arrival : 03/09/2022
Lab. Ref. No. : 044
Sample Collected By : Lab

Source of water Sample :-
Telav H.W

Village: TELAV, Taluka: SANAND, District: AHMEDABAD

Sr. No. CHARACTERISTIC	Value as per IS 10500 : 2012 [2 nd Revision]		Analytical Value
	Requirement [Acceptable Limit]	* Permissible Limit in the absence of Alternate Source	
1 Colour - (Hazen Units), Max	5	15	0.21
2 Odour	Agreeable	Agreeable	Agreeable
3 Turbidity - (NTU), Max	1	5	2.41
4 Dissolve Solids - mg/l, Max	500	2000	276
5 pH Value	6.5 to 8.5	No Relaxation	7.95
6 Total Hardness (as CaCO ₃) mg/l, Max	200	600	116
7 Calcium (as Ca ⁺⁺) mg/l, Max	75	200	22
8 Magnesium (as Mg ⁺⁺) mg/l, Max	30	100	15
9 Chloride (as Cl ⁻) mg/l, Max	250	1000	40
10 Sulphate (as SO ₄ ⁻²) mg/l, Max	200	400	15
11 Nitrates (as NO ₃ ⁻) mg/l, Max	45	No Relaxation	2.20
12 Fluoride (as F ⁻) mg/l, Max	1.0	1.5	0.25
13 Alkalinity (as CaCO ₃) mg/l, Max	200	600	100
Opinion for Potability is given as per Analysed test parameters only.			FIT

Note:
* It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under "acceptable" render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under "permissible limit in the absence of alternate source" above which the sources will have to be rejected.

1. Test Report is issued for assessing Chemical Fitness as per the BIS 12500 2012 for the given Drinking Water Sample only.
2. This Report should not be taken as a basis to getting license from any Government authority.
3. Chemical Sample must be submitted within 72 hours to laboratory from time of collecting sample.
4. Excessive Turbidity, if any may be removed before use.

D.P. Sharma
Chief Scientific Officer

Outward No. - CAR / / of 2022, Date ____ / ____ / 2022

Low frequency of water quality test at each level of service chain in both Sanand and Bareja



No proper test is conducted only 4 parameters of water quality

Looking at IS code 10500 drinking water specification 15 parameter

સાણંદ નગરપાલિકા
હલોરીનેશન ટેસ્ટીંગનો રીપોર્ટ તારીખ : ૨૨/૧૨/૨૨

અ.નં.	સમય	ટેસ્ટીંગનું સ્થળ	સપ્લાય વિસ્તારનાં બોરનું નામ	પરિણામની વિગત (PPM)	લોડ પ્રતિનિધિની સહી	રીમાર્ક્સ
૧.	૬-૫૬	ભાખાજીયા જાગીરા	ગાઠિયા બોર	૦-૬		કુલુબાઈ ભેલકા
૨.	૭-૦૦	સુભાઈ પાટણ	ગાઠિયા બોર	૦-૬		ગુજરાત લોક સેવા
૩.	૭-૩૦	ભોજાઈ વાઘાજીયા	ગાઠિયા બોર	૦-૩		સેના.કે. રાઈલ
૪.	૭-૫૬	ભાખાજીયા જાગીરા	ગાઠિયા બોર	૦-૩		સેના.કે. રાઈલ
૫.	૮-૦૦	સુભાઈ પાટણ	ગાઠિયા બોર	૦-૨		રશ્મી દિવાળી
૬.						
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૧૦.						

ઉપરોક્ત ટેસ્ટીંગ અગ્રણ્ય રૂબરૂમાં કરેલ છે અને જે-તે ટેસ્ટીંગ દરમ્યાન હાજર લોડ પ્રતિનિધિની સહી કરાવેલ છે.

સાણંદ ઉમિયા કેમીકલ્સ વતી (પ્રતિનિધિનું પુર નામ અને સહી)

સાણંદ નગરપાલિકા
હલોરીનેશન ટેસ્ટીંગનો રીપોર્ટ તારીખ : ૨૩/૧/૨૩

અ.નં.	સમય	ટેસ્ટીંગનું સ્થળ	સપ્લાય વિસ્તારનાં બોરનું નામ	પરિણામની વિગત (PPM)	લોડ પ્રતિનિધિની સહી	રીમાર્ક્સ
૧.	૭-૦૦	સુભાઈ પાટણ	ગાઠિયા બોર	૦-૩		કુલુબાઈ ભેલકા
૨.	૭-૧૬	સુભાઈ પાટણ	ગાઠિયા બોર	૦-૩		ગુજરાત લોક સેવા
૩.	૭-૩૦	ભોજાઈ વાઘાજીયા	ગાઠિયા બોર	૦-૩		સેના.કે. રાઈલ
૪.	૮-૦૦	ભાખાજીયા જાગીરા	ગાઠિયા બોર	૦-૪		સેના.કે. રાઈલ
૫.	૮-૧૬	સુભાઈ પાટણ	ગાઠિયા બોર	૦-૨		સુભાઈ
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ઉપરોક્ત ટેસ્ટીંગ અગ્રણ્ય રૂબરૂમાં કરેલ છે અને જે-તે ટેસ્ટીંગ દરમ્યાન હાજર લોડ પ્રતિનિધિની સહી કરાવેલ છે.

સાણંદ ઉમિયા કેમીકલ્સ વતી (પ્રતિનિધિનું પુર નામ અને સહી)

Water quality test result GWSSB Jal Bhawan

Water quality test Sanand

Comparative chart of the multi-parameter water quality monitoring instruments

Product	Product	No. of Parameters	Cost (INR)	Operational	Maintenance	Data Storage	Frequency of reading
	YSI 9800- YSI (Xylem Inc.)	20 water quality parameters	2,50,000 - 4,00,000	Manual Automated	Sensor calibration, membrane replacement	Built-in data logging, wireless	Can be set as per requirement
	Troll 700 In-Situ Inc.	Up to 12 water quality parameters	5,00,000 - 7,00,000	Automated	Sensor calibration, battery replacement	Built-in data logging, wireless	Can be set as per requirement
	Hach HQ40d portable meter	Up to 10 water quality parameters	3,50,000 - 5,50,000	Manual operation	Probe replacement	Data logging, USB connectivity	Can be set as per requirement
	HYDROLAB HL7Hydrolab (OTT HydroMet)	Up to 11 water quality parameters	4,00,000 - 6,00,000	Automated	Sensor calibration, battery replacement	Built-in data logging, wireless	Can be set as per requirement

Multi-parameter water quality monitoring instruments

9800 Photometer

Simple. Convenient. Accurate.

The **YSI 9800 Photometer** streamlines water quality analysis through easy, step-by-step instructions for dozens of parameters on a large touchscreen display. A portable, waterproof design makes this the ideal instrument for any water quality application both in the field and lab. The 9800 uses the same reagents as previous photometer models and all reagents are safe and easy to use.



Benefits of the 9800 Photometer



Quick and Accurate Testing
Simple on-screen instructions guide you through dozens of test options



Multiparameter Sampling
Get more comprehensive data with over 30 parameters on a single instrument



Touch Screen Interface
Easily view testing options, settings, and results even when wearing gloves



Rugged Design
Field-ready housing is impact tested, waterproof, and scratch resistant



Data Management
Test results are saved automatically with easy data retrieval



Easy-to-Use Reagents
Reagents are safe to use regardless of form

Works both in manual and digital format manual sampling and digital machine sampling

5000 tests in 1 charge and rechargeable with c type cable

Sensor calibration, membrane replacement after device indication cost 6500



Select Test
Select from a list of all Tests or Favorite Tests



Check Standards
The 9800 can be verified with a set of standards



Test Log
View logged data and filter to view subsets



Users
Add up to 50 user names for increased traceability



Labels
Use labels to tag data for later filtering



System Settings
Set up and customize your 9800 Photometer

Cost comparison of installing water quality instrument

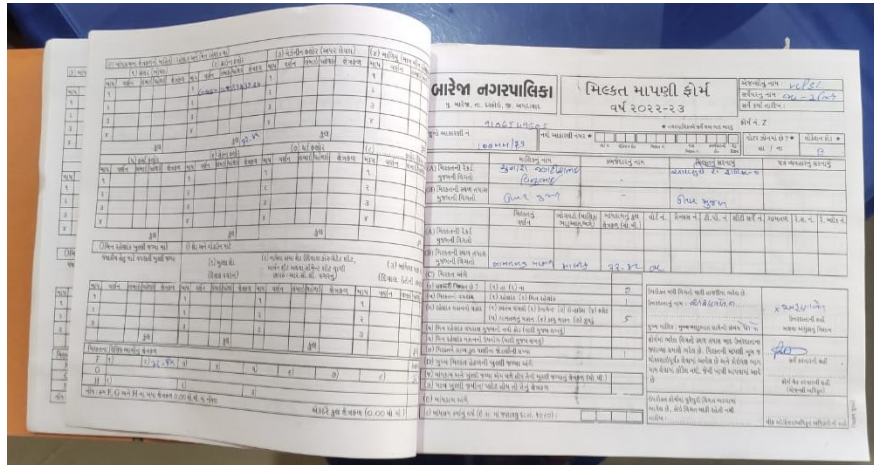
Low frequency and improper Water quality check at WDS as seen in both Sanandana Bareja



If the losses are reduced to 30% from 41% in NRW of WTP to WDS then approx. 34,56,000 can be saved yearly which can be used in installing Water Quality machinery

Installing YSI 9800- YSI (Xylem Inc.) cost – 2,50,000RS – 4,50,000 (one time investment gives more than 20 quality parameter check)

Digital Survey of End-users for property assessment and service availability



Conversion of manual survey into digital survey



- No data related to service availability (water, sanitation , SWM etc.)
- Very Low frequency (4 year ago)
- Manual data store hard to analyze

- Service related question (No. of water connection)
- Frequency once in a year
- Data store in digital format fast Insite generation

Digital Survey of End-users way forward

Survey Design

- Develop a standardized questionnaire covering water supply, sanitation, and solid waste management
- Ensure the questionnaire aligns with the data requirements for Service Level Benchmarks (SLBs)
- Incorporate feedback from municipal officials and community representatives

Digital Survey Implementation

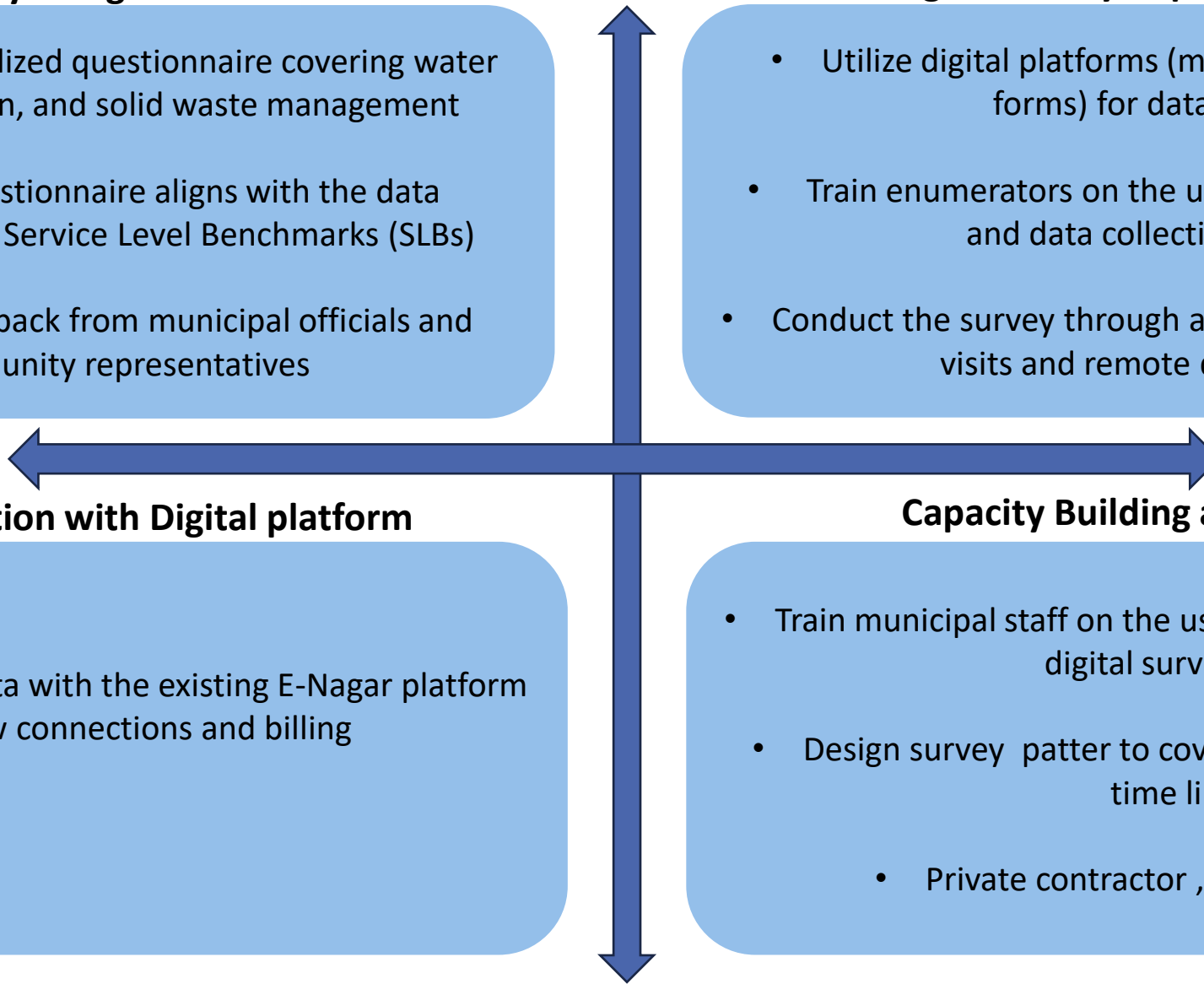
- Utilize digital platforms (mobile apps, web-based forms) for data collection
- Train enumerators on the use of digital survey tools and data collection protocols
- Conduct the survey through a combination of in-person visits and remote data collection

Integration with Digital platform

- Link the survey data with the existing E-Nagar platform for new connections and billing

Capacity Building and Staff training

- Train municipal staff on the use and maintenance of the digital survey tools
- Design survey patter to cover overall city as per the time limit
 - Private contractor , NGO for survey



Recommendation and way Forward

Issue

- Inadequate data collection at different source

- Digital manual data fragmentation

- Interdepartmental coordination

- Inadequate capacity of ULB officials for data collection

Recommendation

- Digitalize data collection
- Frequent Survey

- Linking data with E-nagar through API

- Appoint a data officer.
- State department protocol to share data with Ulbs

- Training needs assessment of staff
- partnerships with educational institutions, NGOs for training



Storage

DATA

Value

Thankyou

Analysis

Knowledge

Strateg

Information