Performance Assessment System for Urban Water Supply and Sanitation in Gujarat

Dr. Meera Mehta
Prof. Mona Iyer
Prof. Sejal Patel

Date: 22th April , 2009
Semester II
Infrastructure Planning batch 08

Aim

To evolve Performance **Measurement, Assessment** and **Improvement Systems** for Urban Water Supply and Sanitation in Gujarat.




Lab Framework

Performance Measurement and Assessment of ULBs (Stage 1)

LEADING TO

Stage 1A

Background studies — Review of

- Institutional Framework in UWSS: Gujarat
- Reforms and programs
- Indicators and benchmarks

Case studies for good practices in UWSS sector in India

Stage 1B

Assessment of UWSS — through

- Selection of 6 cities for study
- Comparing performance level of cities
- Analysis of key issues in these cities

Strategies for ULBs in Performance Improvement Package (Stage 2)

- Sector wide Approach:UWS
- Financial Sustainability
- Equity
- Performance Monitoring System

Case for

- **Bavla**
- **Bhavnagar**
- **Navsari and Vadodara**
- **Chanasma and Vadodara**

Stage 1A

Performance Measurement and Assessment of ULB (Stage 1)

Stage 1A

Background studies

Review of

- Institutional Framework in UWSS: Gujarat
- Reforms and programs
- Indicators and benchmarks

Case studies for good practices in UWSS sector in India

Stage 1A

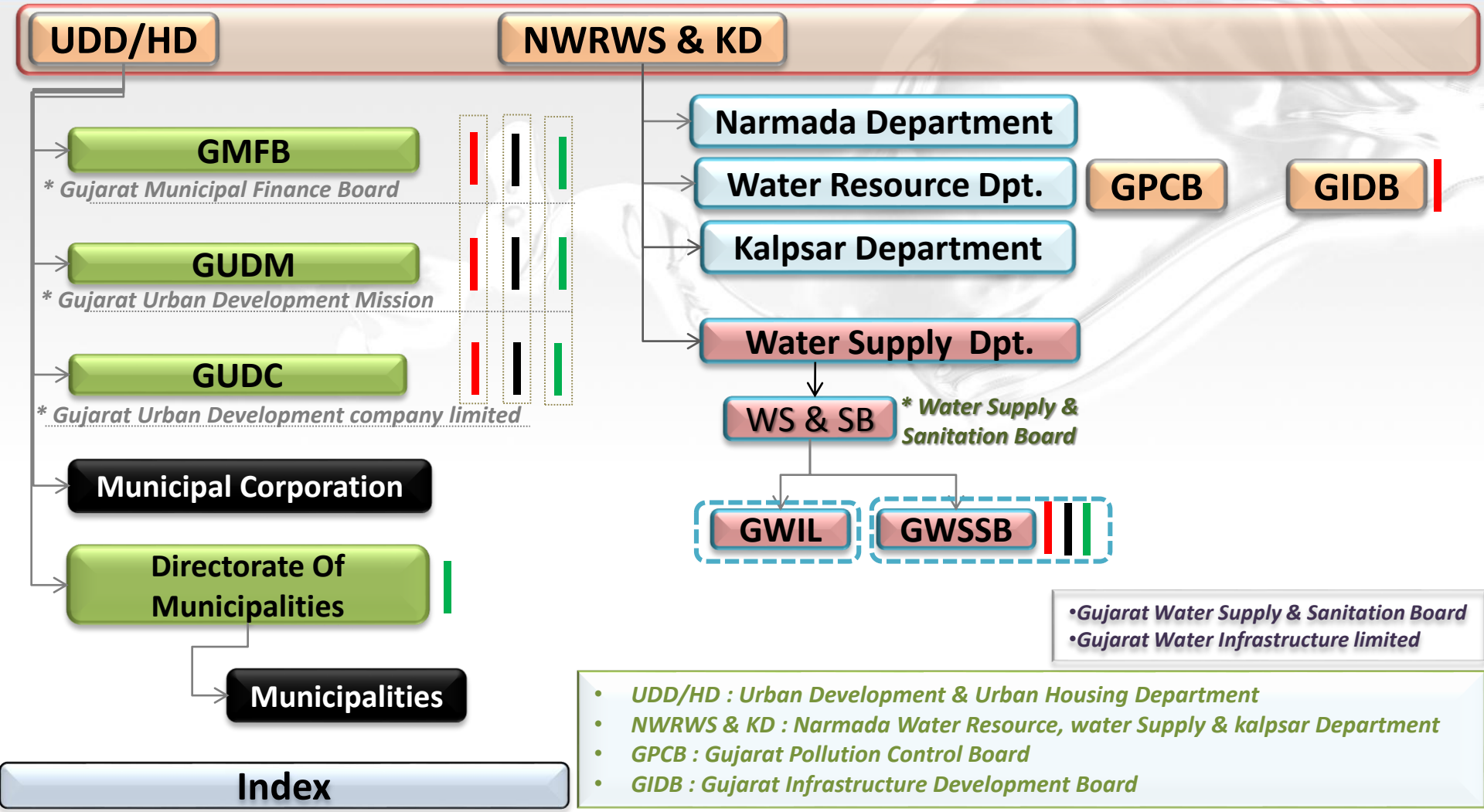
Assessment of UWSS

through

- Identifying 6 cities for study
- Comparing performance level of cities
- Analysis of key issues in these cities

Institutional Framework in UWSS sector

Need: To Identify the Institutions associated to UWSS & their roles in of **Administration, Regulation, Implementation and Operation**



- *UDD/HD : Urban Development & Urban Housing Department*
- *NWRWS & KD : Narmada Water Resource, water Supply & kalpsar Department*
- *GPCB : Gujarat Pollution Control Board*
- *GIDB : Gujarat Infrastructure Development Board*

Index

- Water Supply
- Finance
- Policy Formulation & Capacity Building
- Project Implementation & Monitoring

Source : UDD/HD

In this chart the straight lines with different colors are showing the involvement of various organizations in different ROLES for ex: Finance, Policy making, etc.

Reforms and Programs in UWSS sector

Various Reforms and programs done in past

MEGA CITY	Centrally sponsored scheme for infrastructure development like water supply, sanitation, roads, transport, solid waste management, etc.	MoUD	1993-94
AUWSSP	Extending WSS to household of class IV to VI & towns	MoUD	1993-94
IDSMT	To increase the economic & physical infrastructure & to provide services &facilities	MoUAE	1995
URIF	Reform of rent control act, strengthening of property tax system, reduction of stamp duty, double entry account system, user charges to cover O & M.	MHUPA	2002-03
JnNURM	Improvement of urban governance, to make ULBs financially sound, and enable ULBs to undertake new programs and expand services.	MoUD	2005-06

AIM OF JNNURM: The aim is to encourage reforms and fast track planned development of identified cities. Focus is to be on efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of ULBs/ Para-Statal agencies towards citizens.

Cities covered in JnNURM

Five Million plus cities	7
Cities with population from 1 to 5 million	28
Cities with population less than 1 million	28
Total	63

JnNURM allocates 1,00,000 Crore for projects, out of which 40% is reserved for UWSS

Covering all other 5,098 cities and towns as per Census 2001

Reforms and Programs

OBJECTIVES OF REFORMS

- Improvement of urban governance.
- To make ULBs financially sound.
- To enable ULBs access to market capital.
- To enable ULBs to undertake new programs and expand services.

NEEDS OF REFORMS

- Harnessing the potential of reforms in urban governance.
- Need for national level reform linked investment.
- Need for sustainable infrastructure development.
- Need for efficiency enhancement.

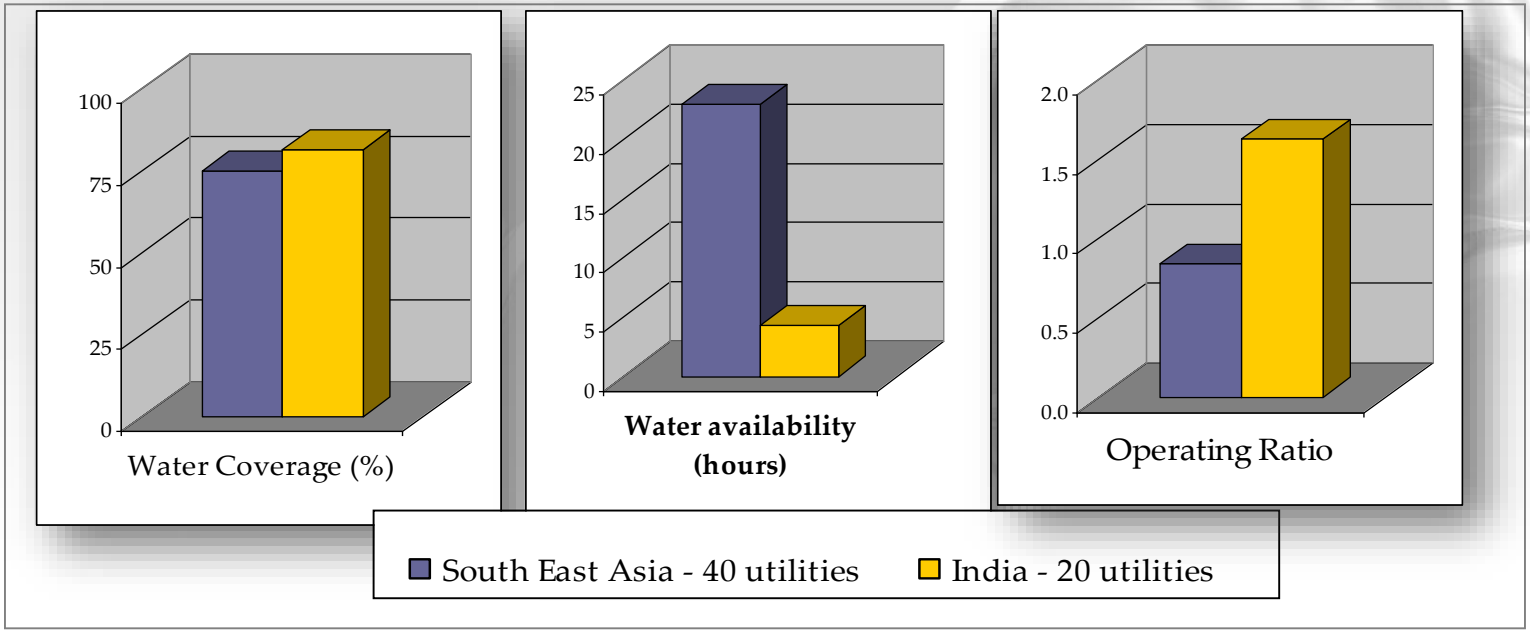
MANDATORY REFORMS (ULB)

- Adaptation of modern, accrual-based double entry system of accounting in ULB & parastatal agencies.
- Introduction of system of e-governance like GIS & MIS for various services provided by ULBs.
- Reform of property tax as a source of revenue of ULBs.
- User Charges for recovery of full cost of O&M.
- Internal earmarking of funds for services to urban poor

MANDATORY REFORMS (STATE)

- Implementation of 74th Constitutional Amendment.
- Repeal of Urban Land Ceiling and Regulation Act.
- Reform of Rent Control Laws.
- Rationalization of Stamp Duty – not more than 5% within next five years.
- Integration of city planning and delivery functions.
- Enactment of Public Disclosure Law.
- Community Participation Law.

Comparative Performance : India Vs SE Asia



Sources: ADB and Ministry of Urban Development (2007), Report on "Benchmarking and Data Book of water Utilities in India." Government of India, and Southeast Asian Water Utilities Network (SEAWUN) and ADB (2007), "Data Book of Southeast Asian water Utilities 2005",

- India's performance on the water access and coverage is high, however the definition of these indicators and their quality level needs to be revisited.
- Also the performance on service level and financial indicators is far from being satisfactory for Indian cities.

Indicators and Benchmarks for UWSS sector

Process of understanding:

- The need of Indicators and Benchmarks
- The constituents of indicators and benchmarks
- Reviewing the worldwide efforts in formulating Indicators and Benchmarks
- Detail study of IBNET, ADB, WSP, SLB of GoI and SG Awards by GoM
- Formulating our lab Indicators for the 6 cities of Gujarat

Developing a comprehensive performance measurement framework

Set of Indicators

- Logical Categories
  - Quantitative
  - Qualitative
- Clear Definitions
- Unit of measurement
- Frequency of recording

Data Acquisition

- Data Requirements
- Collect data
- Process data
- Analyze data
- Present data

Benchmarking

- Assess the performance
- Cross utility comparisons
- Corrective actions for identified level of performance

Example explaining the Indicator:

Category	Indicator	Unit	Definition	Data	Unit	Formula	Bench mark
Access	Household level coverage of direct water supply connections	%	Total number of households in the service area that are connected to the water supply network with a direct service connection, as percentage of Total number of households in that service area. The service area may be either an electoral ward, or the ULB as a whole.	Total number of households in the service area (a)	Number	Coverage = [(b/a)*100]	100%
				Total number of households with direct water supply connection (b)	Number		
Service level and Quality	Per capita quantum of water supplied	(lpcd)	Total water supplied into the distribution system (ex-treatment plant and including purchased water, if any) expressed by population served per day.	Water supplied in distribution system (a)	Liters per month	Per capita water produced = [(a / c) / b]	135 lpcd
				Population served (b)	Number		
				Number of days in the month (c)	Number		

Indicator	Reliability A	Reliability B	Reliability C	Reliability D
House hold level coverage of water supply connections	Calculation based on actual number of households with direct service connections (for which data is maintained); and total number of households as revealed in ground level surveys. Data is periodically updated on basis of building units approved, and new household level water connections provided	Estimation of households covered computed as total number of connections (for which data is maintained) as a percentage of estimated number of households on basis of population (total population divided by average household size)	Estimation of households covered on basis of road length in the city covered by pipeline network, as a surrogate indicator for water supply coverage.	Estimation of households covered on basis of geographical area of the city covered with pipeline network, as a surrogate indicator for water supply coverage.

Comparative analysis of water supply performance indicators

CATAGORIES	IBNET	ADB	AUSTRALIA	SLB of GOI
Access	service coverage(3), water production (2), water sold(2), type of consumers(4)	coverage of water supply, consumption of water, production of water,	length of main, no. of connections, No of Properties served, volume of water produce from river, dams, desalination, ground water, recycle water, Total water supplied	Per capita supply of water
Service level	metering(2), network performance(1), quality of service(4)	water service performance	level of service(4)	Extent of metering of water connections, Continuity of water supply
Costing, finance and staff	non revenue water(3), operation cost(2), staffing(3), contracted out cost, billing and collection(4), financial performance(2), affordability(2)	unaccounted water, tariff per unit of volume, production cost, operating ratio, efficiency of revenue collection, staff/1000 connection	residential tariff, residential bill per annum, Billing & account complaints per 1000 properties, economic and financial	Extent of Non-Revenue Water ,Cost recovery in water supply services ,
Efficiency	% of electricity cost of the overall operation cost.	Efficiency of Revenue collection	Effective revenue collection, Efficiency in water related charges	Efficiency in collection of water related charges, Efficiency in redressal of customer complaints
Customer issues -health, environment			health(12), environment(3)	Efficiency in redressal of customer complaints

Comparative analysis of waste water performance indicators

CATEGORIES	IBNET	AUSTRALIA	SLB of GOI
Access	service coverage(1)	length of main, no. of connections, No of Properties served	Coverage of toilets, Coverage of waste water network services
Service level	sewer blockage,	level of service(8)	Adequacy of waste water treatment capacity
Costing, finance and staff	operation cost(2), staffing(3), electricity cost, contracted out cost, billing and collection(4), financial performance(2), affordability(1)	residential tariff, tariff per annum, Billing & account complaints per 1000 properties, economic and financial	Extent of Cost recovery in waste water management, Extent of reuse and recycling of waste water, Efficiency in collection of sewerage related charges
Efficiency			Efficiency in collection of sewerage related charges, Efficiency in redressal of customer complaints
Customer issues - health, environment	complaints per 1000 connections, treatment levels(2)	environment(10)	Efficiency in redressal of customer complaints

List of indicators for UWSS for the lab study

CATAGORIES	WATER SUPPLY	WASTE WATER SYSTEMS
ACCESS & COVERAGE	▪Household level coverage of direct water supply connections ▪Water connections split by customer type - Residential, Institutional, commercial / Industrial, Bulk treated supply	▪Coverage of toilets ▪Coverage of waste water network services
SERVICE LEVEL & QUALITY	▪Per capita quantum of water supplied ▪Quality of water supplied ▪Continuity of water supply	▪Adequacy of capacity for treatment of waste water ▪Quality of waste water treatment ▪Extent of recycling or reuse of waste water ▪Sewer System Blockages
EFFICIENCY AND COST RECOVERY	▪Extent of Non-Revenue Water ▪Cost recovery in water supply services ▪Efficiency in collection of water related charges ▪Extent of metering of water connections ▪Production cost of water per unit volume ▪Staff Water /'000 Water connections ▪Operating ratio of water supply	▪Efficiency in collection of waste water ▪Efficiency in collection of sewerage charges ▪Extent of Cost recovery in waste water management ▪Staff Wastewater/1000 Wastewater connections
CUSTOMER SERVICE	▪Efficiency in redressal of customer complaints (24 hrs), ▪Quality of water supplied: samples passing on residual chlorine	▪Efficiency in redressal of customer complaints
EQUITY	▪Coverage of water supply connections in ‘slum settlements’ ▪Spatial coverage of water supply network ▪Spatial variations in per capita supply ▪Spatial variations in continuity in supply	▪Coverage of toilets in slums ▪Spatial coverage of waste water network

Stage 1B

Performance Measurement and Assessment of ULBs (Stage 1)

Stage 1A

Background studies — Review of

- Institutional Framework in UWSS: Gujarat
- Reforms and programs
- Indicators and benchmarks

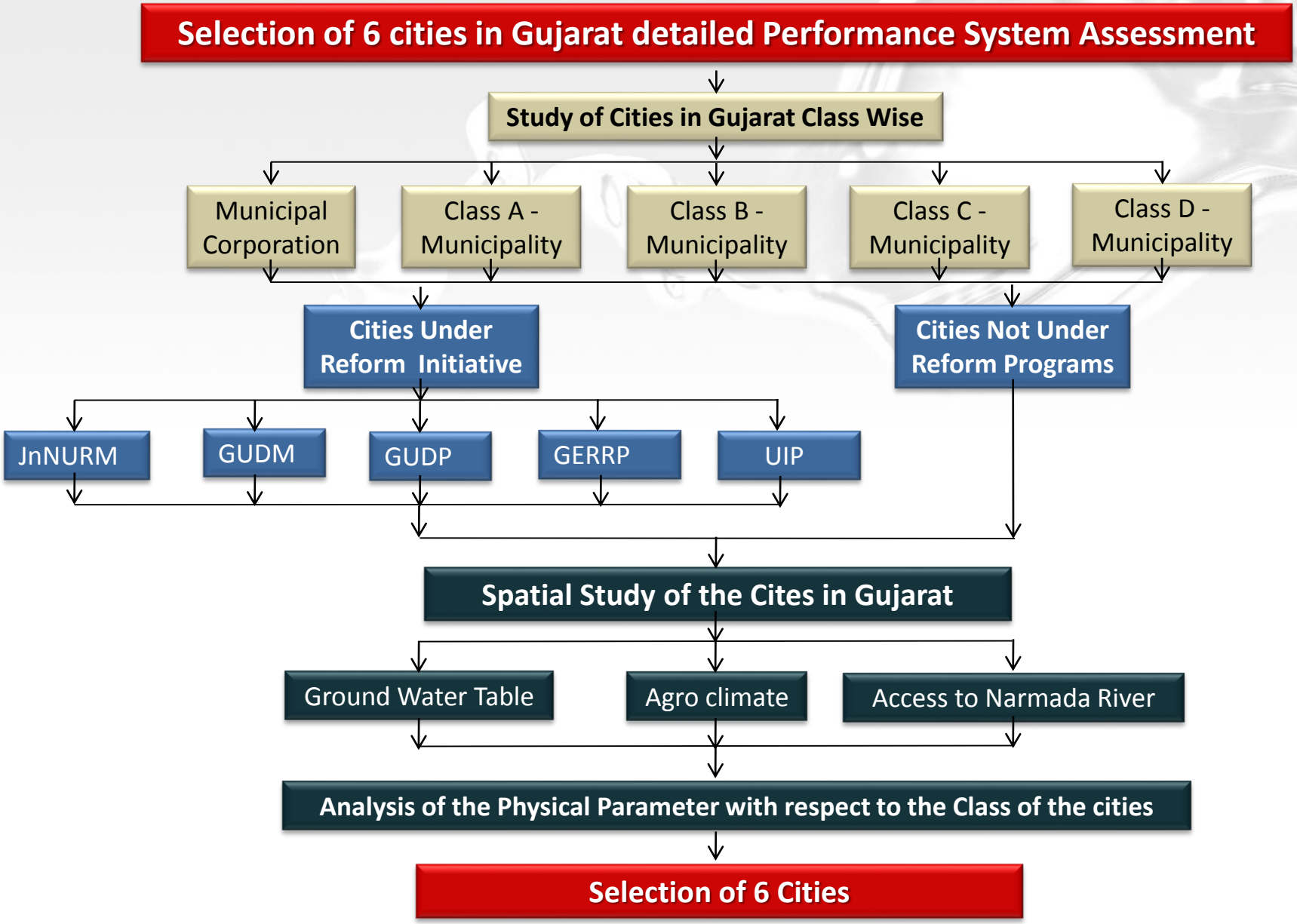
Case studies for good practices in UWSS sector in India

Stage 1B

Assessment of UWSS — through

- Selection 6 cities for study
- Comparing performance level of cities
- Analysis of key issues in these cities

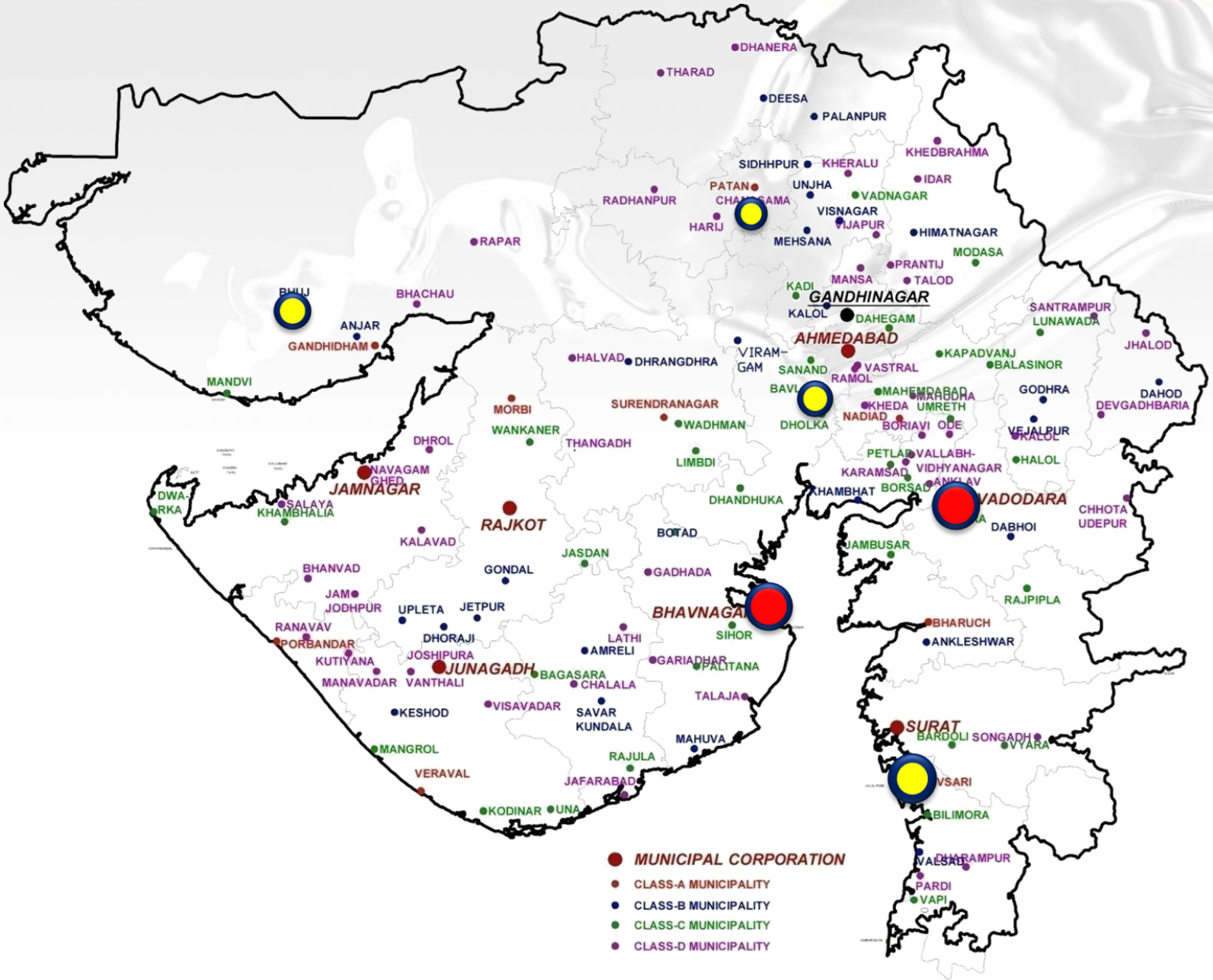
Selection of 6 cities in Gujarat



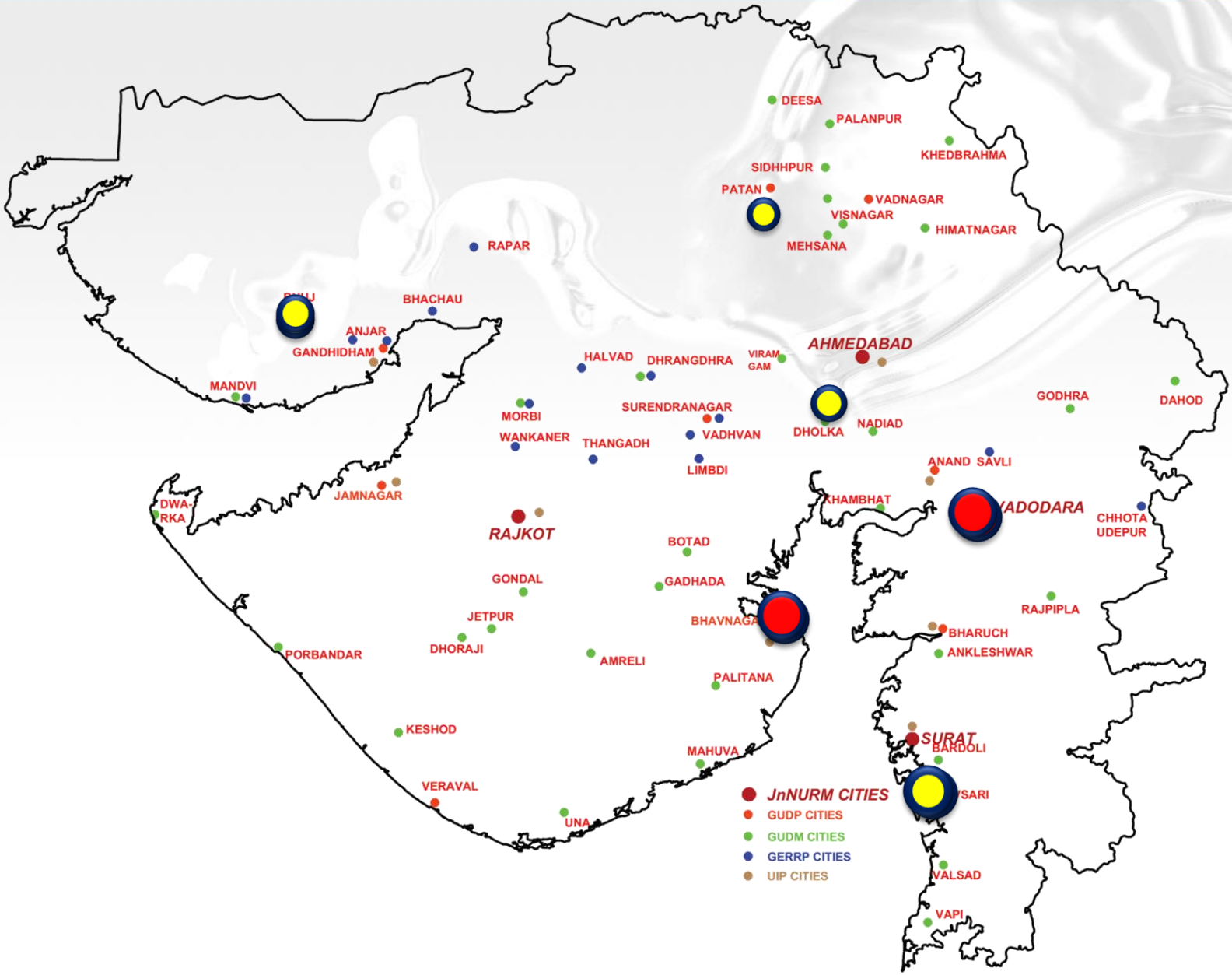
SELECTED 6 CITIES

Class	Cities	Programmes					Access to Namada pipeline	GROUND WATER LEVEL			Agro climatic zones				
		JnNURM Cities	GUDP Cities	GUDM Cities	GERRP Cities	UIP		Over Exploited Zone	Saline Zone	White Zone	South Hills (<1500 mm)	Middle Gujarat (800-1000 mm)	North Gujarat (625-875 mm)	North Saurashtra (400-700 mm)	North West Arid (250-500 mm)
Municipal Corporation	Bhavnagar		√			√	√			√				√	
	Vadodara	√				√		√				√			
Class A	Navsari			√		√			√		√				
Class B	Bhuj				√		√			√					√
Class C	Bavla						√			√			√		
Class D	Chanasma						√	√					√		

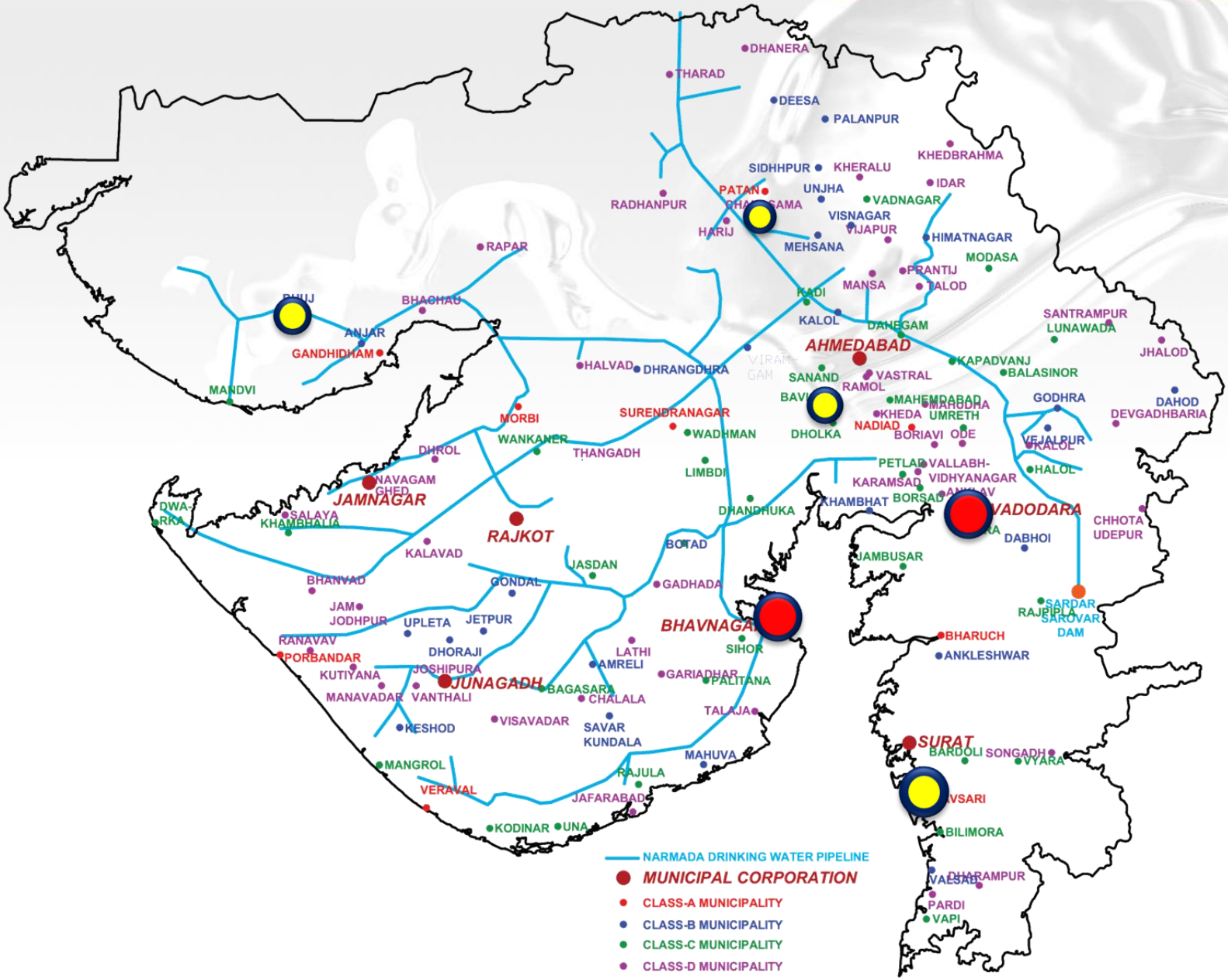
Classification of cities



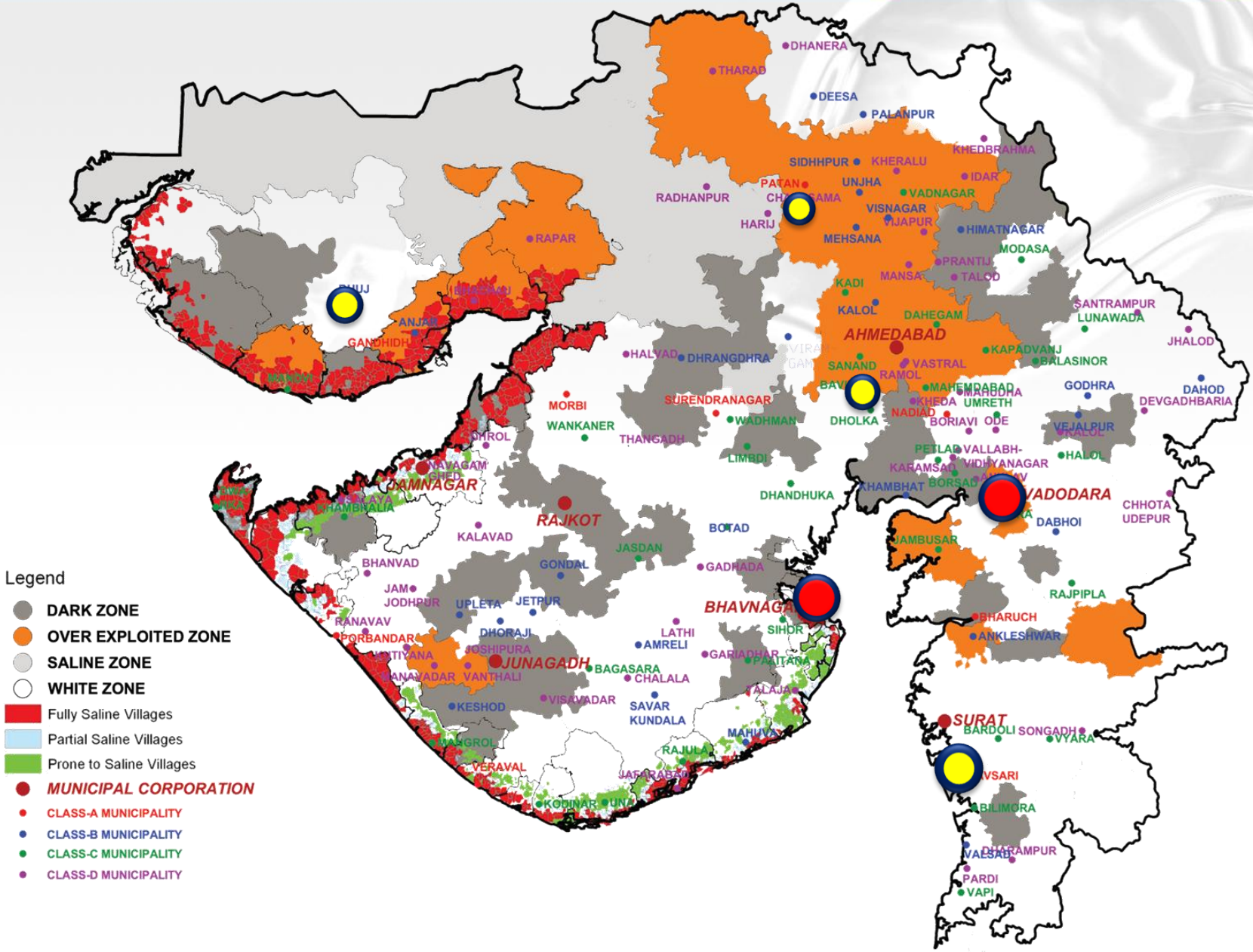
Cities Covered under Reform Initiative



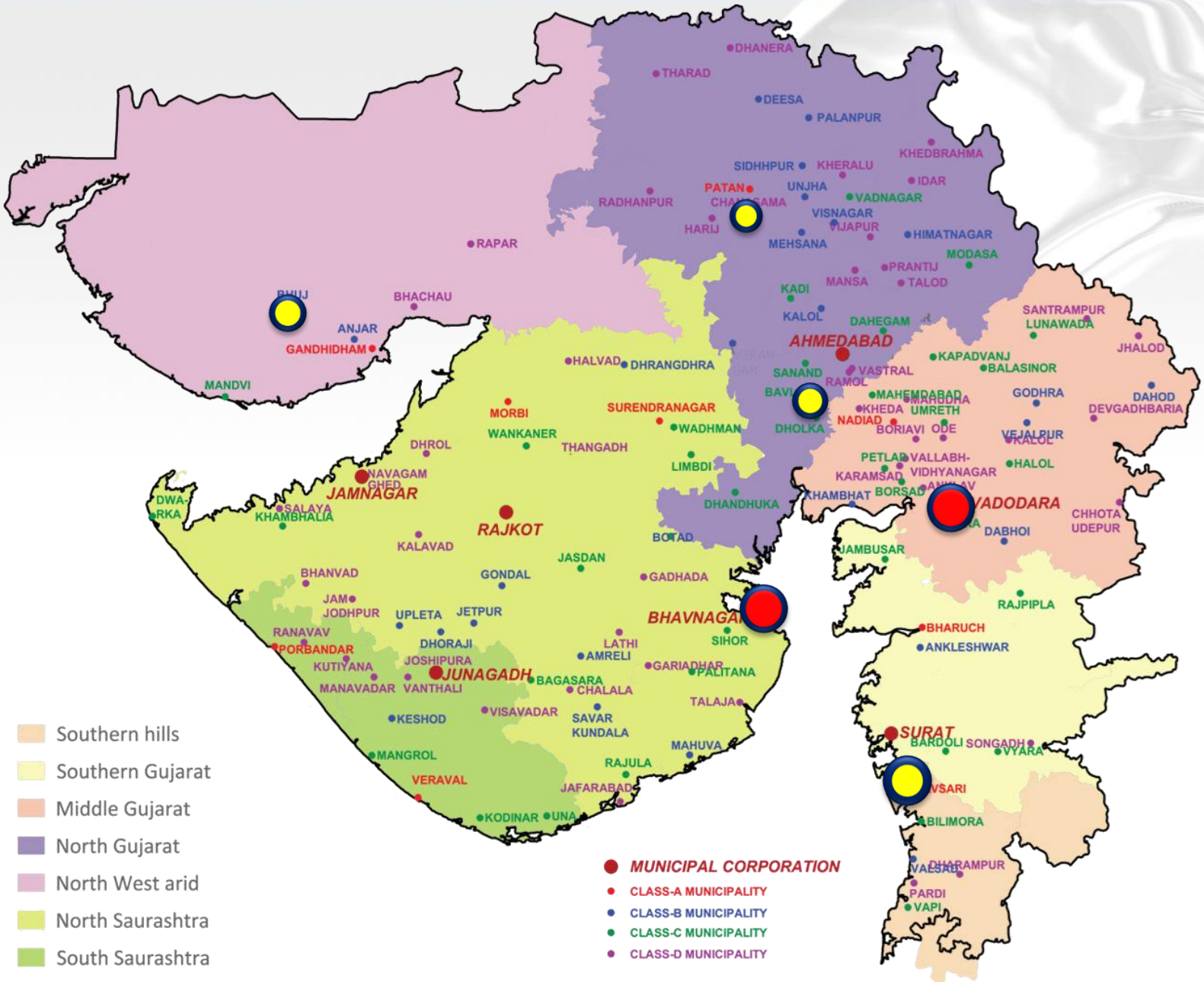
Access to Narmada Water



Ground Water Condition



Agro-Climatic Zone



Stage 1B

Assessment of UWSS

through

- Selection 6 cities for study
- Comparing performance level of cities
- Analysis of key issues in these cities

Water supply indicator status

Sr.No	Categories	Performance Indicator		VADODARA	BHAVNAGAR	NAVASARI	BHUJ	CHANASMA	BAVLA	Bench Marks
		Indicator	Unit							
1	Access & Coverage	Household level coverage of direct water supply connections	%	71.03	70.36	83.38	65	100.00	71.63%	100%
2	Service Level & Quality	Per capita quantum of water supplied	(lpcd)	162.02	183.73	148.52	164.68	136.00	241 lpcd	135 lpcd
		Quality of water supplied	%	100	100	---	81	75	---	100%
		Continuity of water supply	Hours per day	0.75	1	4	1 – 1.5	1	4 Hours	24 hours
3	Efficiency and cost recovery	Extent of Non-Revenue Water	%	---	43.05	22.15	17	NA	48.0%	20%
		Cost recovery in water supply services	%	78.10	56.66	41.48	43	32.00	11%	100%
		Efficiency in collection of water related charges	%	49.23	93.69	90.88	30	90.00	40.18%	90%
		Extent of metering of water connections	%	0.16	0.73	N.A.	0.78	0.00	---	100%
		Production cost of water per unit volume	(Rs/m3)	---	3.66	0.20	13.09	5.00	---	
		Staff Water /'000 Water connections	People Per 1000 connections	3.63	6.58	4.50	5.00	---	2.47	
		Operating ratio of water supply		1.28	1.76	1.88	2.3	---	10.4	max. 1
4	Customer Services	Efficiency in redressal of customer complaints (24 hrs)	%	75.25	0.00	N.A.	64	75.00	100%	80%
		Quality of water supplied: samples passing on residual chlorine	%	100	100	N.A.	25	75	--	
5	EQUITY	Coverage of water supply connections in 'slum settlements'	%	54.9	40.0	47.6	90.2	NA	--	100%
		Spatial coverage of water supply network	%	75	---	---	71.39	---	--	
		Spatial variations in per capita supply	Zone wise	---	---	---	--			
		Spatial variations in continuity in supply	Zone wise	---	---	---	--			

	RELIABILITY A
	RELIABILITY B
	RELIABILTY C
	RELIBAILITY D

Waste water indicator status

Sr.no	Category	Performance Indicator		VADODARA	BHAVNAGAR	NAVSARI	BHUJ	CHANASMA	BAVLA	Bench Marks
		Indicator	Unit							
1	Access	Coverage of waste water network services	%		62.11	26.00	41	--	--	100%
2	Service Level & Quality	Adequacy of capacity for treatment of waste water	%	50.51	0	--	--	--	--	100%
		Quality of waste water treatment	%	100	0	--	--	--	--	100%
		Extent of recycling or reuse of waste water	%		0	--	--	--	--	20%
		Sewer System Blockages	blockages/ km/yr.		66.36	--	--	--	--	
3	Efficiency and cost recovery	Efficiency in collection of waste water	%	67.5	78.9	--	--	--	--	100%
		Efficiency in collection of sewerage charges	%	74.9	1.30	92.91	--	--	--	90%
		Extent of Cost recovery in waste water management	%	16.3	1.199	--	--	--	--	100%
		Staff Wastewater/1000 Wastewater connections	ppl / 1000 connections	11.20	5.97	--	0.87	--	--	
4	Customer Service	Efficiency in redressal of customer complaints	%	71.0	40	--	--	--	--	80%
5	Equity	Coverage of toilets in slums (Not having access to toilets)	%		23.80	10.02	--	--	--	100%
		Spatial coverage of waste water network	%	60.0	62.11	--	--	--	--	

	RELIABILITY A
	RELIABILITY B
	RELIABILTY C
	RELIBAILITY D

Key findings from the analysis of 6 cities

Vadodara
- Water supply is inadequate (45 min.).
- Poor coverage of water supply in slums
- Highly complex and cumbersome process for getting connections.
- Data reviewing is not done.

Bhavnagar
- High UFW (32%)
- No sewage treatment process exist.
- High arrears in revenue collection.
- Financially insufficient to meet their O & M cost.

Navsari
- Coverage in slums is poor.(40%)
- Peri-urban areas are highly dependent on ground water.
- Distribution network is very old (45yrs), thus have high UFW

Bhuj
- Only disinfection treatment is given to water.
- High dependence on ground water.
- Coverage of sanitation service is only 40%

Bavla
- High dependence on ground water.
- Poor Cost Recovery – 11%
- Very high Energy Exp - 78% of Revenue Exp.
- High NRW - 48%

Chanasma
- Good coverage in water supply
- Data recording and managing is improper.
- Cost recovery in WSS is low (32%)

CASE STUDY REVIEW

BANGALORE

KUWASIP PSP model – 24 Hrs water supply

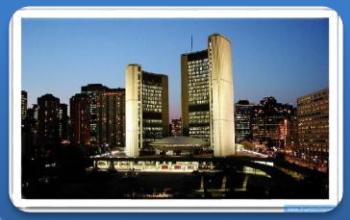
95% of metering of water connections.

India Water Portal - Arghyam

NAGPUR

PIP model for O & M of water treatment plant and application of new technology - VEOLIA

Waste water recycling



PUNE

GIS mapping of all slum pockets - SPARC

Efficient methods of data recording

MUMBAI

SG Award at state level for improving city performance through incentive

Slum sanitation program through CBO formulations

Stage 2

Performance Measurement and Assessment of ULBs

LEADING TO

Background studies — Review of
- Institutional Framework in UWSS: Gujarat
- Reforms and programs
- Indicators and benchmarks

Case studies for good practices in UWSS sector in India

Assessment of UWSS — through
- Selection of 6 cities for study
- Comparing performance level of cities
- Analysis of key issues in these cities

Strategies for ULBs in Performance Improvement Package

- Sector wide Approach
- Financial Sustainability
- Equity
- Performance Monitoring System

Case for

- **Sustainable Revenue Strategies, Equitable Service**
- **Recovering O & M**
- **Slums and Peri – Urban Area**
- **Data Reporting Machanism**

Strategies for ULBs in Performance Improvement Package

- Sector wide Approach
- Financial Sustainability
- Equity
- Performance Monitoring System

Case for

- **Bavla**
- Bhavnagar
- Navsari and Vadodara
- Chanasma and Vadodara

Strategies for ULBs in Performance Improvement Package

- Sector wide Approach
- Financial Sustainability
- Equity
- Performance Monitoring System

Case for

- Bavla
- **Bhavnagar**
- Navsari and Vadodara
- Chanasma and Vadodara

Strategies for ULBs in Performance Improvement Package

- Sector wide Apporach
- Financial Sustainability
- **Equity**
- Performance Monitoring System

Case for

- Bavla
- Bhavnagar
- **Navsari and Vadodara**
- Chanasma and Vadodara

Strategies for ULBs in Performance Improvement Package

- Sector wide Approach
- Financial Sustainability
- Equity
- Performance Monitoring System

Case for

- Bavla
- Bhavnagar
- Navsari and Vadodara
- **Chanasma and Vadodara**

BHAVNAGAR

Performance Improvement Programme for Financial Sustainability

BY
LOVLESH • GAYATRI • RAHUL • PARIMAL • PRASANTH • SHADAB

Why financial sustainability?

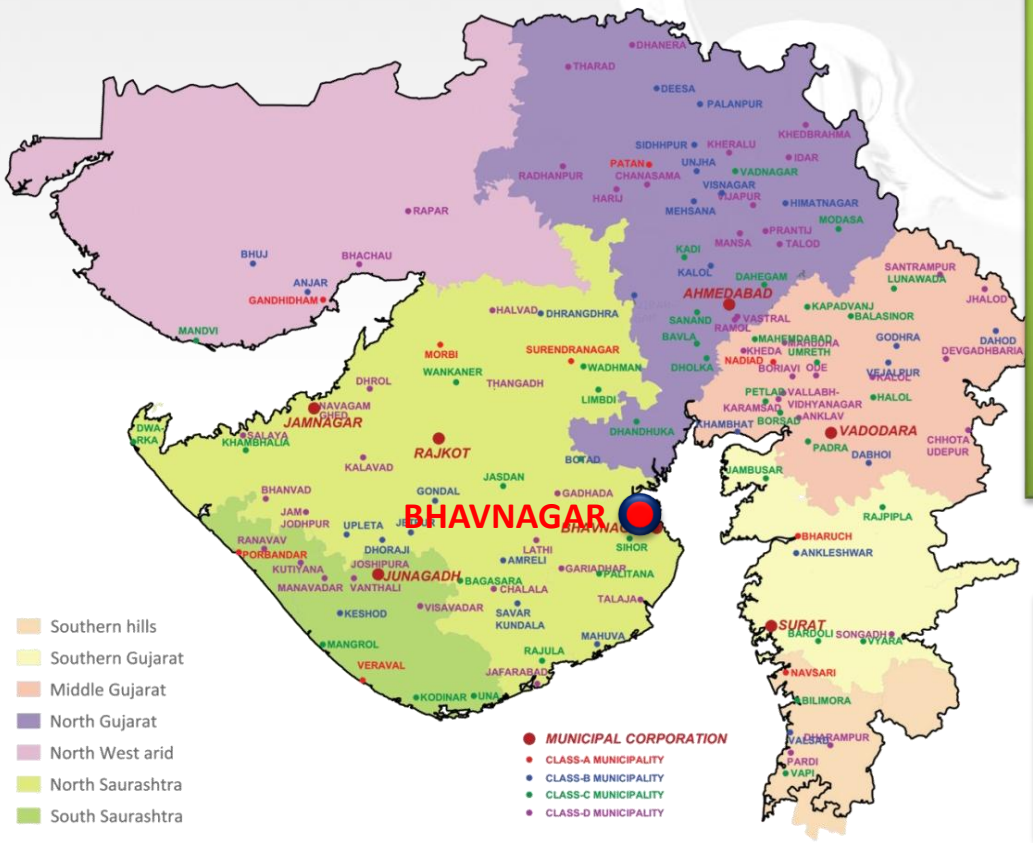
‘Everything has Cost’

Maximisation of returns whenever and wherever possible

Best instrument of cost mitigation and recovery is pricing (user charges).

Objective- To recover 100% O & M Expenditure.

Introduction



- Bhavnagar Municipal Corporation **(BMC)** provides water supply in Bhavnagar City.
- BMC has divided the city into **eight zones** for the purpose of water supply.
- In BADA area, Gujarat Water Supply and Sewerage Board **(GWSSB)** provides bulk water supply, while **BADA** is responsible for transmission and distribution.
- Being a coastal area, groundwater resource is not **suitable** for domestic purposes.

Area	53.31 Sq.km
Population	603983
Total HH	114608
Avg. HH size	5.3
Slum Population	13.7 %

PIP In Financial Sustainability

Present condition

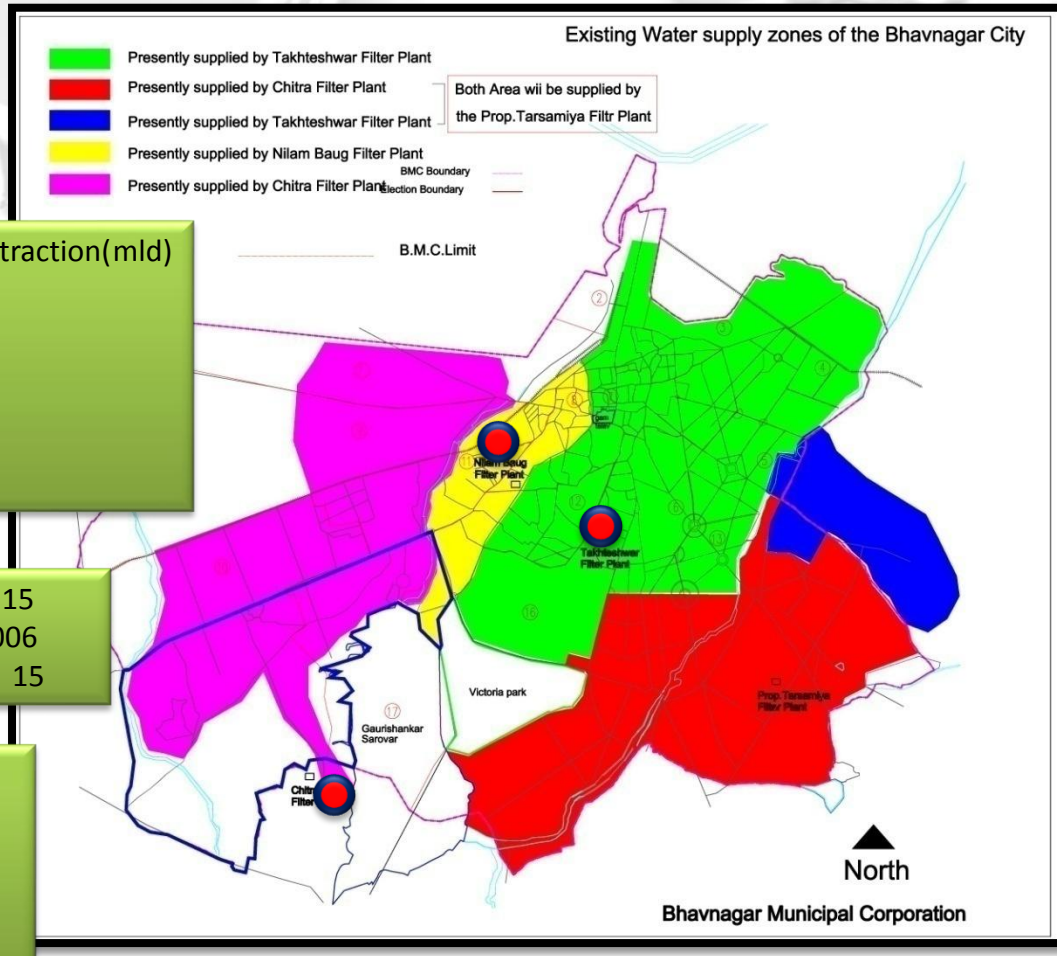
Sources of raw water

Source	Year	Location & distance	water Abstraction(mld)
Shetrunji dam	1982	Palitana ; 45 Km.	60
Gauri shankar Lake	1872	With in the city; 3 Km	20
Khidiyar talav	1935	Rajara; 19 Km	5
Mahi pariyej (Narmada Cnal)	2001	sidsar; 10 Km	10

Treatment plants

Three Water Treatment Plants (75 MLD)	42	18	15
Constructed in	1934	1987	2006
Water Treated (MLD)	58	17	15

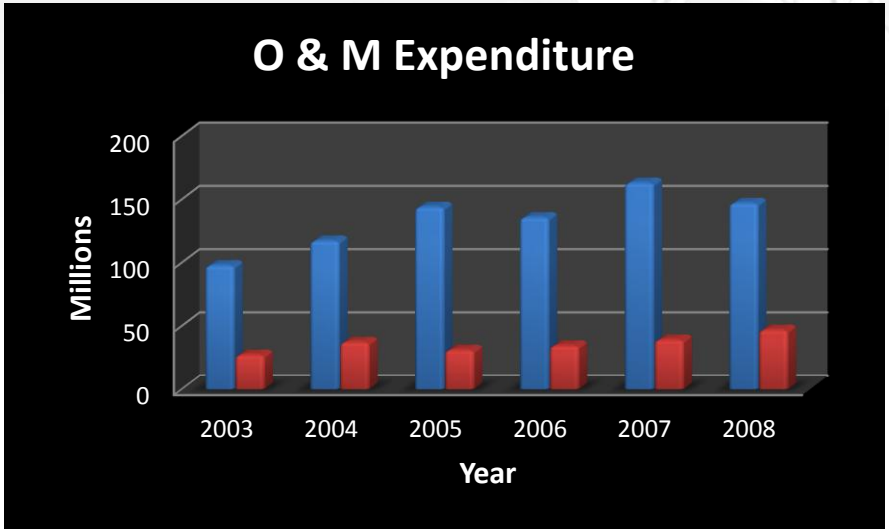
- **95 MLD** is the current LPCD supply
- Falls in fully Saline Zone
- Narmada Drinking water Pipeline is 10 kms from BMC.
- Over Exploited Zone

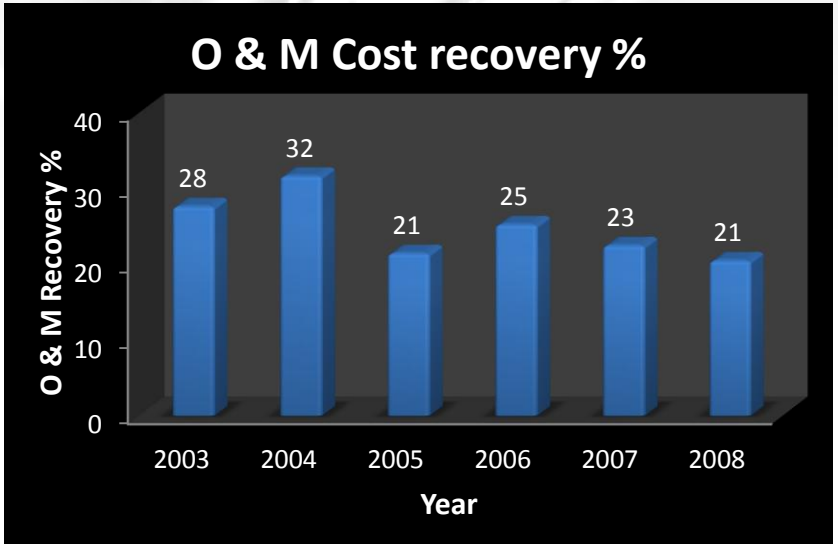


PIP In Financial Sustainability

Past Financial Trends

	Population 2006	Daily production MLD	%O&M Cost recovery
Vishakhapatnam	9,20,000	228	78.4
Coimbatore	9,94,000	228	82
Bhavnagar	5 67511	95	25





Deficit every year is increasing &it is 173 millions in 2008.

PRESENT ISSUES:

- The Billing & Collection Efficiency is 35%.
- The operating Ratio is 4.9 which very serious.
- The O & M Cost recovery in 2008 is 21%.

PIP In Financial Sustainability

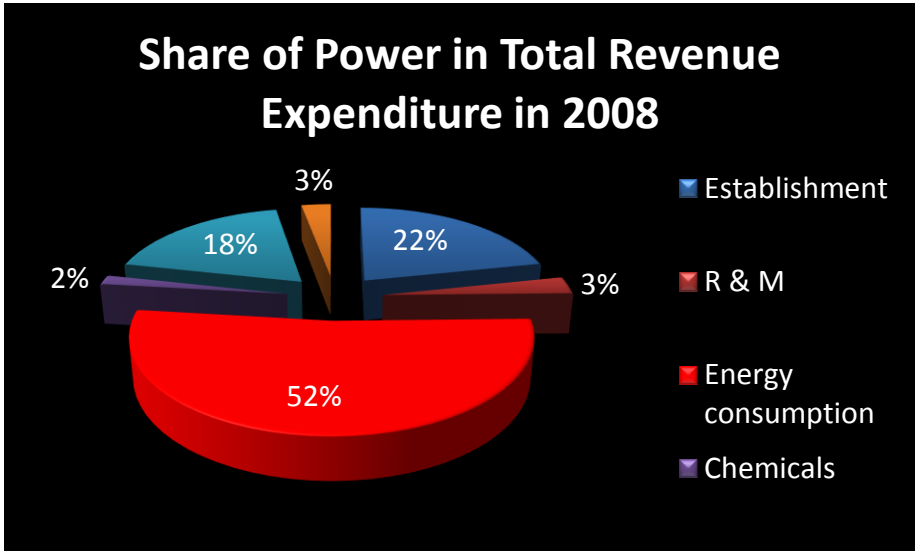
PIP In Financial Sustainability

PIP In Financial Sustainability

REDUCTION IN REVENUE EXPENDITURE

City	Population 2006	Power cost Rs/Mld	Daily production MLD	share of power in total expenditure %
Vishakhapatnam	9,20,000	1135	228	23
Coimbatore	9,94,000	280	228	21
Bhavnagar	5 67511	2537	95	52

Production cost of water/ Mld - Rs.3000



- As compared with the other Cities in India the share of Power in BHAVNAGAR
- IS 52% which is very High.
- So there is need to reduce Expenditure on Power.
- Assuming Efficiency of all Mechanical units as 75%, the expenditure on power in 2008 should have been 63 Millions.
- But the existing Expenditure on power is 78 Millions which means they are not operating efficiently.
- Hence 10% of expenditure can be reduced Every year.

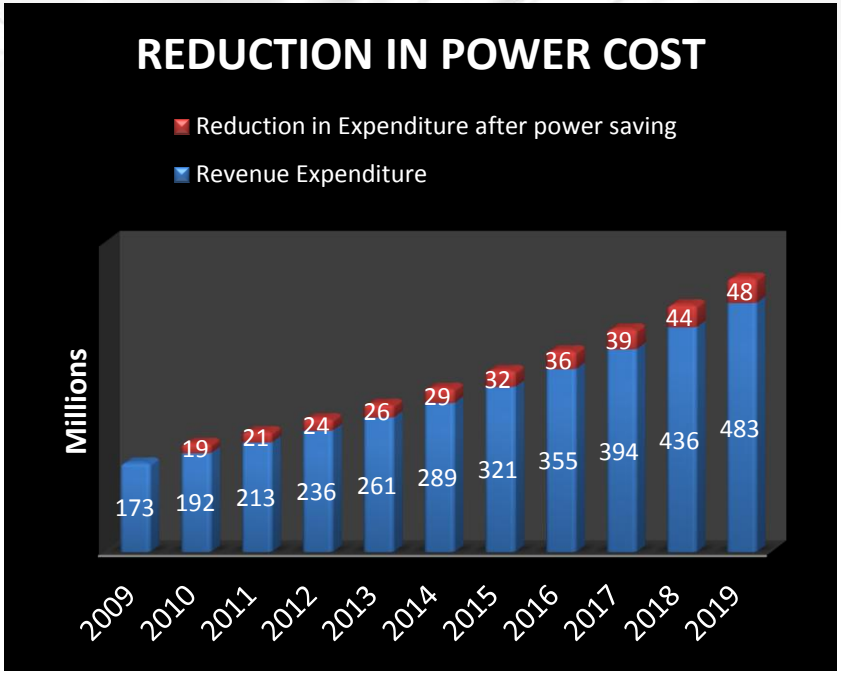
PIP In Financial Sustainability

REDUCTION IN REVENUE EXPENDITURE

To achieve this reduction in Expenditure-

- ***Energy Audit is to be conducted Every year.***
- ***Regular Repairs & maintenance should be done regularly based on schedule.***
- ***Old pumps should be replaced.***
- ***75% efficiency of mechanical units is achieved by 2010.***

Water Supply	Millions	
	2009	*2010*
Revenue Expenditure	177	212
Power	88	96
Expenditure on power after power saving	69	77
Revenue income	59	65
deficit	118	147



PIP In Financial Sustainability

1. POWER ENERGY EFFICIENCY
2. NRW Reduction
3. Waste water treatment & Reuse

1. IMPROVE COLLECTION EFFICIENCY
2. INCREASE IN COVERAGE
3. RATIONALIZATION OF TARIFF

PIP In Financial Sustainability

NRW

<table>
<tr><td rowspan="6">System input volume (measured by input meters, after checking for their accuracy)</td><td rowspan="3">Authorized consumptions</td><td rowspan="2">Billed metered consumption</td><td>Billed metered consumption</td><td rowspan="2">Revenue water</td></tr>
<tr><td>Billed Unmetered consumption</td></tr>
<tr><td rowspan="2">Billed Unmetered consumption</td><td>Unbilled metered consumption</td><td rowspan="4">Non-revenue water (32%)</td></tr>
<tr><td>Unbilled unmetered consumption (4.2 MLD)</td></tr>
<tr><td rowspan="3">Water losses</td><td rowspan="2">Apparent losses</td><td>Unauthorized consumption 4 MLD (13%)</td></tr>
<tr><td>metering inaccuracies</td></tr>
<tr><td>Real losses</td><td>leakages on transmission and\or distribution mains 3.3 MLD
leakage overflows at utility storage tank
Losses in treatment (1.8 MLD)
leakage on service connections up to point of consumer metering</td></tr>
</table>

NRW Reduction

LEGALIZATION OF CONNECTIONS

- ***A preliminary estimate shows that there are about 13-14 percent of unauthorized connections against total house holds. Accounting 4 MLD to NRW***

year	NRW reduced MLD	Amount Saved per year in millions	Percentage of illigal connections
2009	0		13
2010	3	3.1	10
2011	3	6.3	7
2012	3	9.4	4
2013	4	13.6	0

Assumption that, all the illegal Connections would be converted in to illegal connections by 2013. Cost per Connection Rs. 500 per slum HH.

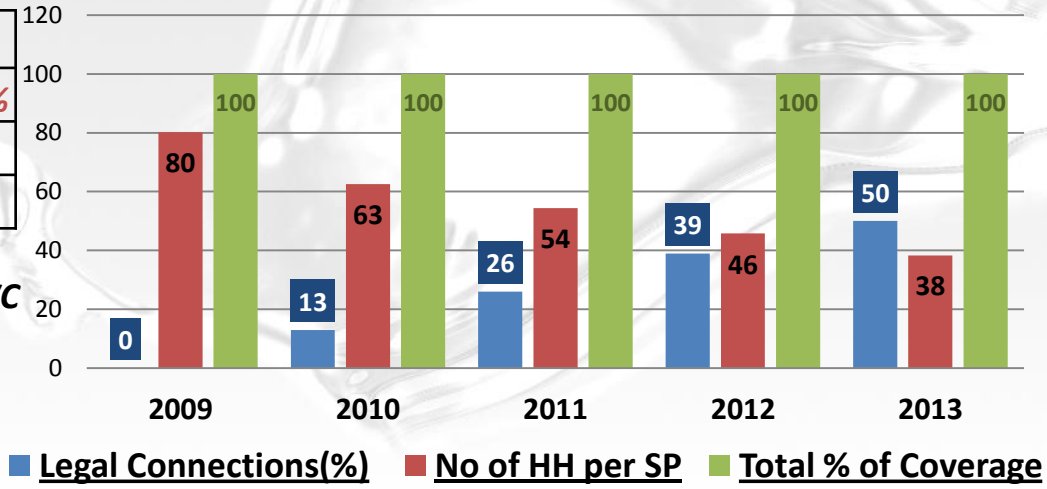
NRW Reduction

Coverage in Slums

Inferences from Household Survey
Willingness to pay for the Individual Connection - 50 %
if Subsidy available, 35%
Remaining 15 %, unable to meet the charges

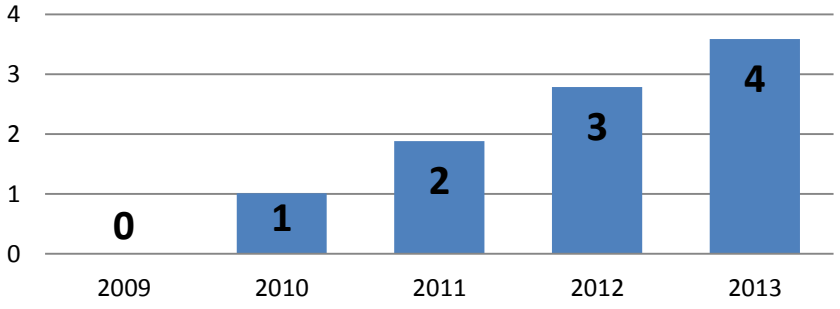
1. *Considered 50 % of Slum HH will have Individual WC*
2. *HH/stand post decreased to 50 %.*
3. *Charge per Connection / annum – 450*
4. *Charge per Stand post – 900 (40 HH)*

Slums Coverage



1. *Total Coverage is 100 %*
2. *Assumed that every slum would have an local committee, which is responsible for collecting the charges.*
3. *By 2013 the NRW will be reduced to 7 MLD*
4. *By 2013 NRW would come down to 17 %. (32)*

Amount Generated Per Annum in slums (in Million)



PIP In Financial Sustainability

1. POWER ENERGY EFFICIENCY
2. NRW Reduction
3. Waste water treatment & Reuse

1. IMPROVE COLLECTION EFFICIENCY
2. INCREASE IN COVERAGE
3. RATIONALIZATION OF TARIFF

PIP In Financial Sustainability

RECYCLING OF WASTE WATER USING DEWAT SYSYEM

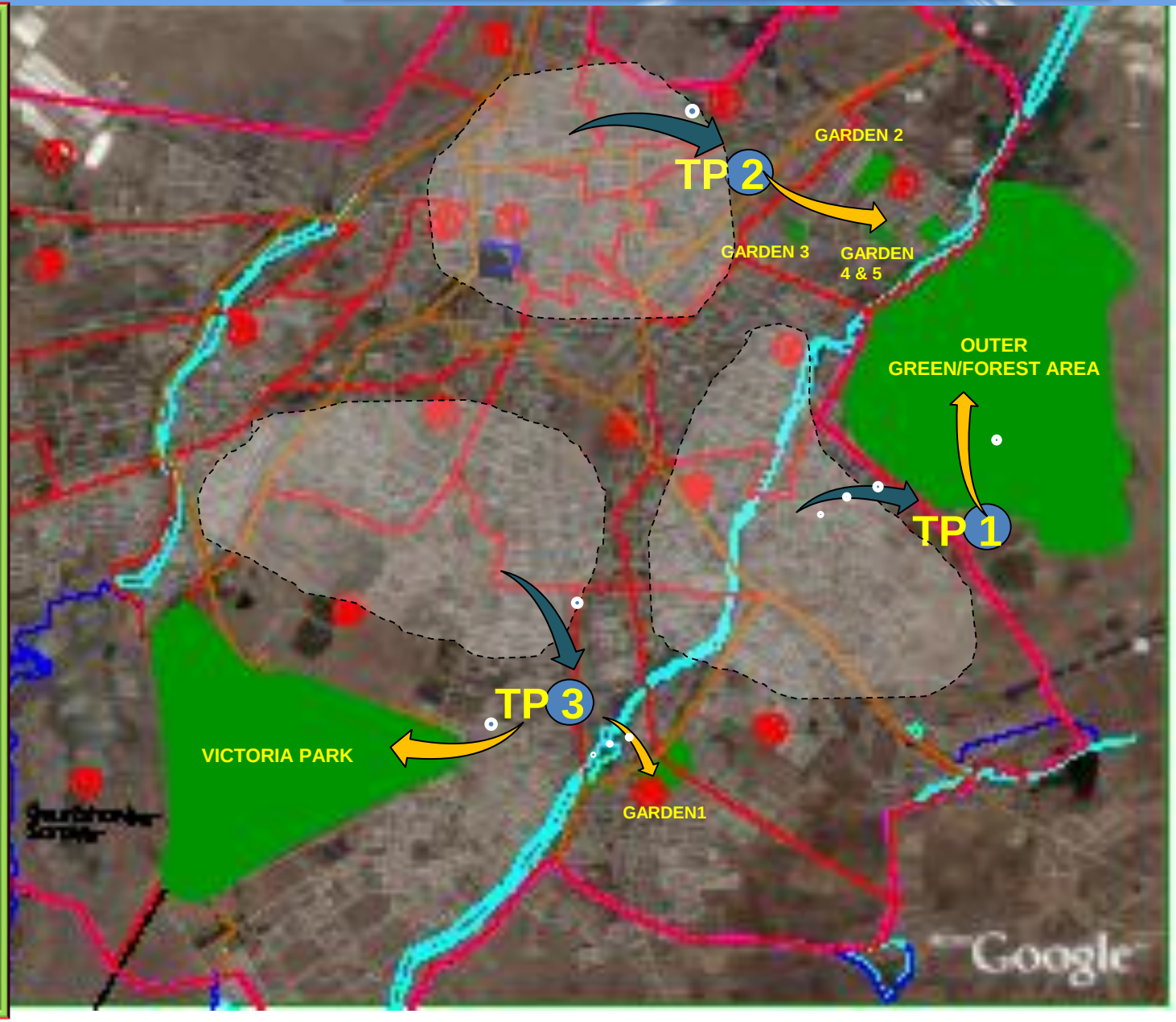
REDUCTION IN NRW

•Bhavnagar is having various public gardens and **Peri-urban** areas.

•these public gardens consumes portable water for gardening and other cleaning purposes.

•They are authorized unbilled connections hence increases NRW considerably.

•For gardening and other purposes we have introduced Decentralized waste water treatment system **(DEWATS).**



PIP In Financial Sustainability

RECYCLING OF WASTE WATER USING DEWAT SYSYEM

OUTCOMES

treatment plant	initial cost of water	area to be served(sq.m)	water requirement(L/d/sq.m)	total water(Kl/d)
TP1	forest	**1500000**	**2**	**3000**
TP 2	victoria garden	2000000	2	**4000**
TP 3	garden1	62500	2	125
	garden2			
	garden3			
	garden4			
TP 4	garden5	50000	2	100
	garden6			
				7.225 Mld

treatment plant		water req(kl/d)	size of tp@10 cum/1Kl	cost of tp @1000 RS/Kl (million)	o & m cost @7% of capital cost /year (millions)	Tariif (m/yr)
TP 1	forest	3000	30000	30	2.1	2.19
TP 2	victoria garden	4000	40000	40	2.8	*
TP 3	garden1	125	1250	1.25	0.0875	
	garden2					*
	garden3					
	garden4					
TP 4	garden5	100	1000	1	0.07	
	garden6					*
						5.0575 millions

Total water require in these areas 7.2 MLD.

BENEFITS

- Source **conservation.**
- Recycling and treatment of waste water saved the use of pure water up to **4mld water**.
- This **reduce the NRW** by providing 'legal but unbilled' connection used for gardening and other purposes.
- Hence **reduced O & M expenditure** (5 million/year)
- **Reduced the load** on sewage system.
- **Conservation of natural resource** and protecting the environment.

PIP In Financial Sustainability

1. POWER ENERGY EFFICIENCY
2. NRW Reduction
3. Waste water treatment & Reuse

1. IMPROVE COLLECTION EFFICIENCY
2. INCREASE IN COVERAGE
3. RATIONALIZATION OF TARIFF

Improving collection Efficiency

Service Improvement :

1. **Metering** of the main Pipe lines in order to identify the consumption & **leakage detection**
2. **Water Quality** and **Timings** of the water supply (Timings should be informed before)
3. **Complaints** should be readdressed as soon as possible based on the type of problem.

Reliability Scale:

1. **If quality and hours of water supply assured,** the opportunity cost on other sources reduces
2. If complaints are readdressed within time, the reliability scale on services would increase.

Willingness to pay for service from Public :

1. **If service levels are increased the opportunity cost reduces in turn willingness to pay for Service would increases.**

Improving collection Efficiency

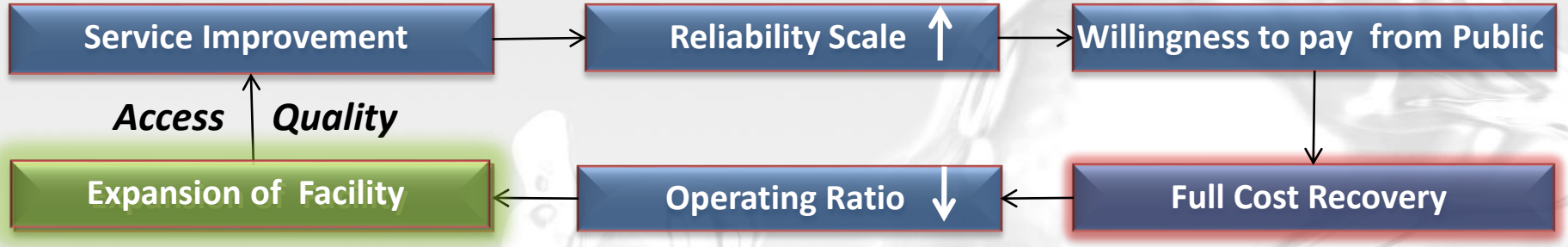
Full Cost Recovery:

1. Private operator for billing and collection of water charges based on Performance contract
2. Targets are given to private operator and out of collection .2 % is share of private operator.
3. If collects more than the targets, .5% is the share and Billing is done 3 times in a year
4. Transparency in billing is done by using some modern technology like billing machines which Directly feeds the data in storage with private as well BMC.

Operating Ratio :

1. Through this method the 100 % collection efficiency would be reached and by 2014 and Operation and Maintenance would be achieving more than 100 % by 2015.
2. The Operating ratio has come down to 0.68

Improving collection Efficiency



Expansion of Facility :

1. As Surplus would be generated from 2018 and it can be used for the expansion of the Service delivery and service quality as well subsidies can be given to the BPL in BMC.
2. Role of BMC (Municipal Councilors in community awareness programmes and encouraging public to pay for the services plays a vital role in the overall approach

70 % of the Total Households have Legal connections, 13 % of the Total HH have Illegal connections.

Increasing in Coverage

Reasons of the Illegal Connections :

1. Legal Procedure for Issuing the Legal Connections (Land Documents, Property Tax)
2. Socio economic status of the HH leads to take illegal connections by paying high one time cost than the normal connection fee .

Illegal to Legal Connection

13 % of illegal to Legal (2013)

- Nominal fee for conversion of Illegal to Legal connection (Rs. 500)
- Proof of land tenure and the BPL card would serve the identity proof for taking connection
- Municipal Councilors involvement in encouraging people to take legal connections has importance.

Extending the Coverage through Subsidies

Individual Connections in Slums

- Connections through subsidies will have a great scope to encourage slum dwellers to take connections
- Fastening the Process of connection as well the legal procedure like, No objection letter, etc
- Water charges based on the BPL card would help to reach the subsidy to the real HH who is in need,

Decrease the no. of HH/Stand post

- By 2013, 40 Households per stand post instead of 80 HH, will reduce the opportunity cost bared by HH
- Water Charge on the Individual Connection and Stand post will help to inc. O & M recovery
- Responsibility of charge collection can be given it to the slum committee or Private Operator
- Awareness programmes and encouraging HH to pay water charges by some attractive schemes are imp.

NGOs or Role of council

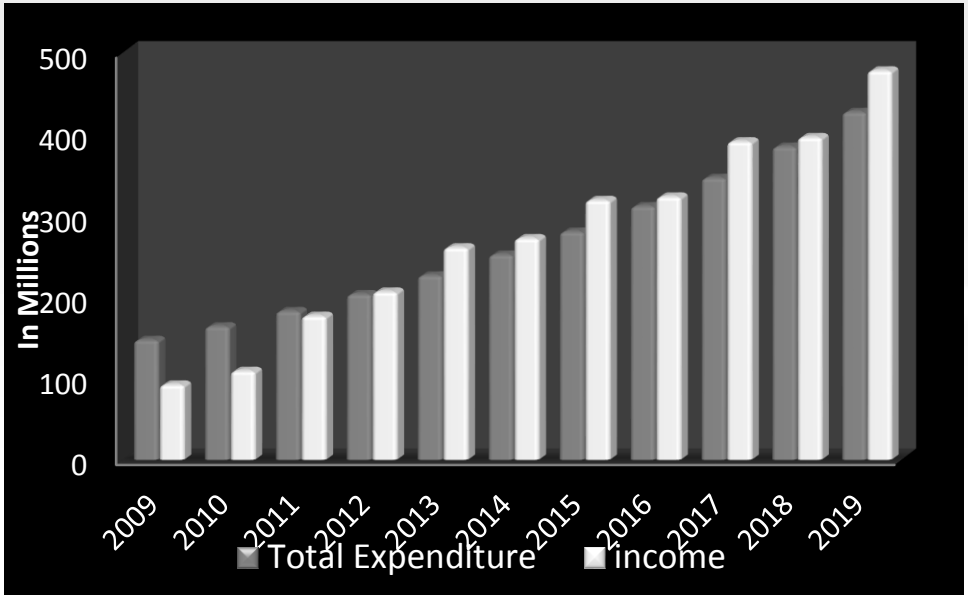
NGOs, special Programmes to Fasten the process of connections

- NGOs and municipal councilors are key players to get awareness among the public to improve the Coverage ratio.
- Conducting some special Programmes would fasten the process of issuing the connections for free of Cost and a nominal fee of registration fee would be collected.
- By 2018, 50 % of the slum Households are given with Individual Connections.

PIP In Financial Sustainability

Rationalisation of Tariff

Reducing Power cost, increasing coverage & Improving collection efficiency, reducing NRW.



- Existing collection efficiency is 35% and coverage is 70%.
- And by 2014, collection efficiency would be 95% and coverage would be 100%.
- After achieving 100% Coverage & 95% billing & collection efficiency there will be surplus after 2013.
- Tariff are increasing at 20% in two year upto 2014, and after that it will be increase at 15% .

100 Coverage and 95% Billing & Collection Efficiency

Tariff per connection(rs)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Domestic	900	900	1080	1080	1296	1296	1529	1529	1805	1805	2129
Slum	400	400	440	440	480	480	520	520	560	560	600
Commercial	2400	2400	2688	2688	3011	3011	3552	3552	4192	4192	4946
industrial (rs/kl)	20	20	22	22	25	25	28	28	31	31	35

VADODARA

Performance Monitoring Program

BY
BHUMIN • NITIN • VANDANA • SMITA • JITEN • SANGARDASSE

Our Task : Performance Assessment

- Provider-level where providers monitor themselves and compare their performance with better performers.

- Consumer-level monitoring where consumers rate providers on services delivered.

Presentation Guide

- **Vadodara Overview** : Population Area Admistration Zones
- **BPMC Act Provision** : Designation Accountably Of Work
- **Institutional Structure** : Admistrtive , Elected And Technical Wing
- **Institution Structure** : Ward To City Level With Responsibly And Sanction Power

  Water Supply And Sanitation Department Structure With Responsibility
- : Capital Work

  Water Distribution

  Water Connection

  Complain Redressal

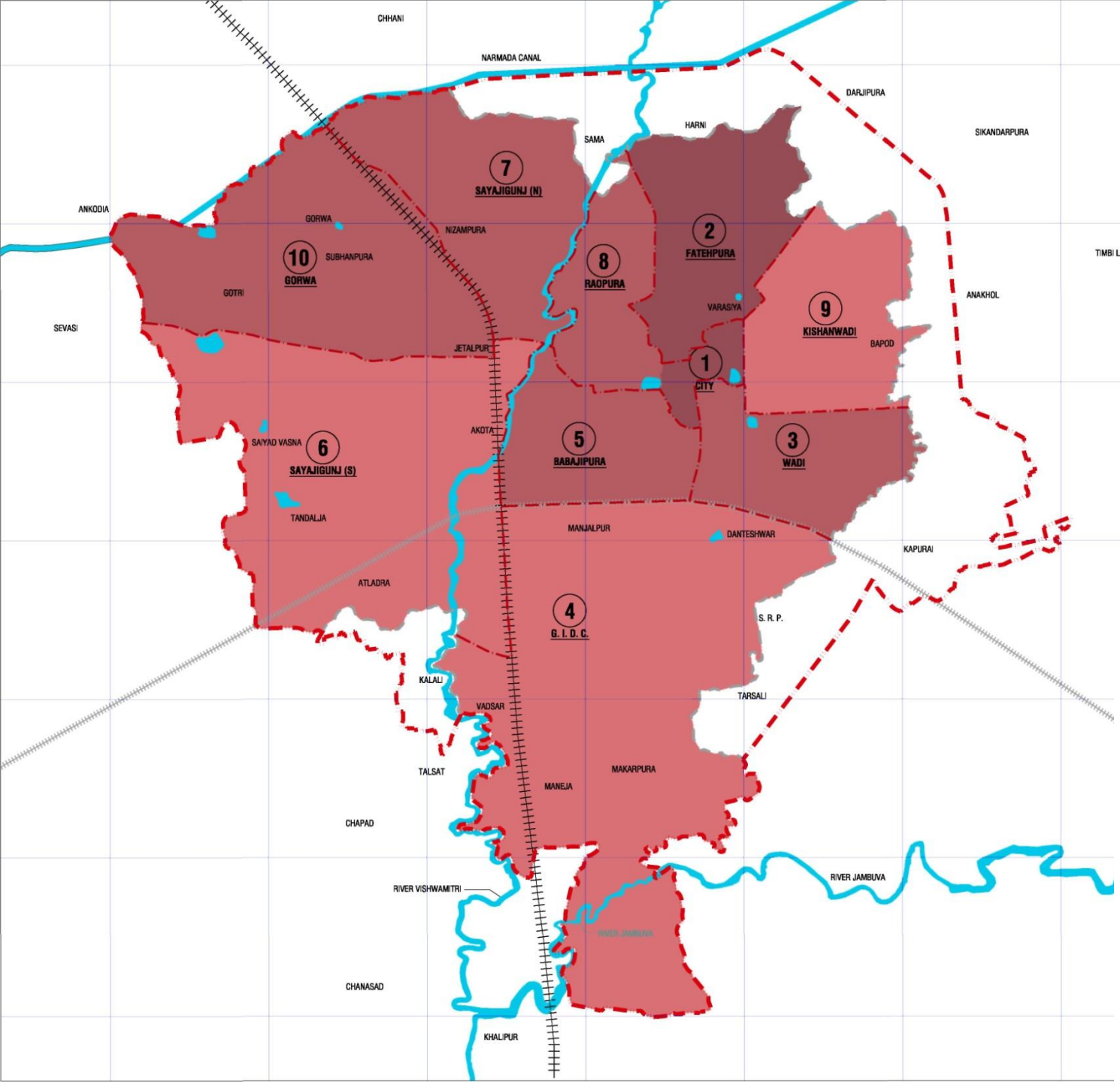
  Water Quality

  Bill Collection
- **Stage Wise Work Process** : Ward Level Zone Level City Level
- **Citizens Charter** : Comparing With Actual Process Capital Work
- **conclusion**
- **Way forward**

Area	149 (2001) 159 (2008)
Population	1,437,934 (2001) 1,977,079 (2008)
Total No. of Households	4,20,655 (2008)
Slum pockets	336
Slum Population	2.57 lac. (20 % of total population)
Number of Elected wards	28
Number of Corporaters	84
Number of Administrative Wards	13
Number of Zones	4

No.	Zone	Ward	Area
1	East	1,2,9	27.36
2	West	6,10,11	42.15
3	North	5,7,8,13	52.11
4	South	3,4,12	30.27
Total	**4**	**13**	**151.89**

Ward Wise Density Plan of Vadodara



LEGEND

- Vadodara Municipal Corporation Boundary
- VMC Boundary till July 2002
- Ward boundary
- Waterbody
- Broad Guage Railway Track
- Metre Guage Railway Track

WARD DENSITY

- < 10,000
- 10,000 to 25,000
- > 70,000
- 1 Ward No.

Source: CDP

Provisions of Bombay Provincial Municipal Corporations Act , 1949

SECTION – 4

THE POWERS HAVE BEEN VESTED IN THREE DISTINCT STATUTORY AUTHORITIES :

GENERAL COMMITTEE

The General Board is the supreme body of the Corporation constituted by elected members from each wards. One third of the seats are reserved for ladies. Its term is for a five year duration after which elections are held once again.

STANDING COMMITTEE

The Standing Committee is one of the twelve statutory committees and is one of the most powerful committees. It has the powers to sanction and award major works of cost over Rs. Five lacs. It is also vested with financial powers.

OTHER COMMITTEE

There are other twelve committees which look after specialized functions of VMC

FUNCTIONS OF A ZONE OFFICE

HEALTH DEPARTMENT :

- Scavenging The Entire Area Coming Under The Zone.
- To Clean Chocked, Gully-trap And Sewer Traps
- Food Inspection Branch
- License Permit
- Vaccination, Birth/Death Registration, Family Planning.
- Market Department To Remove The Nuisance Of Stray Animals - Malaria Control.

Assessment And Recovery Department:

- Assessment Of Properties
- Recovery Of Property Tax, Education Tax, Water Bill Etc.
- Appeals Regarding Assessment And Rent Recovery Of Corporation's Various Properties Etc.
- Registration Of Shop/Firms Renewal And Court Complaints Regarding Breach Of Law.

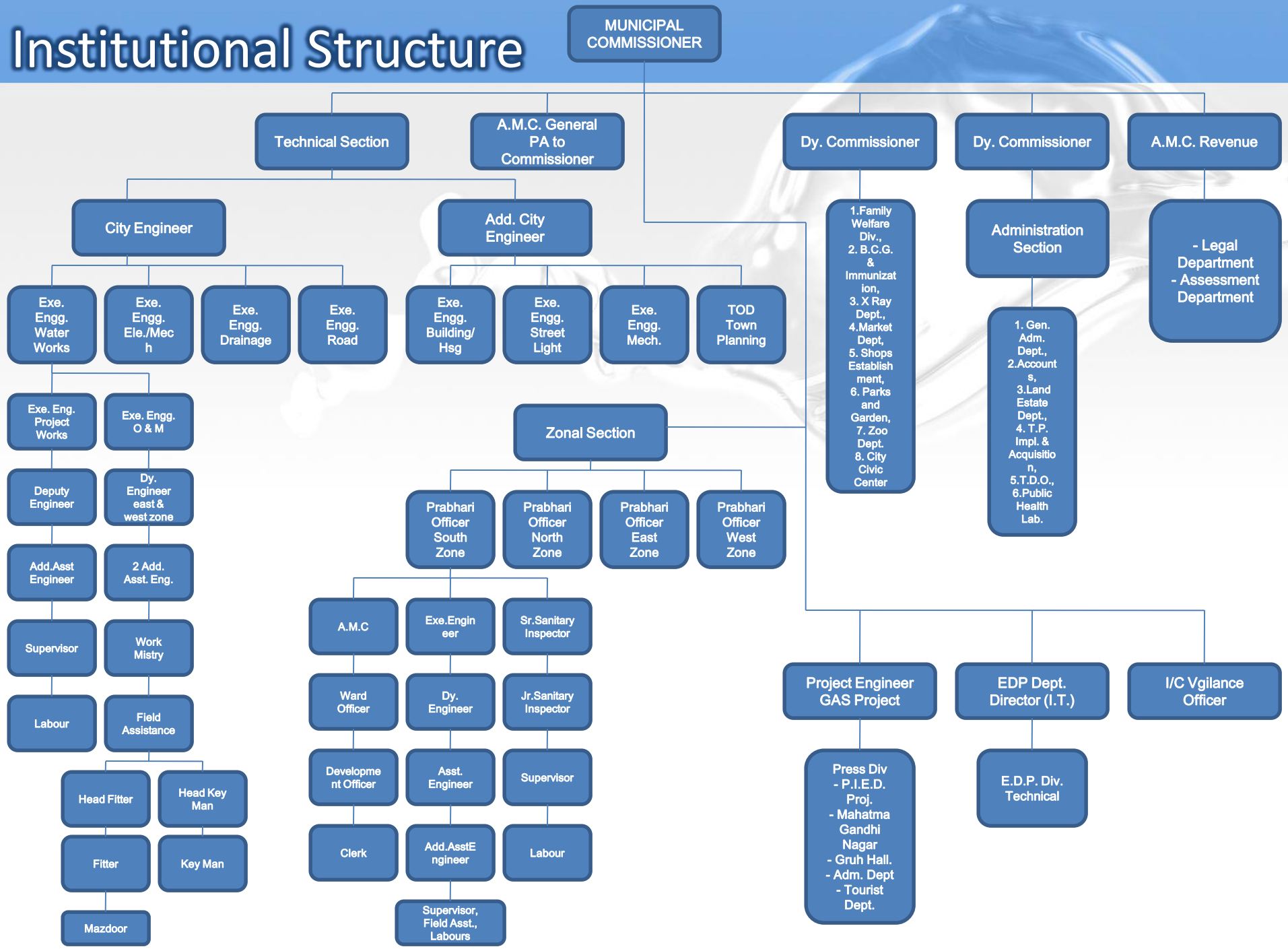
ENGINEERING DEPARTMENT:

- To build new roads up to 60 feet with, to widen the roads, repairs & retargeting of roads etc.
- To build society road by raising public funds - to prepare new footpath, to repair them, scraping etc.
- To build roads up to 80 feet width and their repair work.
- To build new buildings and to maintain the Municipal Properties.
- To build and maintain School buildings.
- To sanction 1/2" domestic and 1" Industrial connection.
- Repair work of main water pipelines up to 250mm.
- Legal procedures for illegal connections, repair of polluted water connections.
- Issuing permits regarding stand posts, free connection hand pump, drainage.
- Legal procedures against illegal drainage connections & illegal construction.
- To construct and maintain (box drain) rain water drain.
- To maintain and clean temporary/permanent drainage.
- Disposal of rain water through new additional catch pits.
- Issuing permits for layout of Low rise buildings procedure against illegal construction.
- Implementation of town planning scheme-recovery of betterment charges.
- To take actions against public nuisance and damaged property.
- Issuing permits for banner, hoarding-collection of land-rent, property rent.
- To remove permanent, / temporary encroachments, to make alternative arrangement for obstructing slums.

FUNCTIONS OF A WARD OFFICE

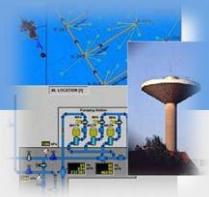
- Cleaning and Sprinkling of Pesticides
- Collection, transportation and final disposal of solid waste and Disposal of Carcasses (small and big)
- License renewal of non-edible things (matches, Kerosene, coal, fireworks etc.) and edible things.
- To clean choked gully-trap.
- Cleaning of drip well and Chlorination of the well in use and chlorine test of water samples.
- Legal actions against citizens who are creating nuisance.
- Inspection of hotels, hawkers and small shopkeeper with hygienic point of view.
- Cleaning of public urinals.
- Inspection of Cinema halls, theatres and other public entertainment places form hygiene point of view.
- To avail basic details of the epidemic immediately inform higher authority regarding disease controlling measures.
- Issue license for eatables and non-eatable items under the BPMC Act,1949.

Institutional Structure



Responsibilities Of Technical Wing

City Engineer	•To monitor the entire works of department of VMC
Additional City Engineer	•To maintain the work of the entire water supply and drainage department
Executive Engineer	•At central office, authority of water works department. He monitors the maintenance & project wings. •At the zonal office, monitors the ward offices and visiting ward offices periodically.
Deputy Executive Engineer	• He is the decision maker for the ward office. • He looks after the engineering functions of water supply, drainage, roads. • Every week he has to give report to the executive engineer.
Assistance Engineer	• 4 assistant engineers for water supply & drainage & other projects. • to visit site & scrutinize the estimates for repairs & new project prepared bt additional assistance engineer.
Additional Assistance Engineer	• In the ward office, he is only for the water supply functions.. Daily routine work is allotting the complaints to be solved. He is responsible for site visit, preparing estimate for giving new line connection as per feasibility study done during the site visit. He reports to the Deputy Executive Engineer.
Superviso r	• Over looks the jobs allotted to the fitter and laborers. • He reports the daily work handled to the additional assistance engineer
Clerk	• function is to register the complaints, preparing daily work records, which is sent to the deputy executive engineer in the hierarchical order.



Water Works Department

Functions Of Water Works project Department

- Planning & monitoring
- Implementation

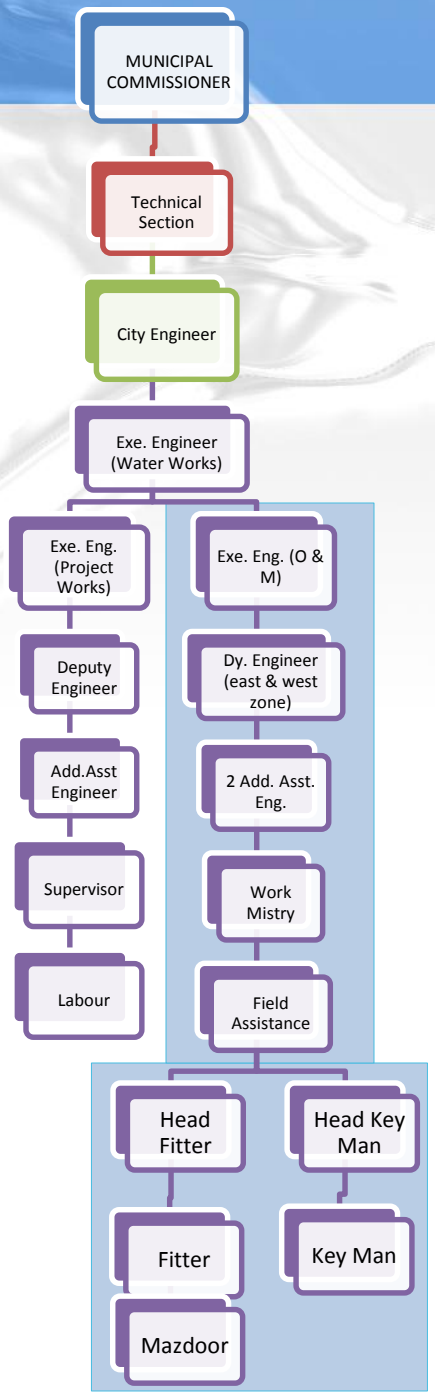
Function of Operation & Maintenance Dept.

repair & operation
- replacement
- granting new connection

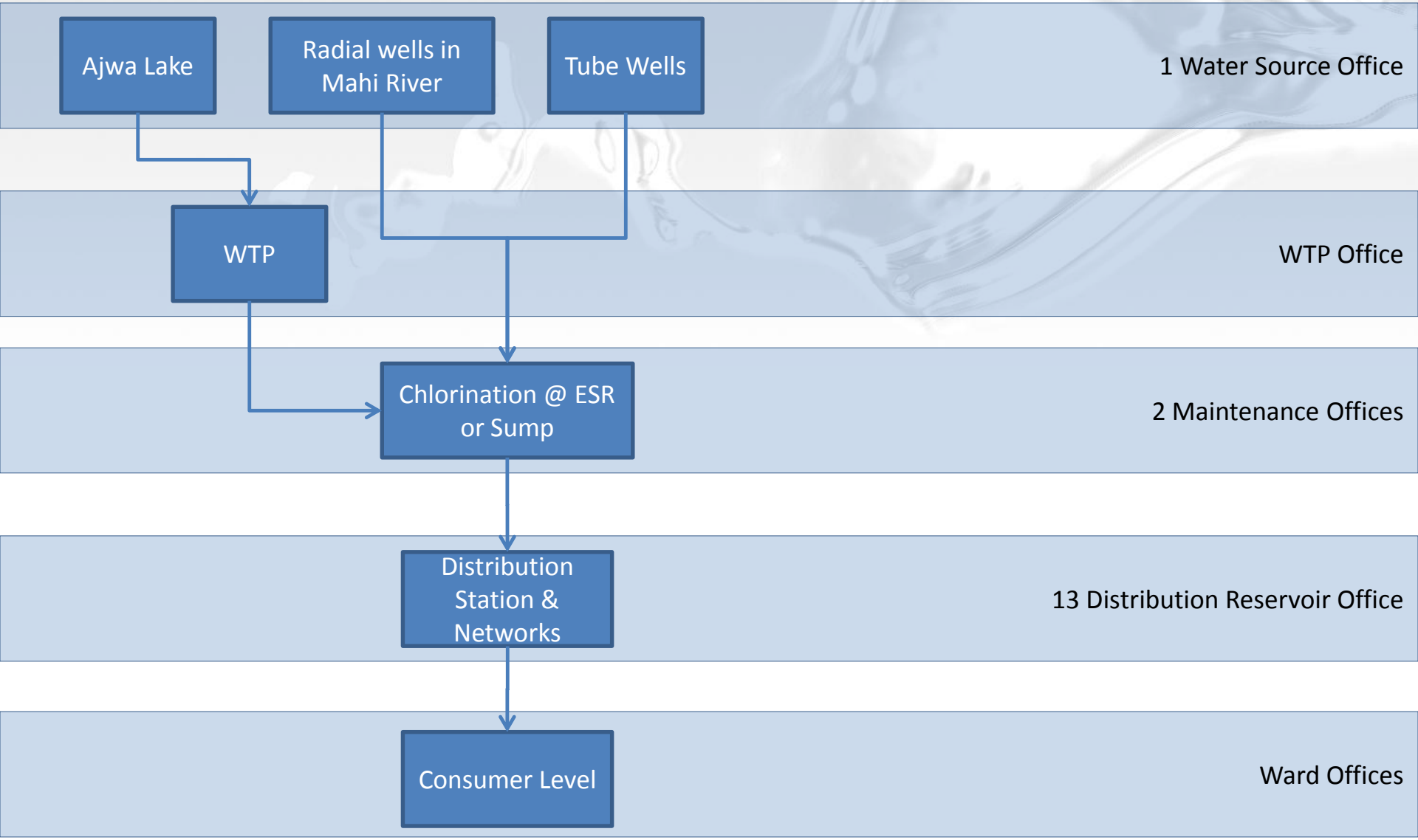
FIVE COMPONENTS
(1)The distribution network (Main lines & Consumer connection),
(2) Stand posts & hand pumps, (3)Meters,
(4)Distribution reservoirs,
(5) Sources

- Maintenance of these components is done on the basis of the complaints.

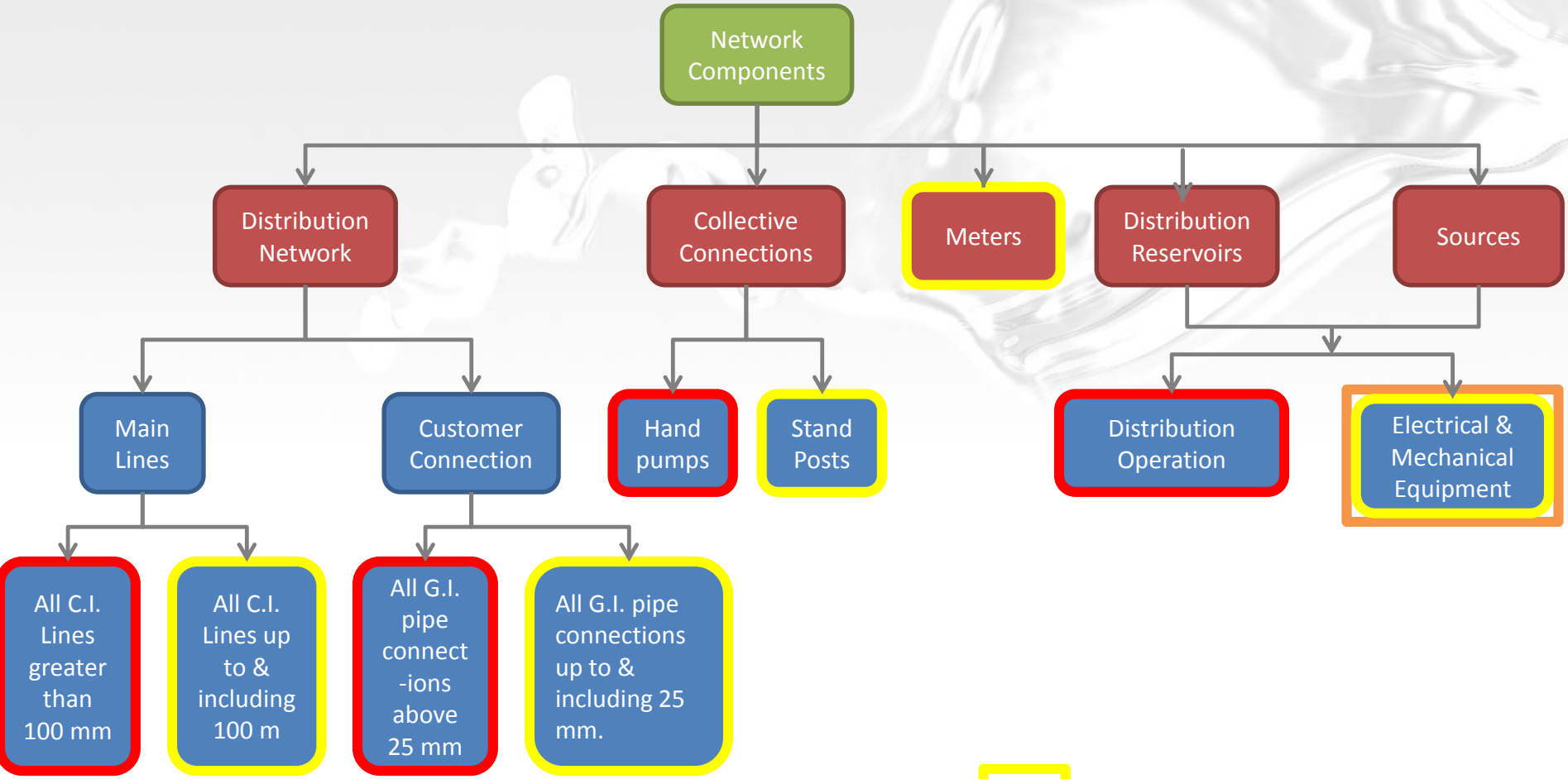
- And for 4th & 5th components is done through monitoring, field survey & sometimes on the basis of cumulative complaints.



For Water distribution Offices Involved in Operation & Maintenance



Operation & Maintenance Dept.
Work Distribution amongst different Components



• **Joints :** are of rubber or lead. These joints are weak links in pipeline network leading to **problems like leakages and contamination**.
• **Valves:** controlling points in supply network.750 valves, operated 4 times a day. 3000 valve operations carried out per day by 120 chawiwalas @ 25 chawis per head per day. **A lengthy job, involving so many people at a time and causing maximum leakages.**

Ward: Duties of the ward

Maint: Functions done by the maintenance dept

E & M: work done by electrical & mechanical wing

Inferences – present MIS

- No standard prescribed format to record the data .
- It is only in times crises , breakdown and water shortage that information gets monitored regularly at higher level officer . in other case the operation level staff monitors the data and the situation.
- The information regarding water supply gets compiled at the water supply department‘s central office and is send to the city engineer and municipal commissioner office

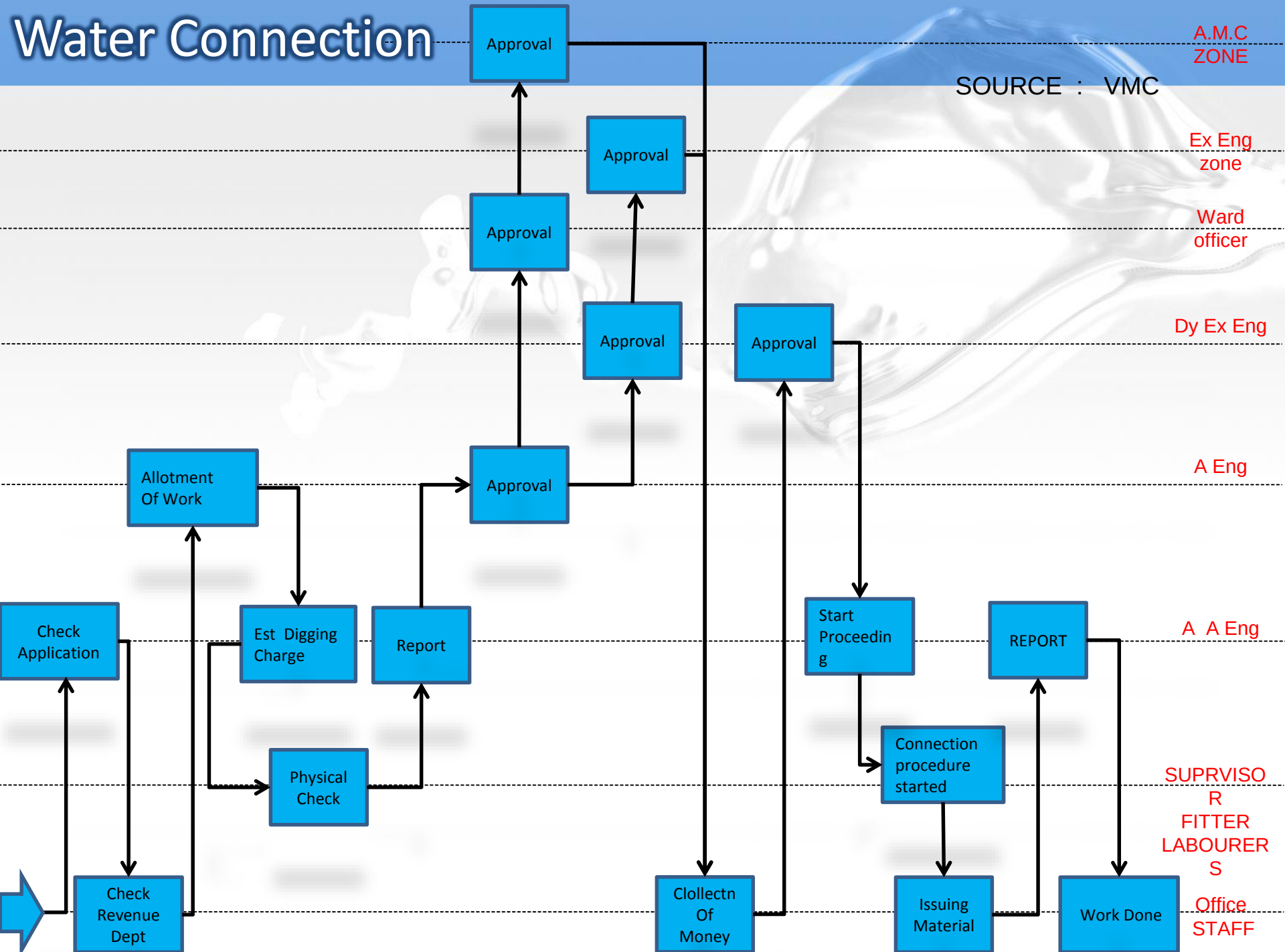
Capital Work – Authority Sanctioning Power

General Board	• Above 5 Lakhs
Municipal Commissioner	• 2 to 5 lakhs
City Engineer	• Rs. 1,20,000 to 2 lakhs
Executive Engineer	• 15,000 to1,20,000
Deputy Executive Engineer	• Up To Rs. 15000
Assistance Engineer	• No Sanctioning power

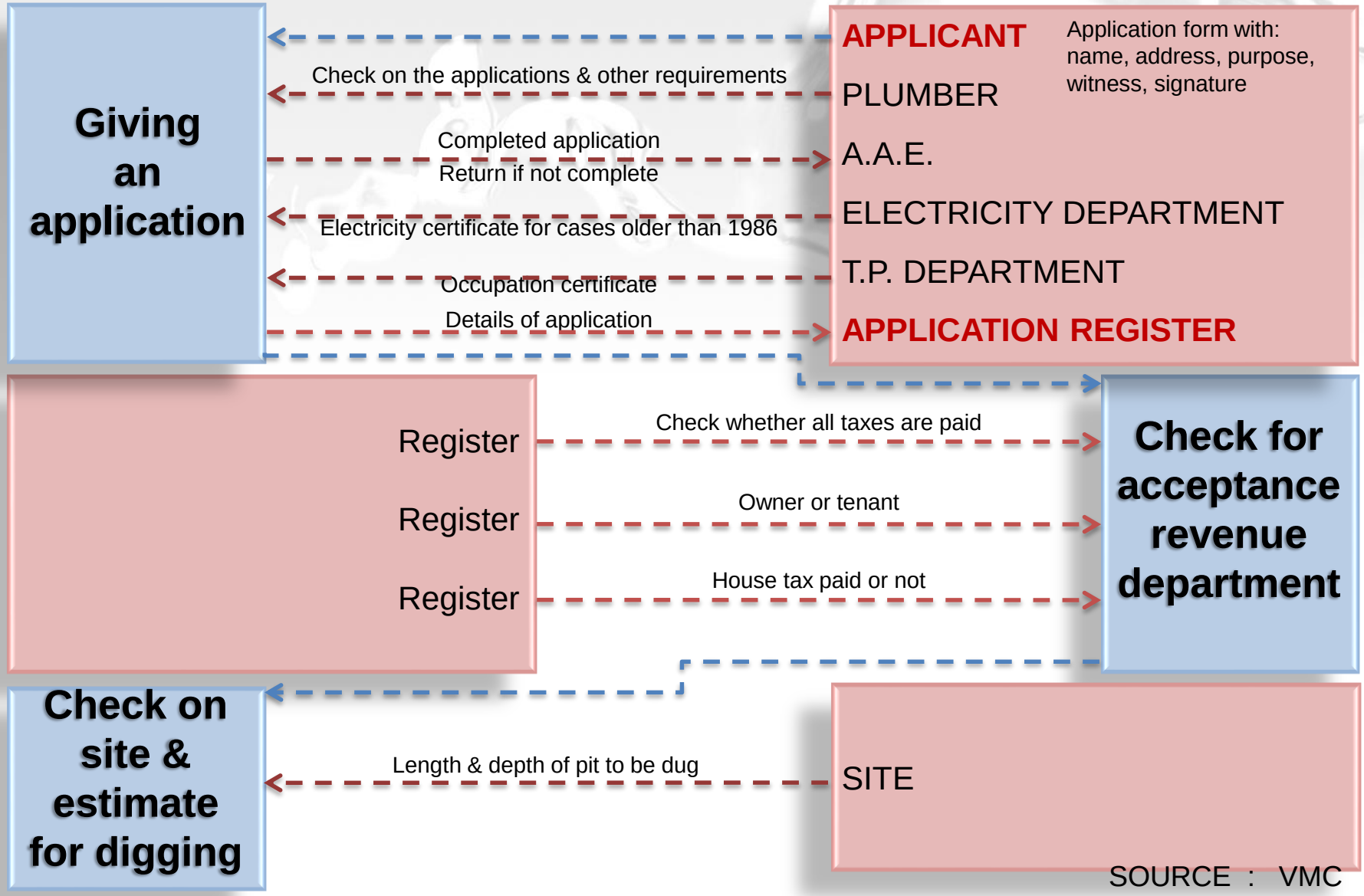
SOURCE : VMC

Water Connection

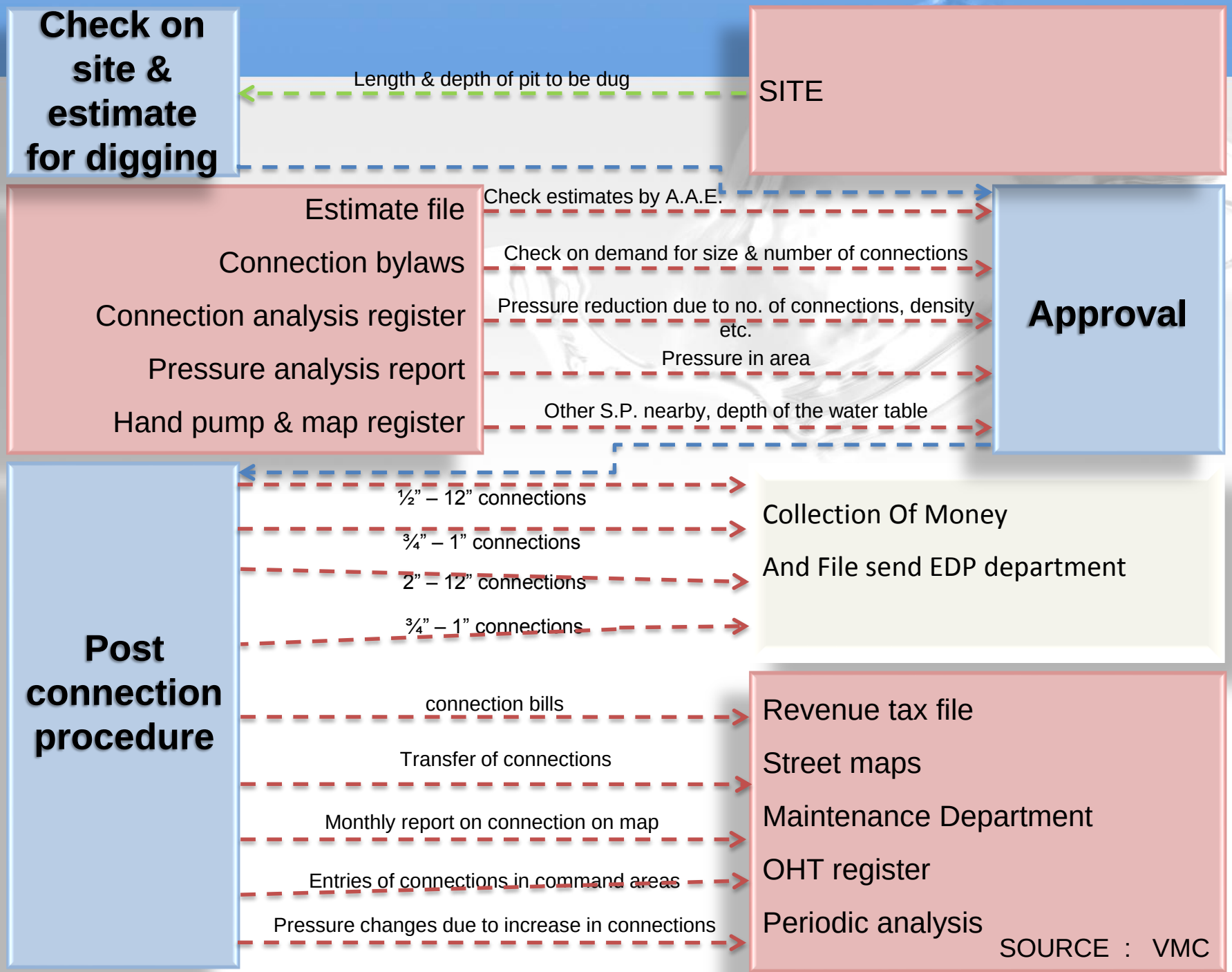
SOURCE : VMC



New connections data flow



SOURCE : VMC


Check on site & estimate for digging
Length & depth of pit to be dug
SITE
Estimate file
Connection bylaws
Connection analysis register
Pressure analysis report
Hand pump & map register
Check estimates by A.A.E.
Check on demand for size & number of connections
Pressure reduction due to no. of connections, density etc.
Pressure in area
Other S.P. nearby, depth of the water table
Approval
Post connection procedure
½" – 12" connections
¾" – 1" connections
2" – 12" connections
¾" – 1" connections
Collection Of Money
And File send EDP department
connection bills
Transfer of connections
Monthly report on connection on map
Entries of connections in command areas
Pressure changes due to increase in connections
Revenue tax file
Street maps
Maintenance Department
OHT register
Periodic analysis
SOURCE : VMC

Inferences

- The New Connection Is Long Process It’s Take All Most 30 Days .
- The Process Is Such That It’s Leads To Increase Corruption .
- Long Time And Complicated Process Increase Illegal Connection .
- Connection charge is fixed as per the municipal corporation but no monitoring of lump-sum charge given to labor and supervisor at site .
- Still the application done by paper work at ward level no computerize entry and monitoring of status report .

Complain Redressal

SOURCE : VMC

A.M.C ZONE

Ex Eng water works

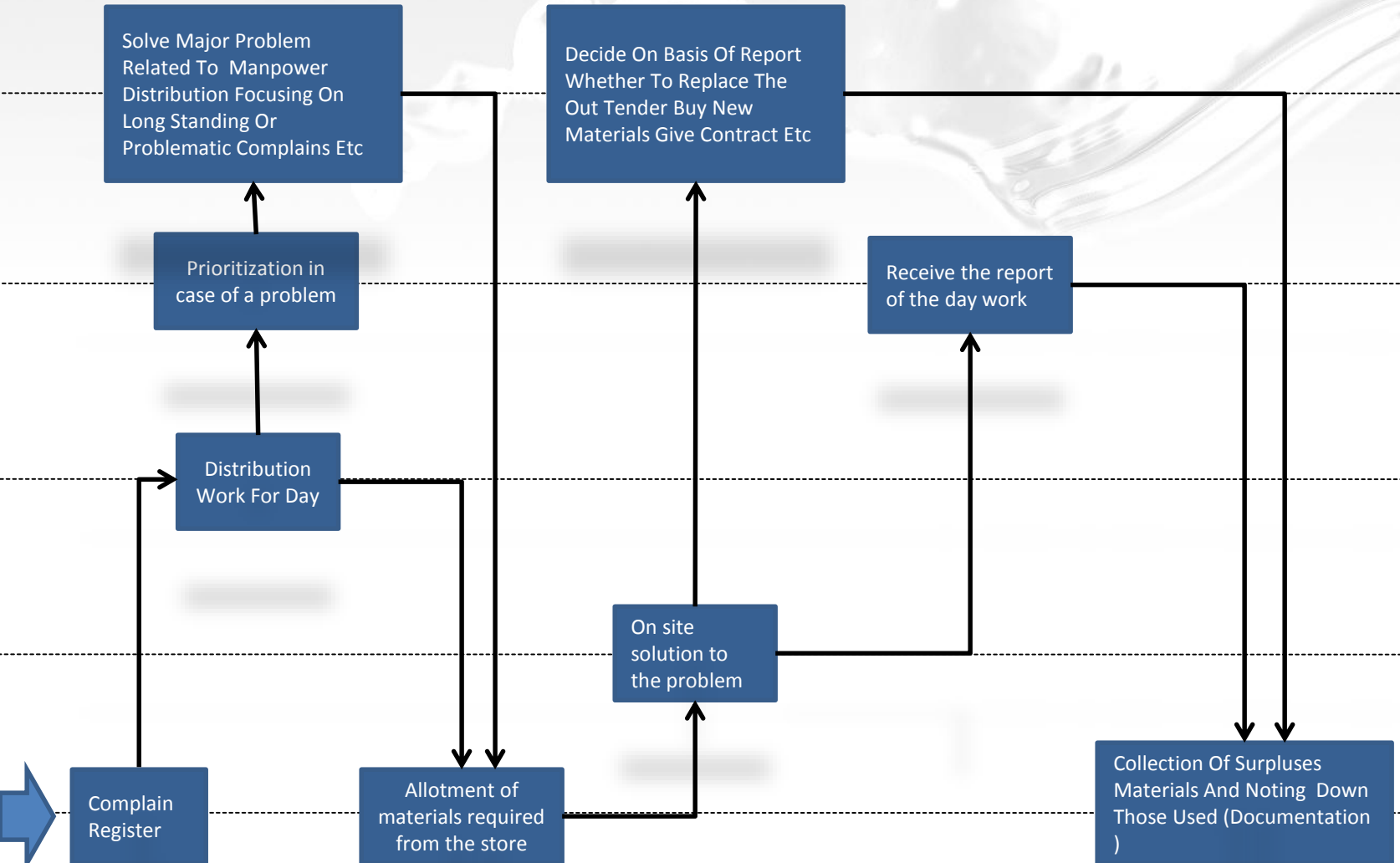
Dy Ex Eng

A Eng

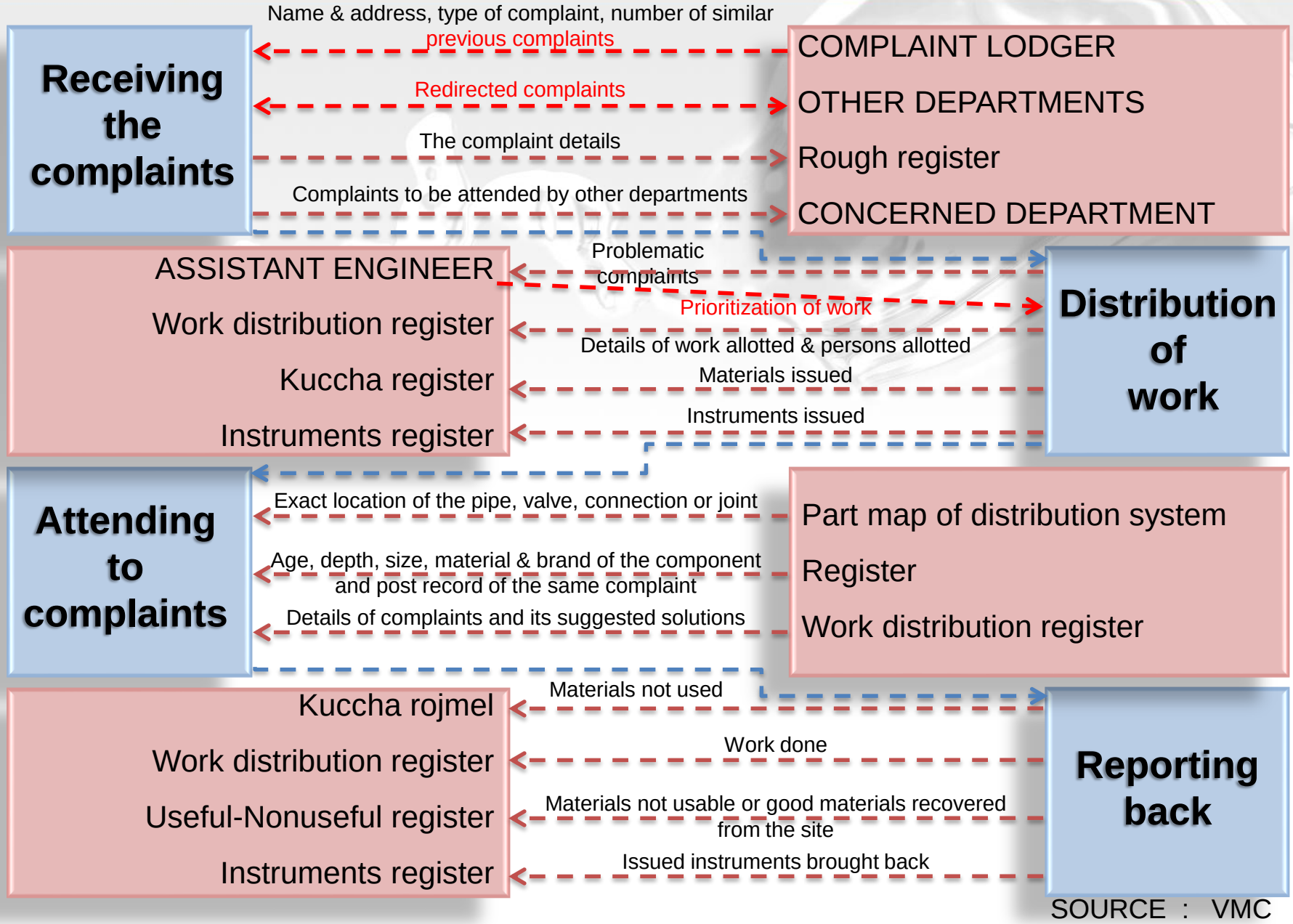
A A Eng

SUPRVISOR FITTER LABOURERS

CLERICAL STAFF



Complain data flow



SOURCE : VMC

Existing The Data Base, Format Its

Explanation of various registers & reports maintained by the concern departments
The office clerk and Store Clerk are In Charge Of All These Registers .
Their Updating & Monitoring Is Done By The Additional Assistant Engineer

- **The Complaint Book:**

Format of the Complaint Book			
Date	Sr. No.	Complaint Lodger Name/Address	The Complaint

Drawbacks:
- The person writing the complaint are not particular about writing the date of the complaint.
- no format for asking pointed questions to the applicant, to identify the nerve of the problem.

- **The Work Distribution Register**: It gives details about the work to be done & the work actually done on the site

Format of Work Distribution Register			
Date	Sr. No.	Fitter's Name	The Complaint

Drawbacks:
- Complaint receive date is absent, so difficult to know the time gap between the complaint received & allotment.
- the ward no. is missing from the format.

SOURCE : VMC

The Daily Account Register: The actual material used is transferred into this register. Two variations- 1) for the fitters,& Others, 2) for the contractors.

Format of the Daily Accounts Register				
Sr. No.	Date	Fitter's Name	Complaint Type	Material Used
1	25.03.09	ABC	Line crack in area XYZ	¼" pipe- 1 no.

Drawbacks:
- No. of complaints column is missing.
- Format tells about the total material used by each fitter & not materials used per complaint.

Usefull & Useless Materials Register: All the materials issued from the store but which have proven to be non-usable or the usable material recovered from the site, are written in this register. Its called form no. 22. The usable Material is submitted in the central store.

Format for Form no.22			
Sr. No.	Material's Name	Weight or Number	Date
1			

Drawbacks:

Reports:

1) Contamination Report:
   Contaminated water complaint report is sent to the Public Health Laboratory every week. In case of any epidemics it is further sent to the state government. Otherwise its just a routine work.

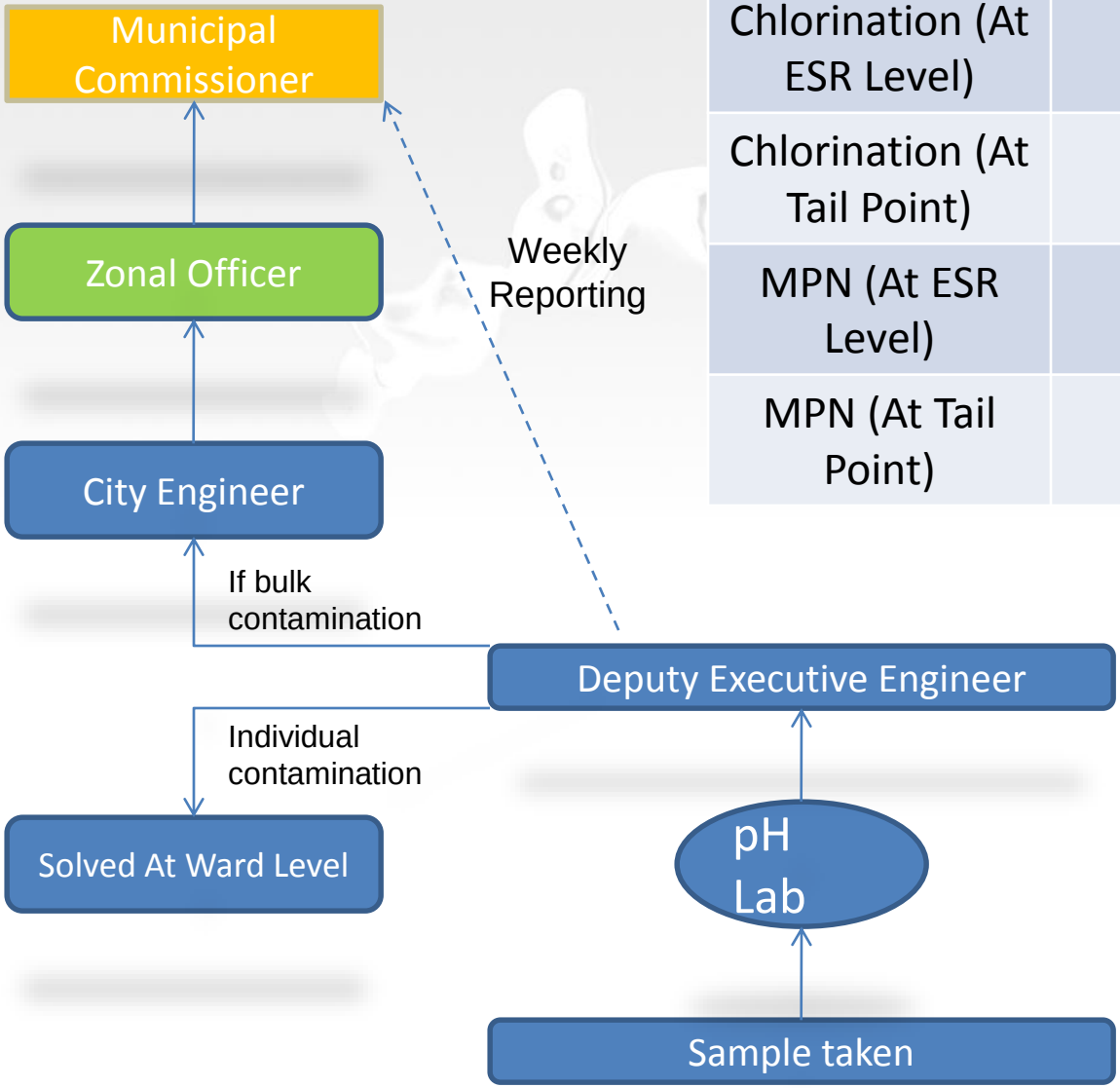
2) Weekly Report of the Work Done:
   A copy of each of the report goes to the Health Officer, City Engineer & Director of Municipal

inferences

- All type of complain are registered by one person only and at same register.
- 2 person work / shift for complain registration and daily 30 to 40 all type of complain.
- These registers are only reviewed by the additional assistance engineer once in a week, higher authorities (Ex. Engineer, Dy. Engineer) is least concerned about it.
- Operator have to work under all department officer force and finally consumer have to visit office several time.
- Same labors are utilize for all kind of operation and maintenance work .Like pipe line maintenance, road repairing , assets reaping .
- Complain redress management is not proper assistant engineer and supervisor works under labor shortage machinery shortage.
- Because of shortage of resources complain redressal takes more time and all system stuck at one place.
- Same complain occurs periodically because of lack of skill and hurry to complete it.
- Some of the high density area of city (old city) complain/day is high but staff is limited.
- Need to have reference for work compilation on time so poor people have to suffer a lot.
- Because of political pressure staff not works effectively .
- No attempt is made to analyse the past record of the complaint.

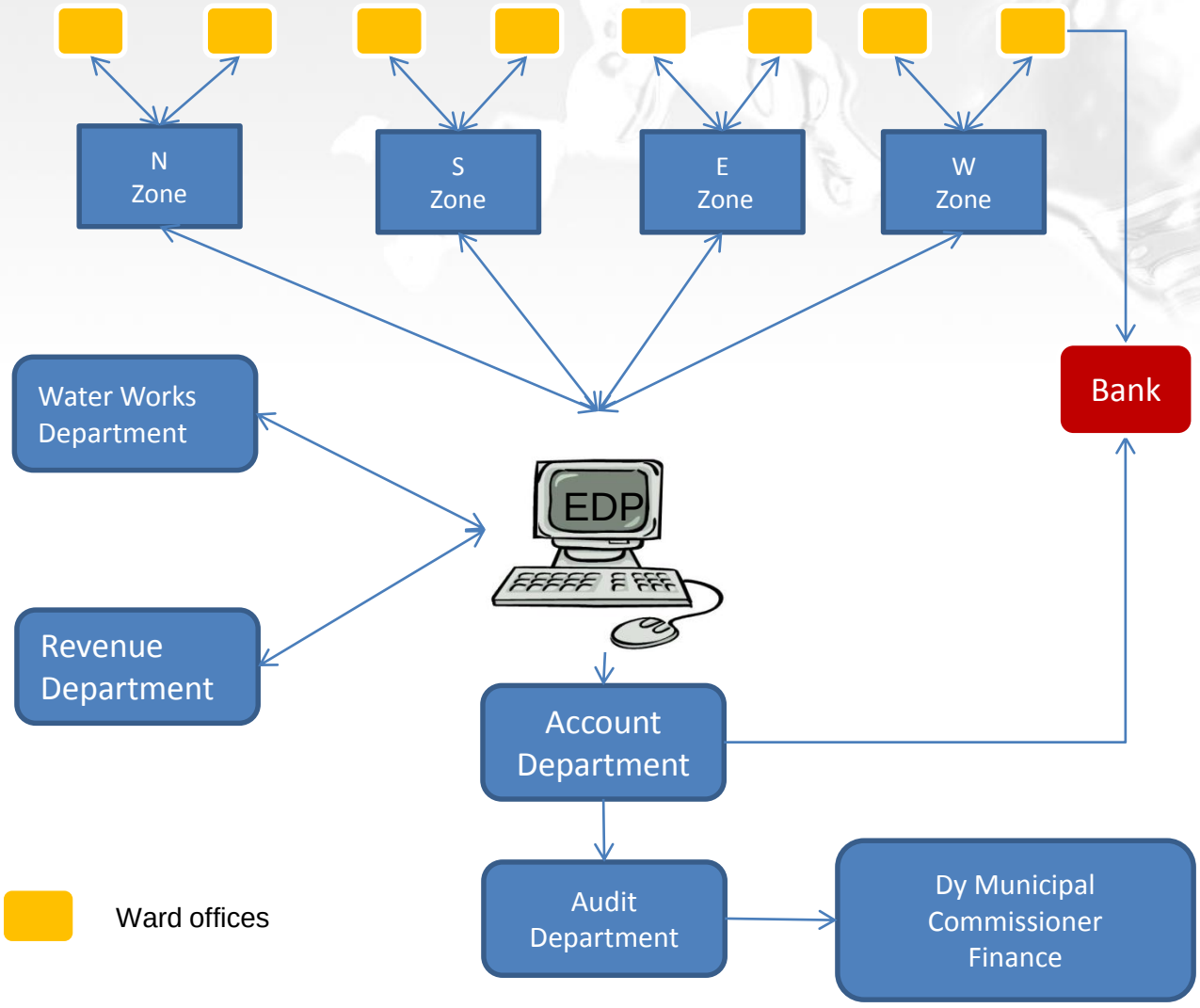
Water Quality

Types of Test	No. Of Samples	Frequency
Chlorination (At ESR Level)	2 (Ward)	Daily
Chlorination (At Tail Point)	2 (Ward)	Daily
MPN (At ESR Level)	1 (Ward)	Weekly
MPN (At Tail Point)	1 (Ward)	Weekly

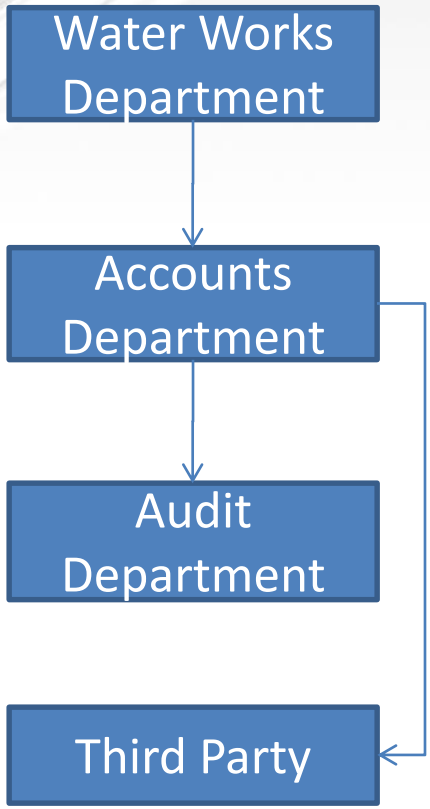


Bill Collection

Bill Collection - Water



Bill Collection - Water Work Dept.



inferences

- Water Bill is included in property tax bill and it's on flat tariff basis so no monitoring on water consumption of any property tax payer.
- Online System of collection of bill is consumer can pay bill at any ward office .
- But very long and complex process to get relief from ghost connection payment .
- Water billing related inquiry not resolved properly in time at ward office because of lots of table work on clerk and officer on recovery .

Stage Wise Work Process

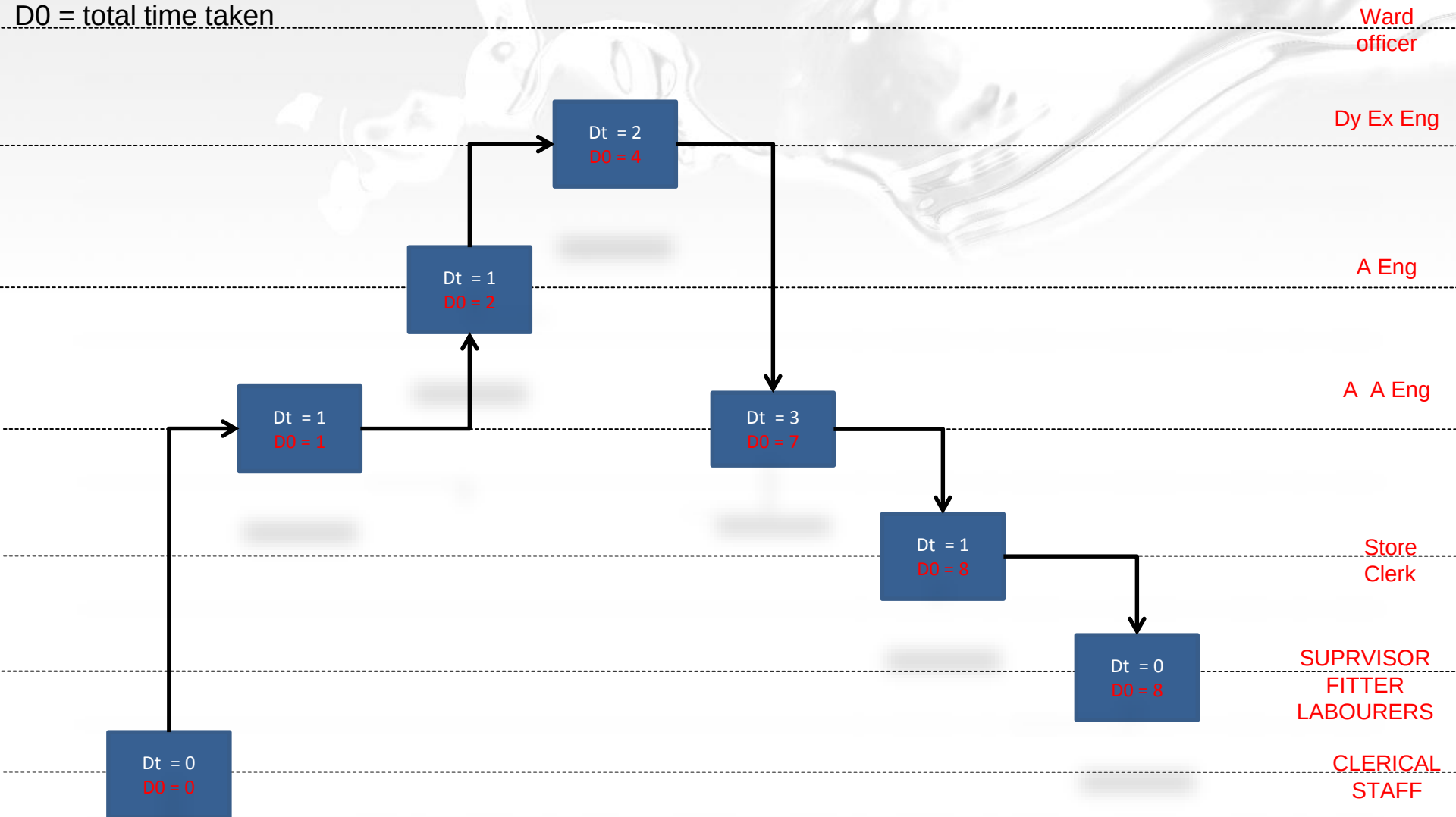
WARD OFIICE

File Flow Process apx Total 8 Days

SOURCE : VMC

Dt = time taken for that activity

D0 = total time taken

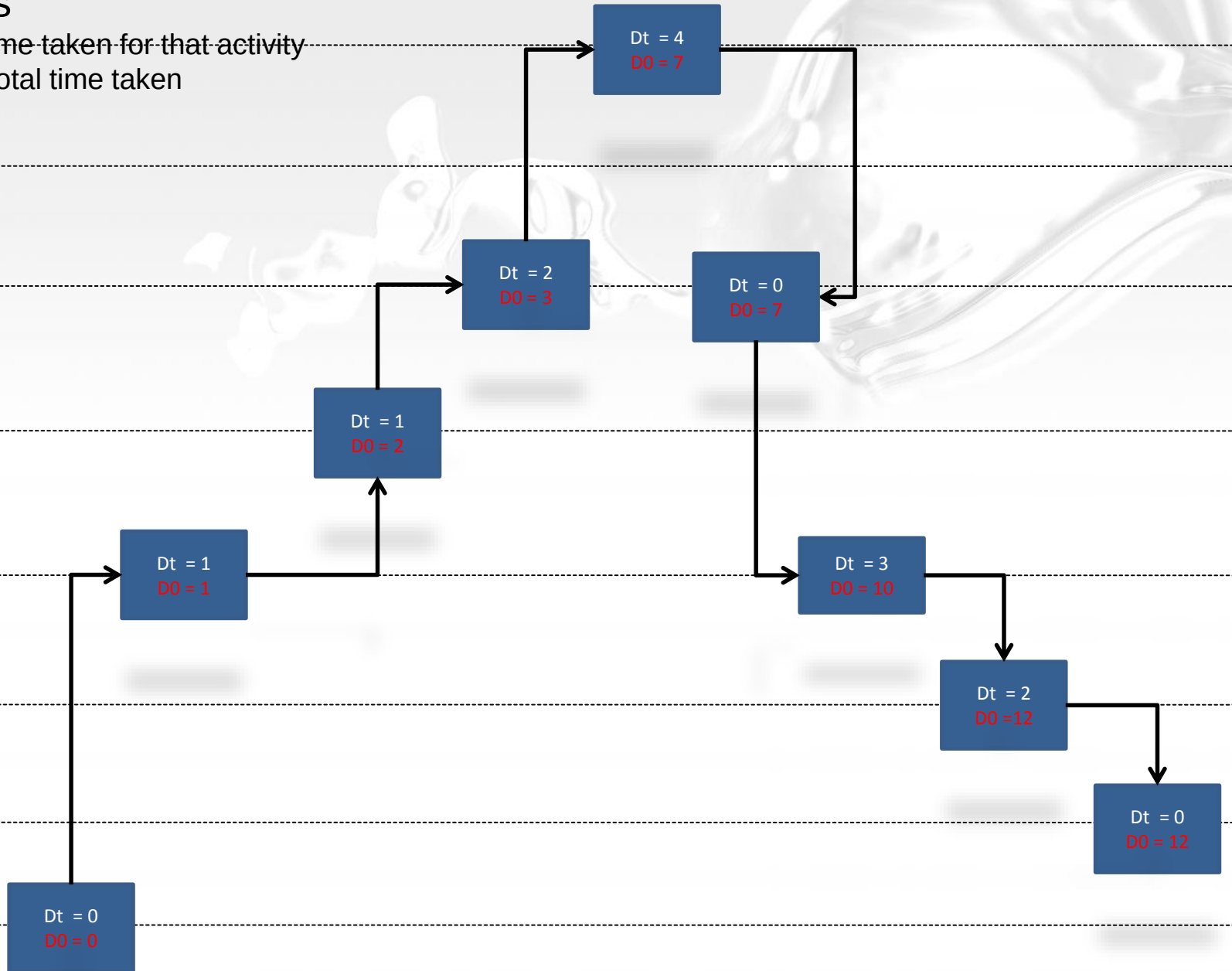


ZONE OFIICE
File Flow Process apx Total 12

SOURCE : VMC

Days

~~Dt = time taken for that activity~~
D0 = total time taken

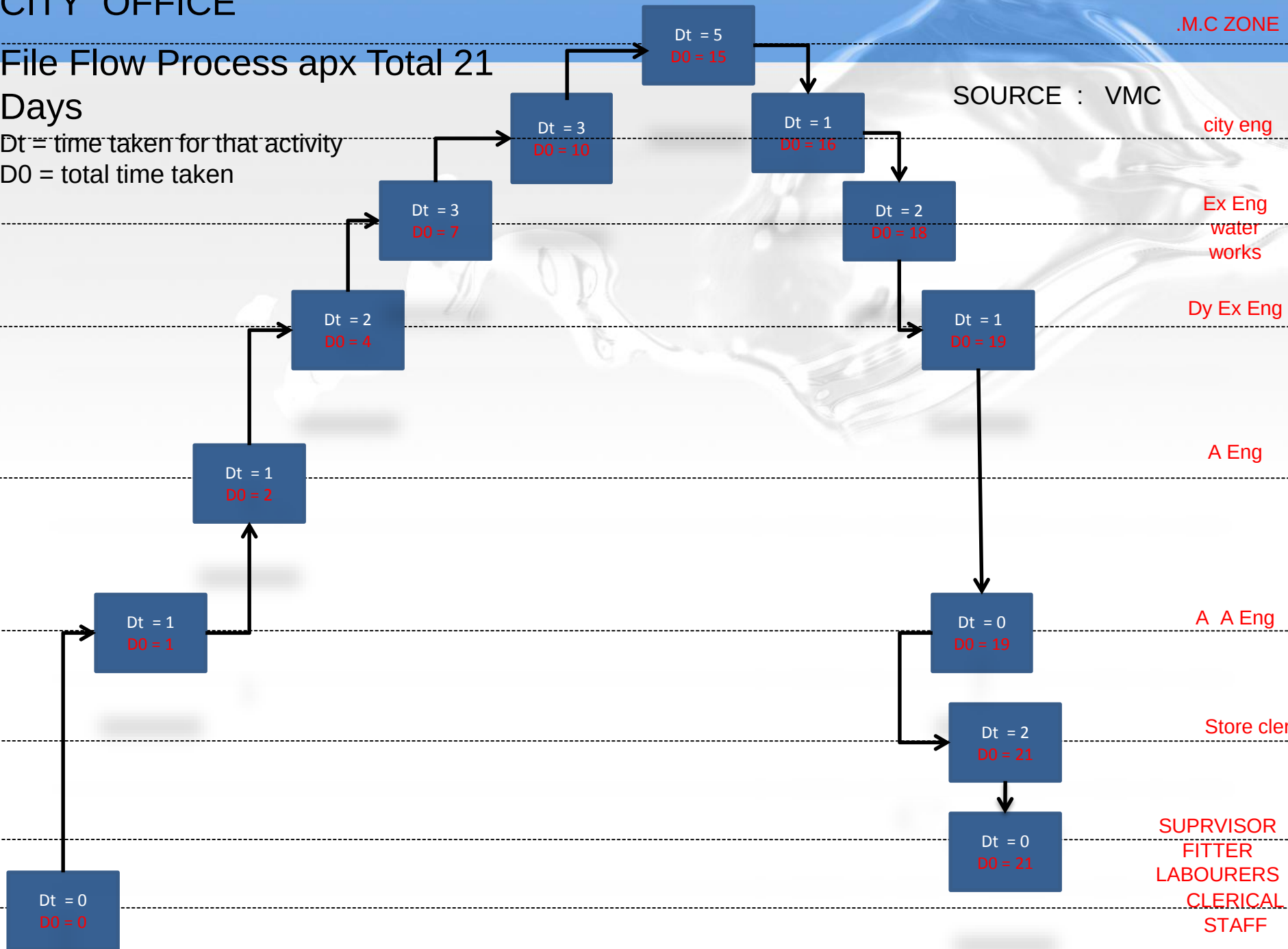


CITY OFFICE

File Flow Process apx Total 21 Days

Dt = time taken for that activity
D0 = total time taken

SOURCE : VMC



Citizens charter

24 HOURS	3 DAYS	7 DAYS
Drainage Overflow	Public stand post close	New connection
Water Leakage	Assets maintenance	New sewerage connection
Public Stand Post Leakage		
Contamination Of Water		
Strom Drainage Problem		
Chamber Cover Damage		

Note :

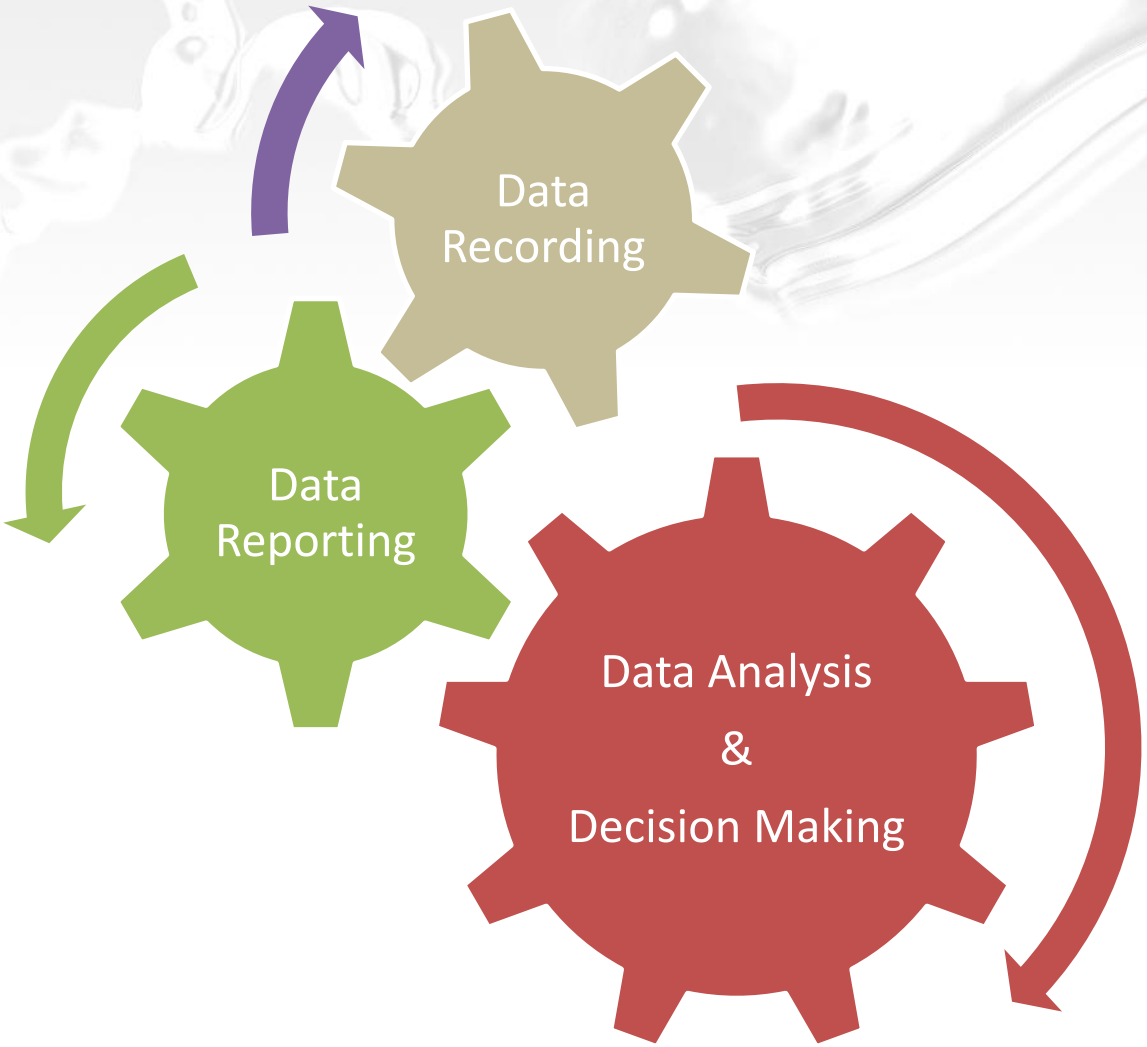
- If We Compare This To Actual File Flow Process of each level Minimum Time Taken Is 8 Days So It's No Where Near To Citizen Charter

General inferences

	Data Recording	Data Reporting	Data Analysis	Decision Making
Water Distribution	No Standard Formats To Record Data	Directly At Higher Level	At Time Of Crises	Take Time Because Of Lack Of Proper Information about data availability
New Connection	Data Are Collected By Different Officers	Involvement Of Many Officer Takes Long Time And Ultimately Corruption Starts	All Data Not Available At Same Time With Officers	Not Availability Necessary Data Some Times Wrong Dictions
Complain Redressal	No Separate Provision For Different Data	All Data Follow Same Path From Same Officers No Separate Allotment Of Work According To Data	All Data Not Available At Same Time With Officers	Information To Redress Complain At Various Department Lack Of Resources And Data
Water Quality	Data recorded at ward level	Data reported weekly from ward level to higher levels	Data is available to analyze the data	Complaints are solved as soon as possible from the data available
Boll Collection	Online Updated	EDP Department	Data available but Only for High level Officers	Not Complete Segregation Of Data
Capital Works	No Separate Officer At Ward Level	Because Of Less Amount Sanction Power Ward Level Mostly Have To Report Higher Level Officer	Data Is Not Updated With The Progress Of Work	Pending Demand Due To Scarce Resources And Involvement Of Political Lobbing It Takes More Time For Approval

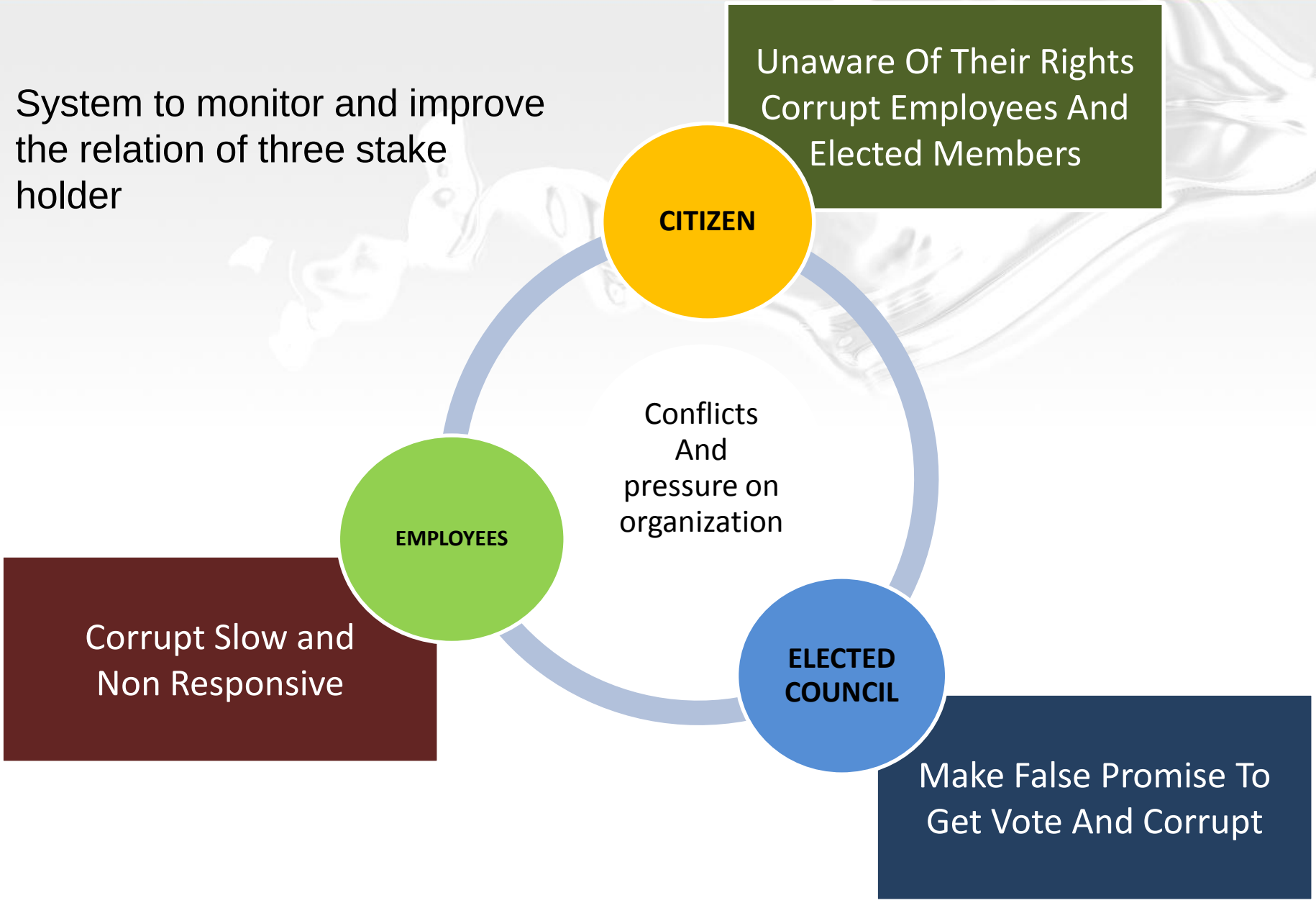
Conclusion : Efficient Working

Improvement Of Performance Monitoring System Of Following System Should Work Together



Way Forward

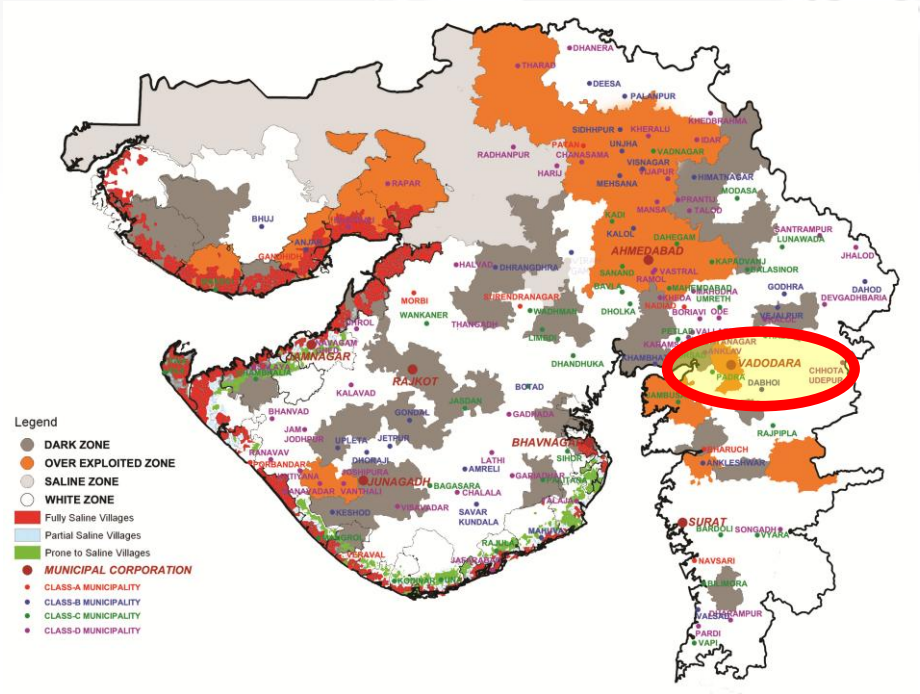
System to monitor and improve the relation of three stake holder




SIMPLE
MORAL
ACCOUNTABLE
RESPONSIVE
TRANSPARENT
SMART

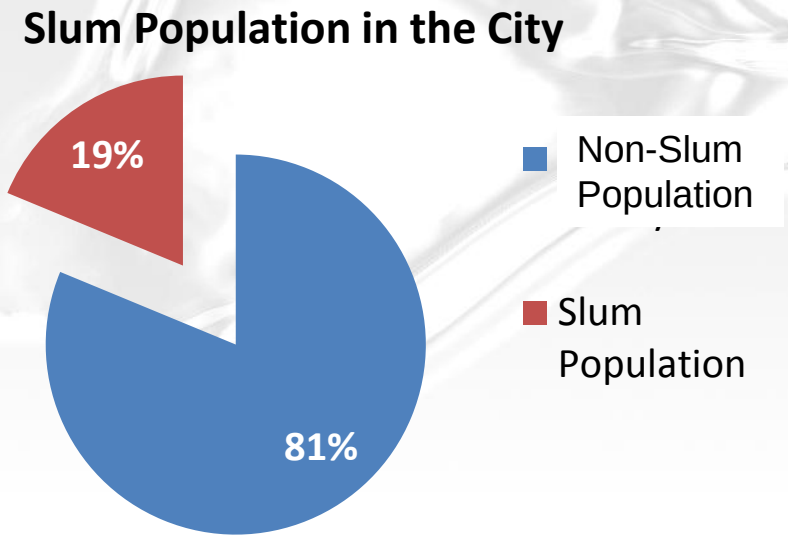
Equity in the Slums of -

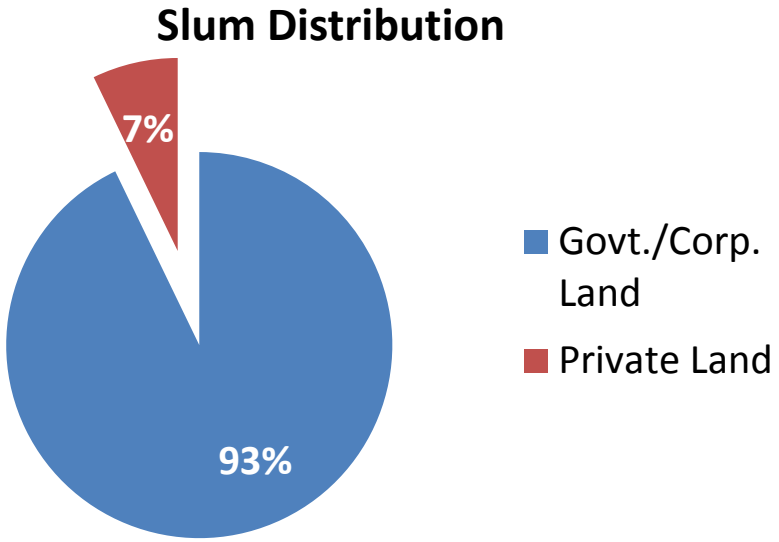
VADODARA



Slums in Vadodara

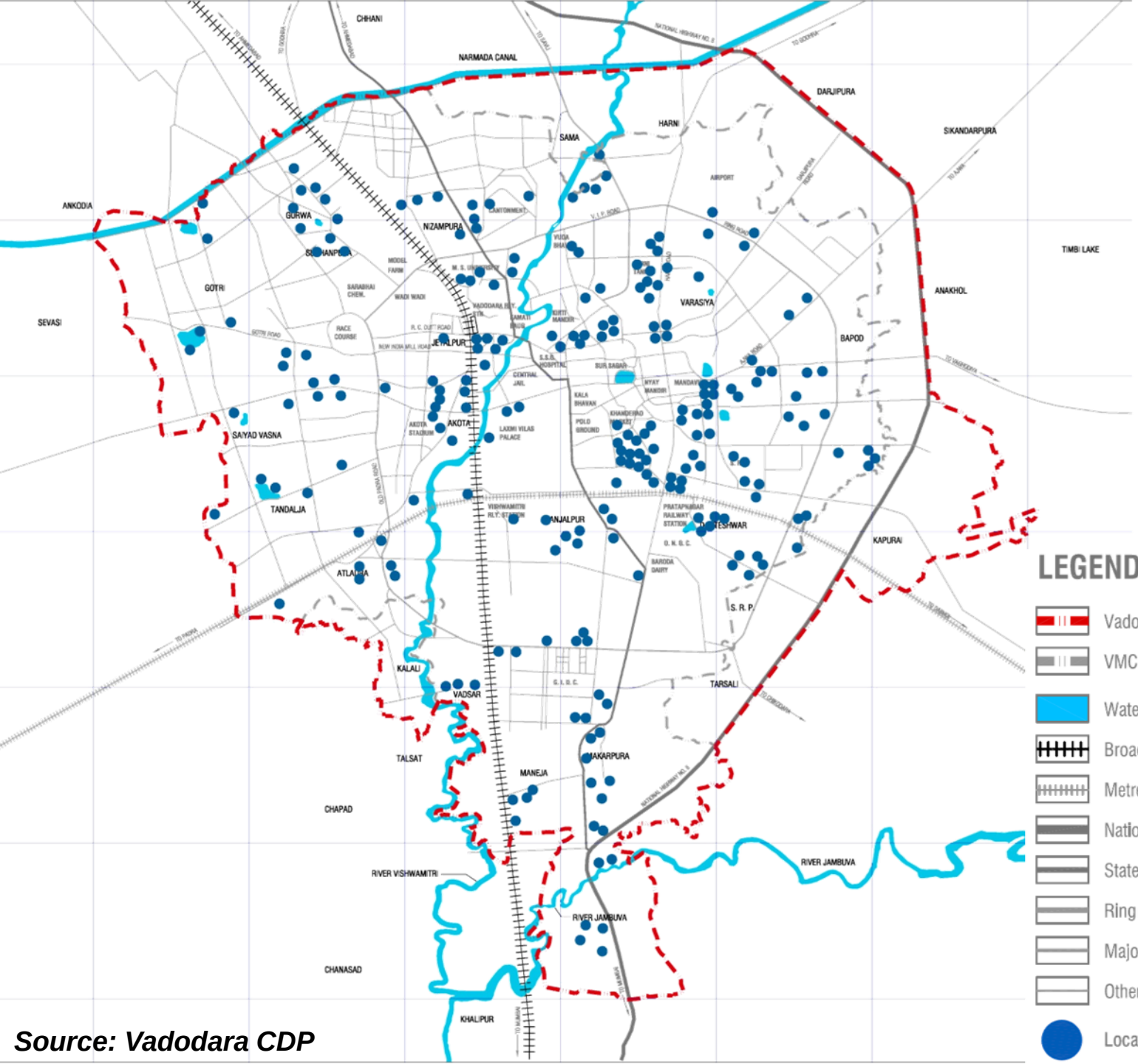
EXISTING SCENARIO	
Total Population of Vadodara	19,77,079
Total Population of Slum	2,43,460
Total No. of Slum Pockets	297
Slums on Govt./Corp. land	259
Slums on Private land	20
Total no. of House-hold	48,692





Source: MHT, SEWA Report

Slums Location



LEGEND

- Vadodara Municipal Corporation Boundary
- VMC Boundary till July 2002
- Waterbody
- Broad Guage Railway Track
- Metre Guage Railway Track
- National Highway
- State Highway
- Ring Road
- Major Road
- Other Road
- Location of Slums

Source: Vadodara CDP

Inequity in the Slums of Vadodara

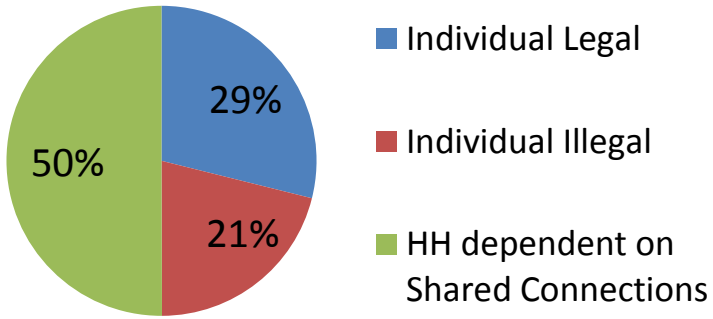
Inequity at City Level

Comparison of the UWSS Sector Performance of the Slums and Non-Slums -			
Sector	Sector Performance Indicator of Equity	Non-Slum Areas	Slums
Water Supply	Coverage of individual connections	71%	47%
Sanitation	Coverage of individual sewerage/toilets	85%	60%

- *The Performance of the UWSS in the Slums is very poor when compared to that of the Non-Slum areas in the city*

Inequity within the Slums

Water Sector Scenario -		
Individual Water Supply Connections	Legal	14,378
	Illegal	10,488
	Total	23,775
Shared Connections		608

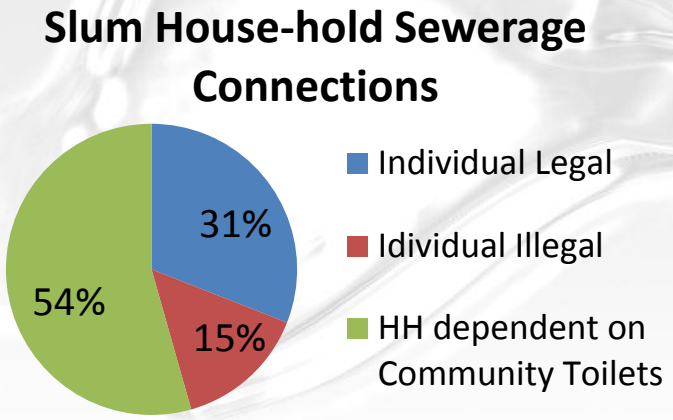


- *60% of the total no. of Individual Water Supply Connection are legal Connection*

Source: MHT, SEWA Report

Inequity in the Slums of Vadodara

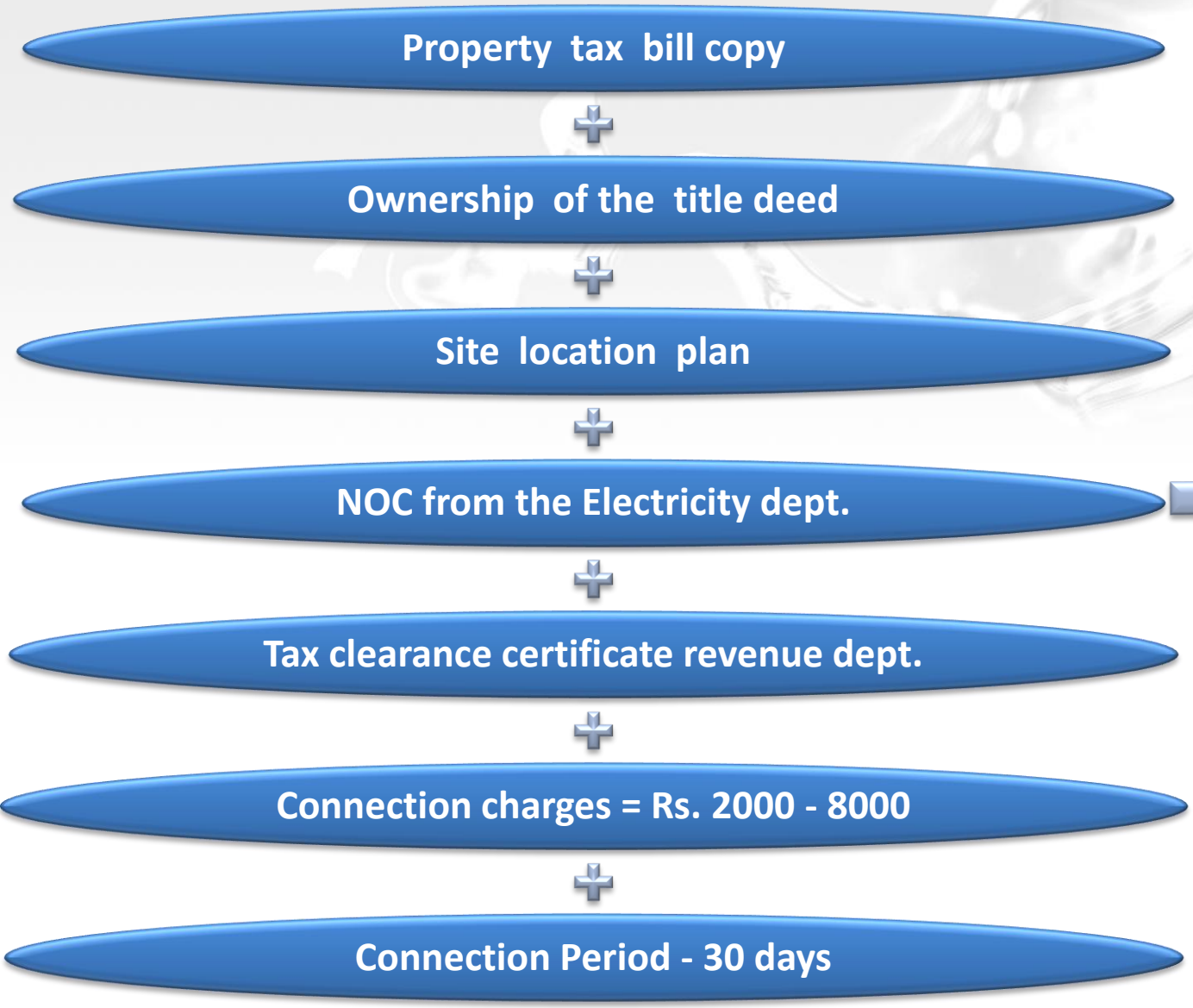
Sewerage Sector Scenario -		
Sewerage Connections	Legal	15,418
	Illegal	7,297
	Total	21,598
Community Toilets		111



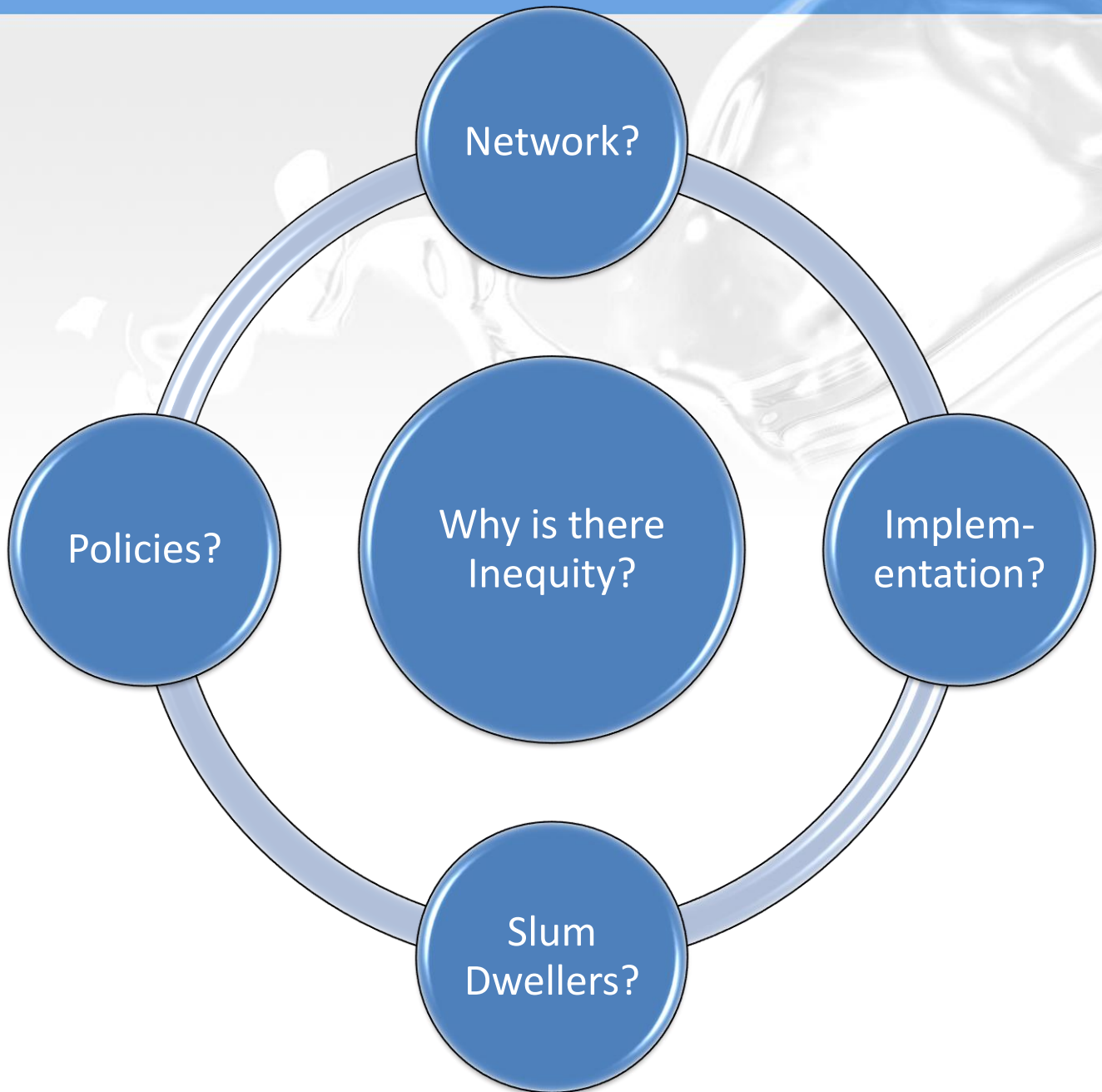
- *71% of the total no. of Individual Sewerage Supply Connection are legal Connection*

Source: MHT, SEWA Report

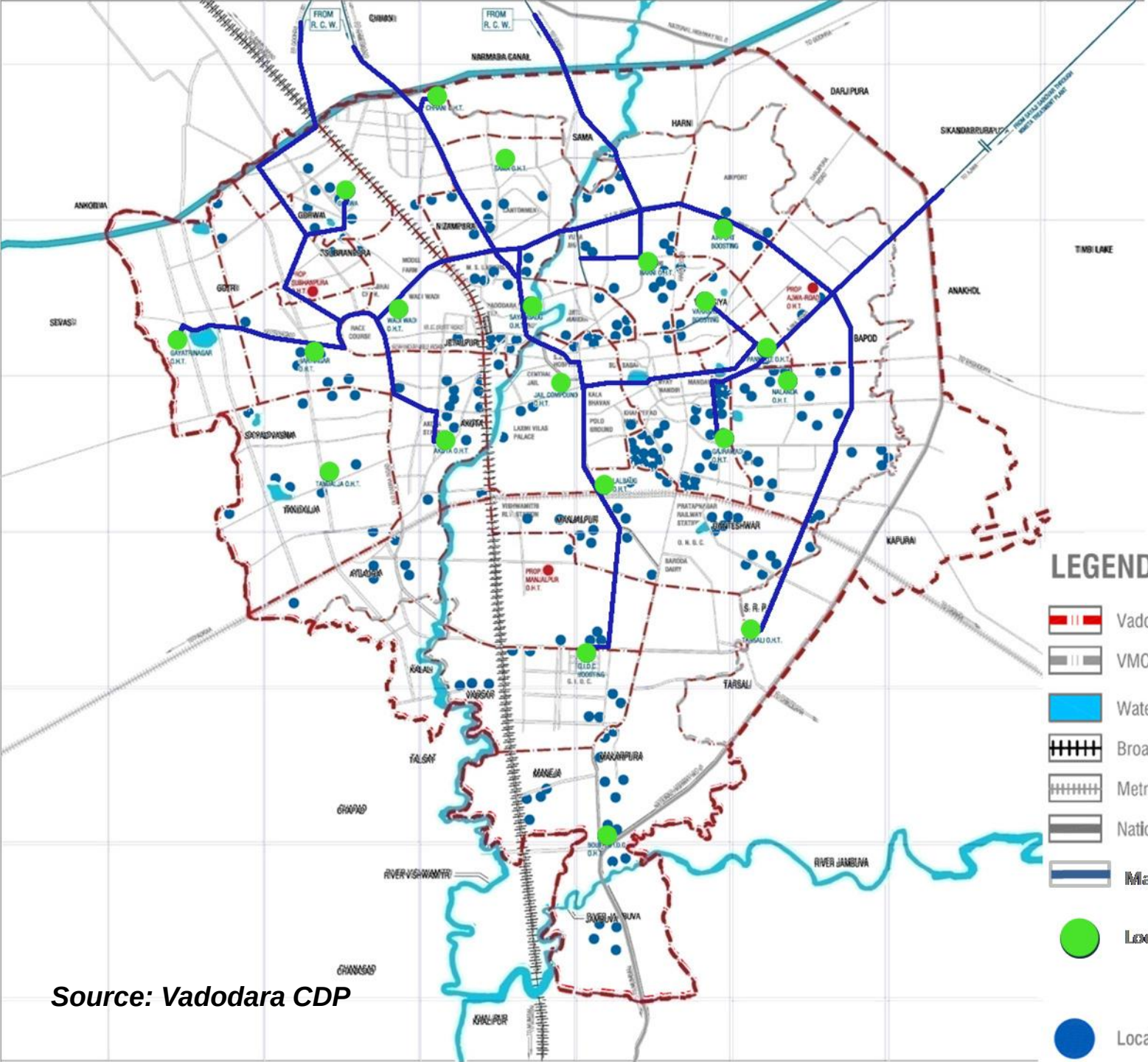
Procedure For New Connections



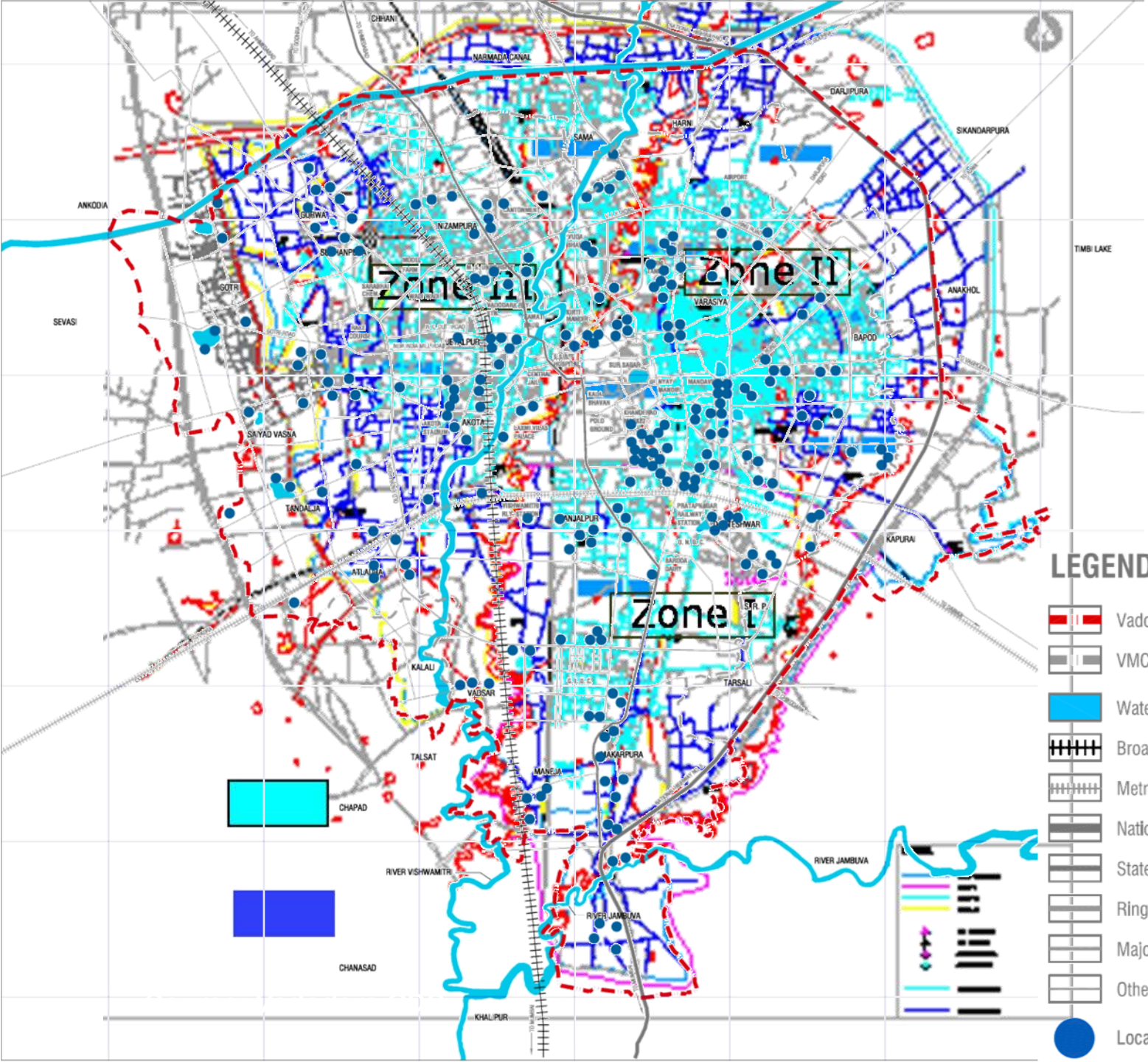
New Connection


Network?
Policies?
Why is there Inequity?
Implem-entation?
Slum Dwellers?

Water Supply Network



Source: Vadodara CDP



Drainage Network

Inequity within Slums

. . . At POLICY Level?

Absolutely deprived areas or only dependence on shared services

- No program or fund allocation mechanism for focused development of slum developers and making provision for service.

Past programs

- *SNP – Soniyanagar slum*
- *BCC – Ramdevnagar*
- *GMFB – Toilets Provision*
- *90 : 10 Scheme*

Inequity within Slums

. . . At POLICY Level?

Absolutely deprived areas or only dependence on shared services

- No program or fund allocation mechanism for focused development of slum developers and making provision for service.

Illegal connections

- Variable connection charge depending on location
- Procedure for New Connections
  - Only tax payers are entitled for services
  - Only tax payers are entitled for services

Illegal Slums

- No mechanism to include slums on government land and private land in property tax payers

Inequity within Slums

. . . *At* IMPLEMENTATION *Level?*

Illegal connections

- Bill payment also is a lengthy task for a daily wage laborer.
- Same tariff in slums as well as the city.

Procedure for New connections

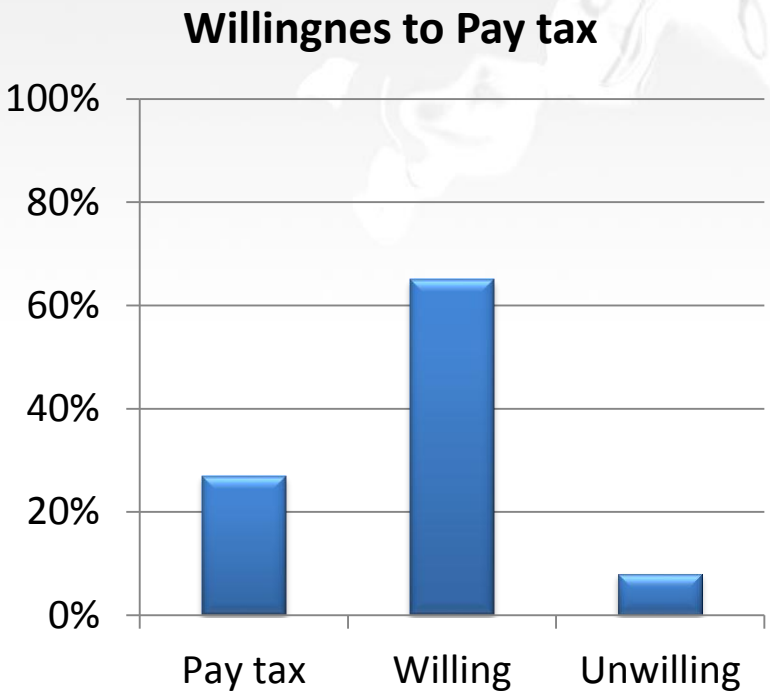
- Complex procedures for taking connection which involves a lot of time.
- Provision of services in slums slow because of the pre- conceived notion that slums cannot pay.

Illegal Slums

- Political factors of major concern.

Inequity within Slums

. . . Are the Slum Dwellers Willing to Pay Tax?



Willingness to Pay Tax	
Slum Pockets Paying Tax	73
Slum Pockets willing to Paying Tax	179
Slum Pockets not willing to Paying Tax	23

- *65% of the Slum Pockets are willing to pay tax*

Detailed Analysis

Analysis Methodology

100% Legal Connection	Illegal Connections	Depend on shared connections
Pay Property Tax	Pay Property Tax	Pay Property Tax
Do-not Pay Property Tax	Do-not Pay Property Tax	Do-not Pay Property Tax

SCALE	Least Intervention	Less Intervention	Demands Attention	Highest Priority

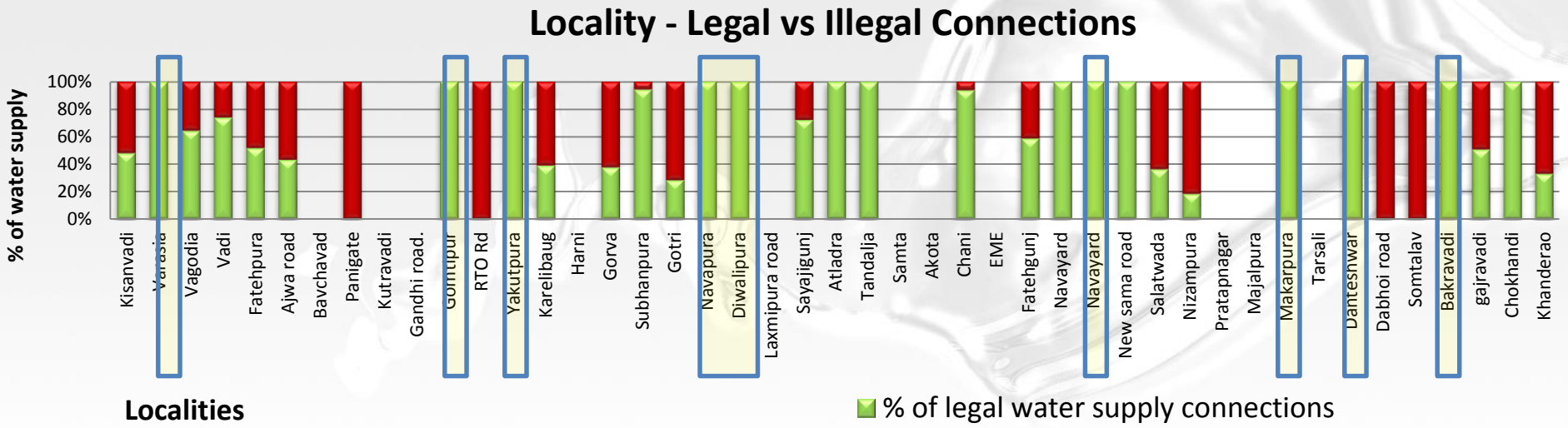
•Under the BSUP project, slums lying in the ***flood prone area*** to be rehabilitated, hence ***excluded*** from strategies

• There exists ***similar condition*** in the slums of a ***locality***.

• Hence ***analysis*** of the slum pockets have been done ***Locality wise***.

• There are ***45*** such ***localities*** in Vadodara.

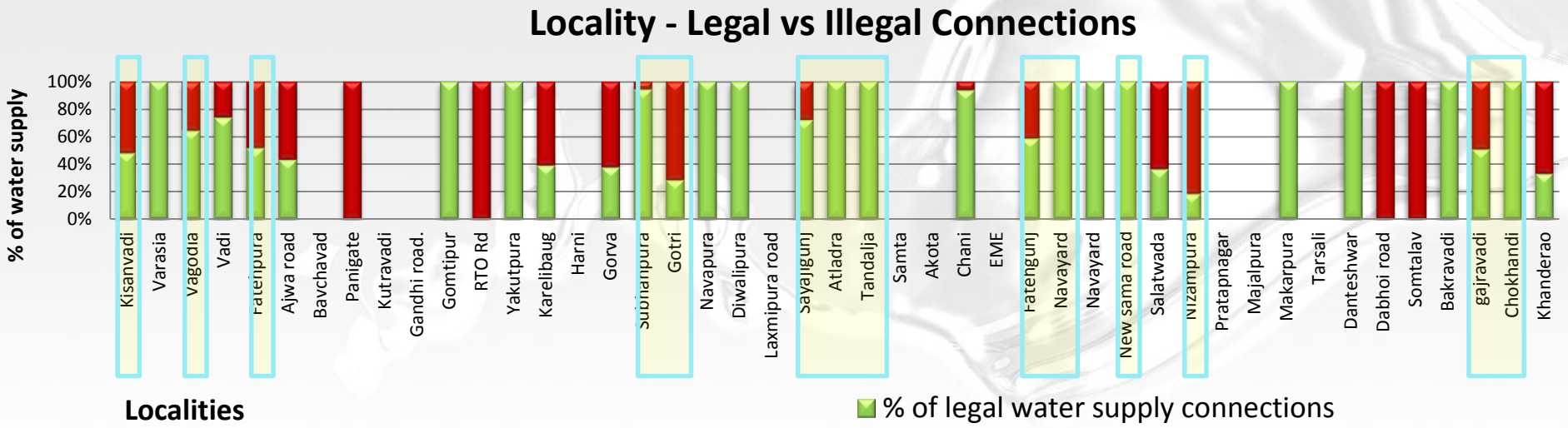
Detailed Analysis



Water supply	100% Legal Connection	
	Pay Property Tax	Least Intervention
No. of Slum Pockets	9%	
Total – Households	10%	
Total - Individual Connections	11%	
Legal Connections	25%	
Illegal Connections	0%	
Shared Connections	6%	

Source: MHT, SEWA Report

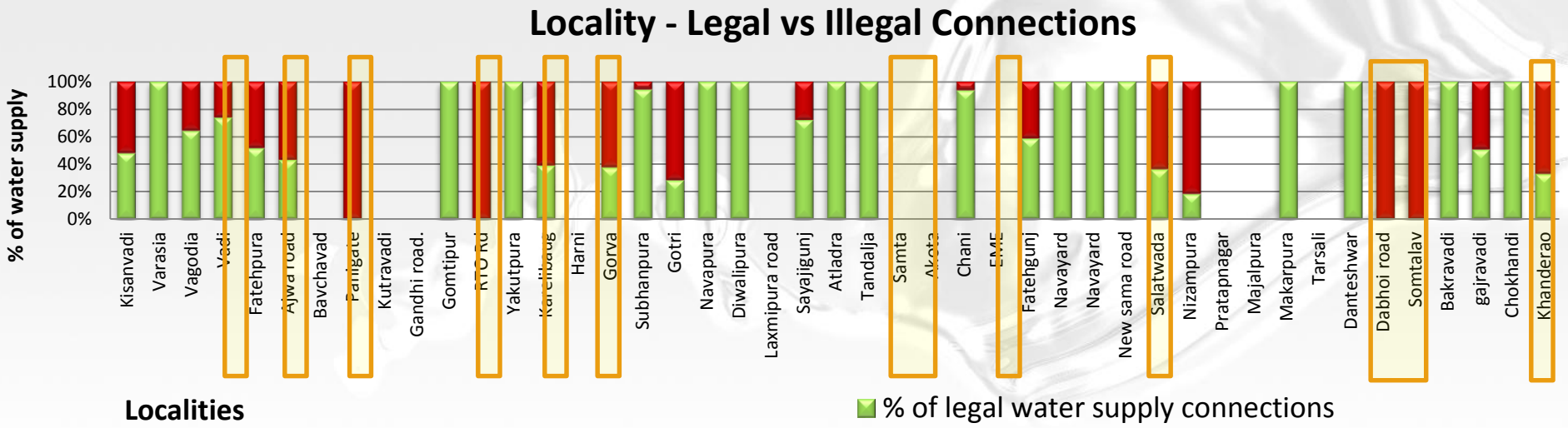
Detailed Analysis



Water supply	100% Legal Connection		Illegal Connections	Less Intervention
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Total
No. of Slum Pockets		4%	45%	49%
Total – Households		7%	47%	54%
Total - Individual Connections		4%	51%	55%
Legal Connections		6%	45%	51%
Illegal Connections		0%	52%	52%
Shared Connections		8%	48%	56%

Source: MHT, SEWA Report

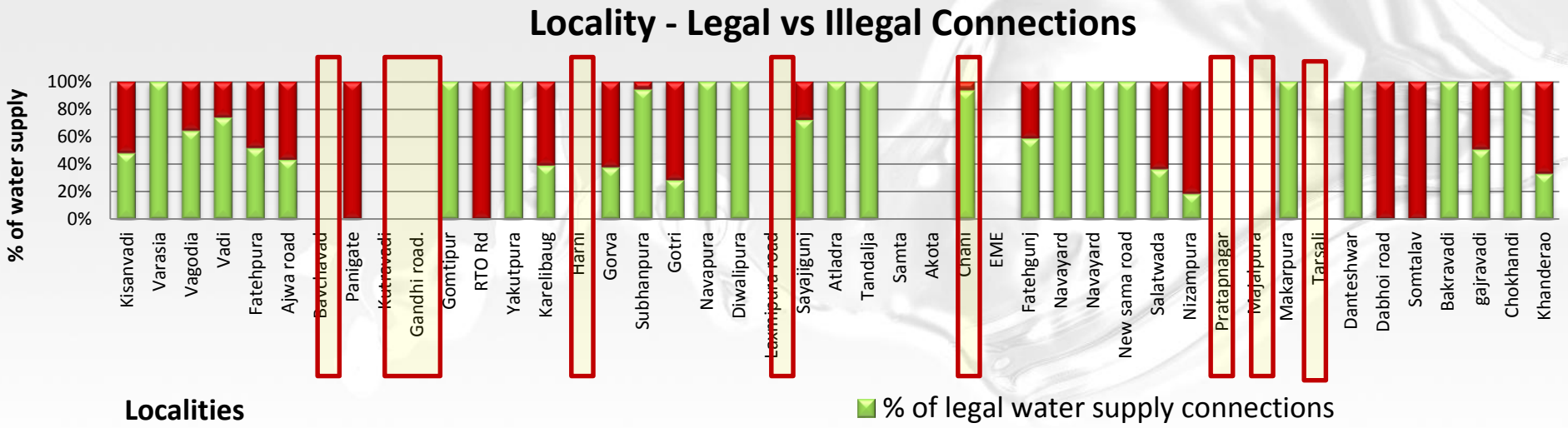
Detailed Analysis



Water supply	100% Legal Connection		Illegal Connections		Depend on shared connections	Demands Attention
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Total
No. of Slum Pockets				21%	0.1%	21%
Total – Households				30%	0.1%	30%
Total - Individual Connections				34%	0%	34%
Legal Connections				19%	0%	19%
Illegal Connections				52%	0%	52%
Shared Connections				17%	0%	17%

Source: MHT, SEWA Report

Detailed Analysis

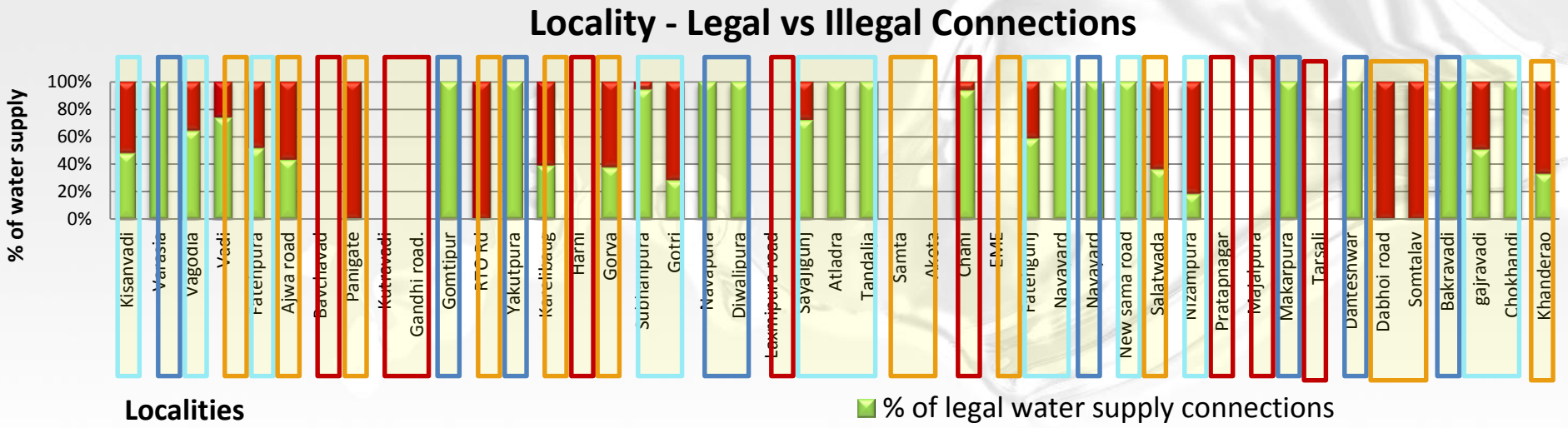


Water supply	100% Legal Connection		Illegal Connections		Depend on shared connections	
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax
No. of Slum Pockets						3%
Total – Households						3%
Total - Individual Connections						0%
Legal Connections						0%)
Illegal Connections						0%
Shared Connections						5%

Highest Priority

Source: MHT, SEWA Report

Detailed Analysis

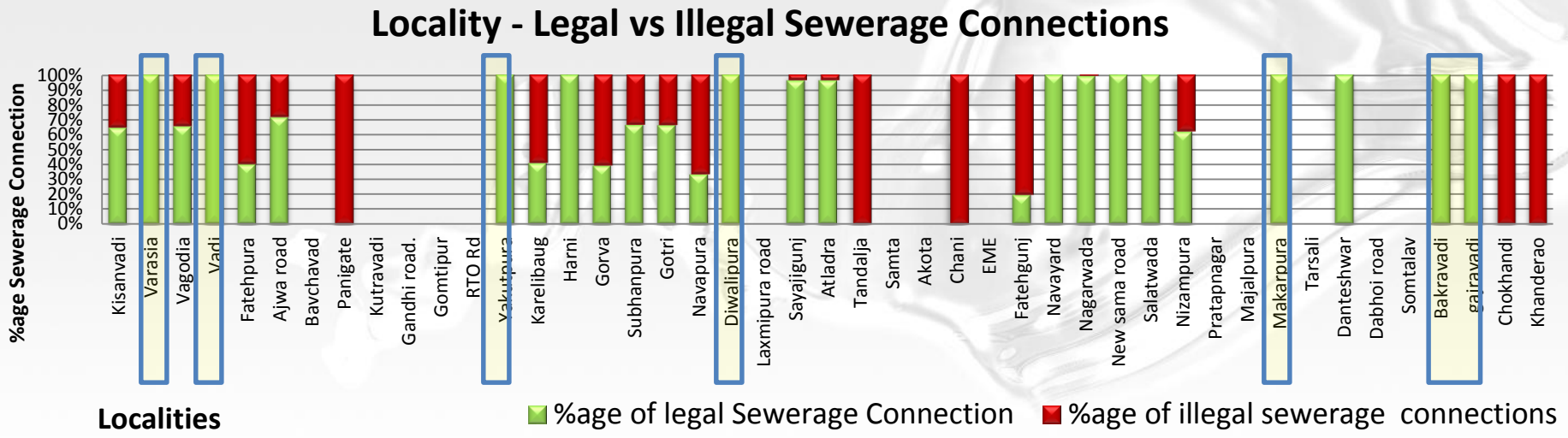


Water supply	100% Legal Connection		Illegal Connections		Depend on shared connections	
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax
No. of Slum Pockets	9%	4%	45%	21%	0.1%	3%
Total – Households	10%	7%	47%	30%	0.1%	3%
Total - Individual Connections	11%	4%	51%	34%	0%	0%
Legal Connections	25%	6%	45%	19%	0%	0%)
Illegal Connections	0%	0%	52%	52%	0%	0%
Shared Connections	6%	8%	48%	17%	0%	5%

******Excluding slums in flood prone area as they are being rehabilitated under BSUP program only constitute to 13% of the total no. of House-holds***

Source: MHT, SEWA Report

Detailed Analysis

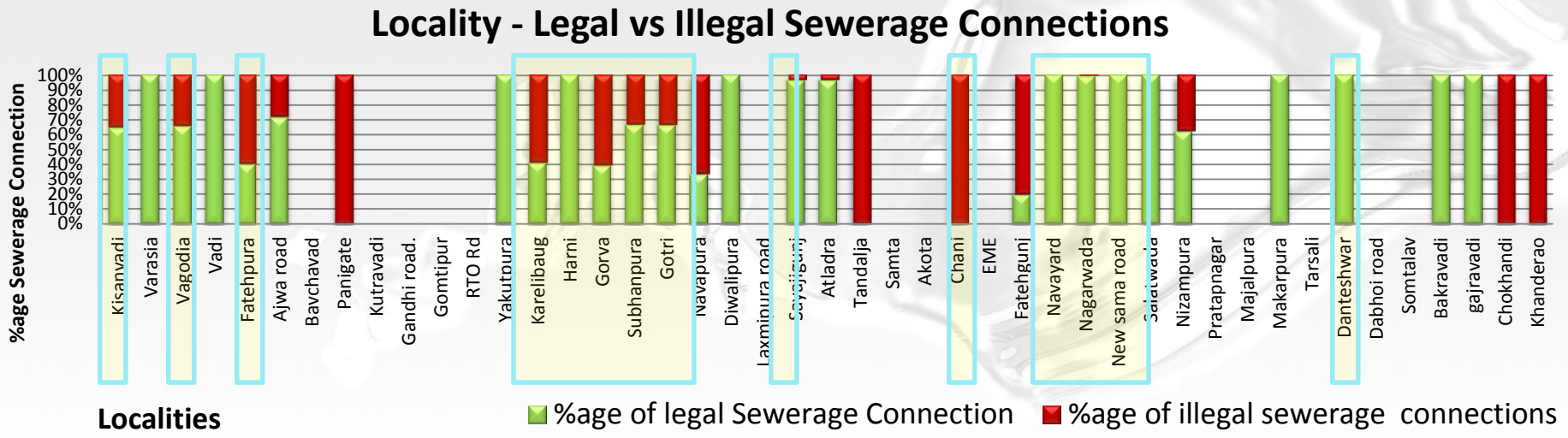


Sewer connections	100% Legal Connection
	Pay Property Tax
No. of Slum Pockets	10%
Total - Households	14%
Total – Individual Connections	20%
Legal Connections	40%
Illegal Connections	0%
Community toilet	19%

Least Intervention

Source: MHT, SEWA Report

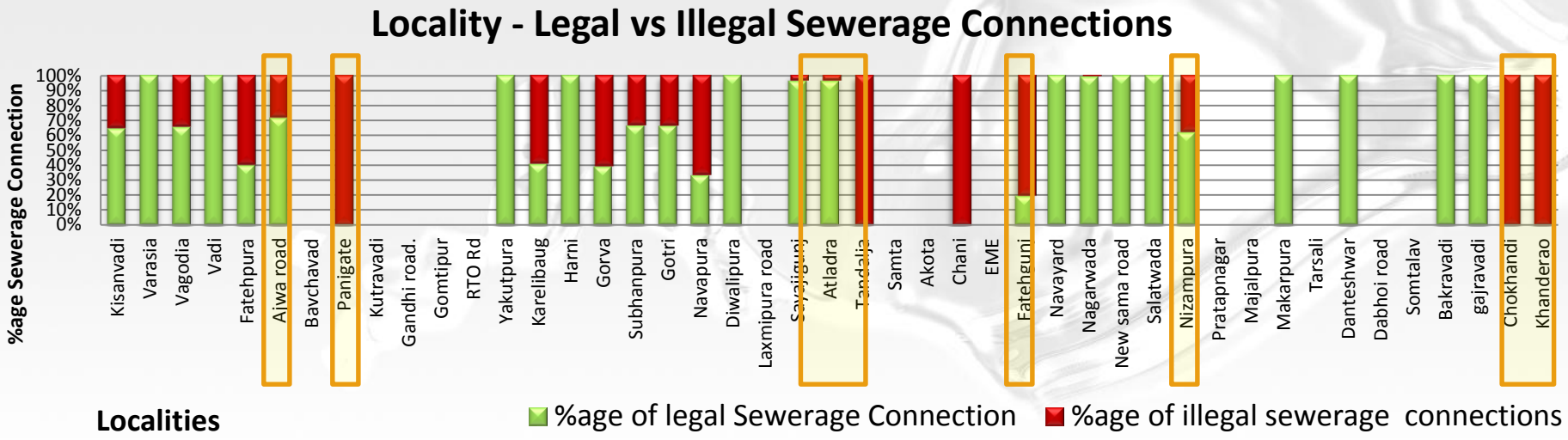
Detailed Analysis



Sewer connections	100% Legal Connection		Illegal Connections	Less Intervention
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Total
No. of Slum Pockets		4%	56%	60%
Total - Households		4%	51%	55%
Total – Individual Connections		6%	57%	63%
Legal Connections		12%	44%	56%
Illegal Connections		0%	73%	73%
Community toilet		2%	85%	87%

Source: MHT, SEWA Report

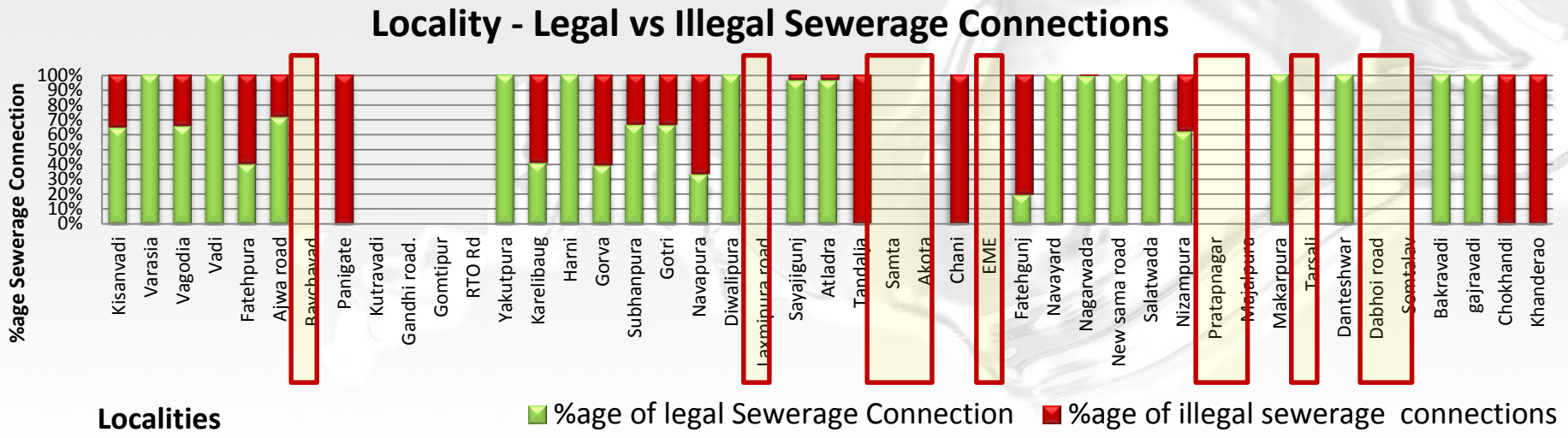
Detailed Analysis



Sewer connections	100% Legal Connection		Illegal Connections		Depend on shared connections	Demands Attention
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Total
No. of Slum Pockets				26%	1%	27%
Total - Households				22%	1%	23%
Total – Individual Connections				17%	0%	17%
Legal Connections				4%	0%	4%
Illegal Connections				27%	0%	27%
Community toilet				4%	,4%	8%

Source: MHT, SEWA Report

Detailed Analysis

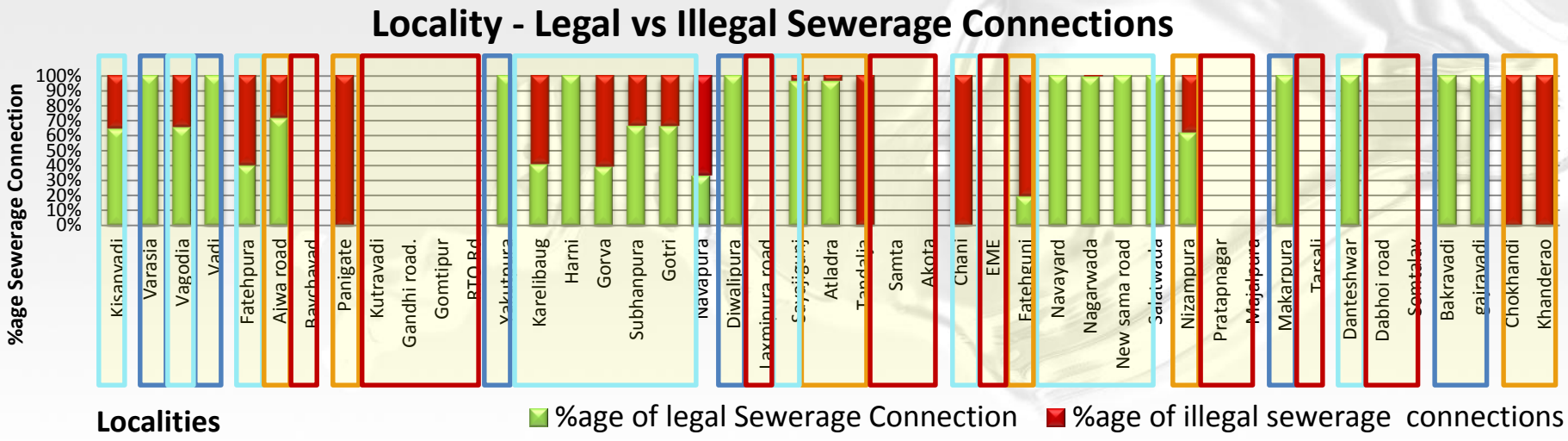


Sewer connections	100% Legal Connection		Illegal Connections		Depend on shared connections	
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax
No. of Slum Pockets						4%
Total - Households						9%
Total – Individual Connections						0%
Legal Connections						0%
Illegal Connections						0%
Community toilet						0%

Highest Priority

Source: MHT, SEWA Report

Detailed Analysis



Sewer connections	100% Legal Connection		Illegal Connections		Depend on shared connections	
	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax	Pay Property Tax	Do-not Pay Property Tax
No. of Slum Pockets	10%	4%	56%	26%	1%	4%
Total - Households	14%	4%	51%	22%	1%	9%
Total – Individual Connections	20%	6%	57%	17%	0%	0%
Legal Connections	40%	12%	44%	4%	0%	0%
Illegal Connections	0%	0%	73%	27%	0%	0%
Community toilet	19%	2%	85%	4%	,4%	0%

******Excluding slums in flood prone area as they only constitute to 13% of the total no. of House-holds***

Source: MHT, SEWA Report

Detailed Analysis

Analysis Summary – Slum Pockets

Priority Scale	Least Intervention	Intervention Required	Demands Attention	Highest Priority
Water supply	9%	49%	21%	3%
Sewer connections	10%	60%	27%	4%

Attention Seeking Zones

- *The proportion of Slums in high priority zone is less but the proportion in the attention seeking zones is high.*
- *Thus the issues is not the availability of UWSS services but it is the absences of proper policy frame-work to make service accessible to all.*

Plan Formulation

- Policy & law formulation – for Slum dwellers
- Incorporating in TP schemes and planning
- Capital partners - pay for the services
- Formulate mechanism - Government as facilitator.
- CBO's and Kiosks - demand driven approach.

Issue Specific Policies

Absolutely deprived areas or only dependence on shared services

- **Resources** should be earmarked to support construction of water sources.
- By channelizing funds to **feasible alternative technologies**.

Legalize illegal connections

- **Nominal legalizing charges**
- **Proof for legalization**: BPL card and Slum residency proof issued by resp. slum **CBO**.

New connections

- **Private rental agreements** whose legality should be recognized.
- **Community land trusts** that provide long-term leases to their members.
- **De facto tenure** through the paying of property tax and utility services
- **Alternative sources** for basic service be recognized and legalized.

Issue Specific Policies

New registration of slum house hold

- **Arrear** shall not be added in new bills issued.
- **Legislation** to prevent forced eviction should be formulated.
- **Women** shall have equal access to land tenure and titling rights.
- **Tenure regime** decision – Lies with the Slum dwellers as partners with local authorities
- An improved low-cost, user-friendly **system for land titling** shall be introduce.
- **Community contracting** to implement small infrastructure works in slums to be allowed.
- **Reform of building codes** and Access to micro-credit.
- Well-targeted incentives to encourage the **private sector**.

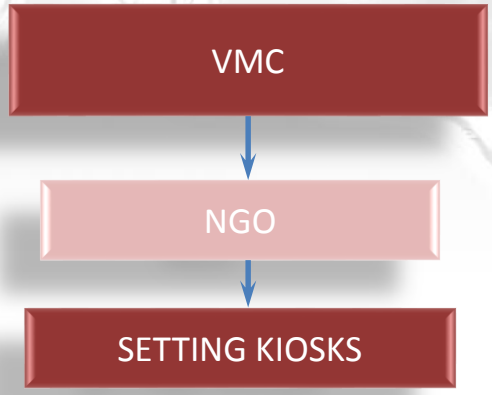
Provide awareness

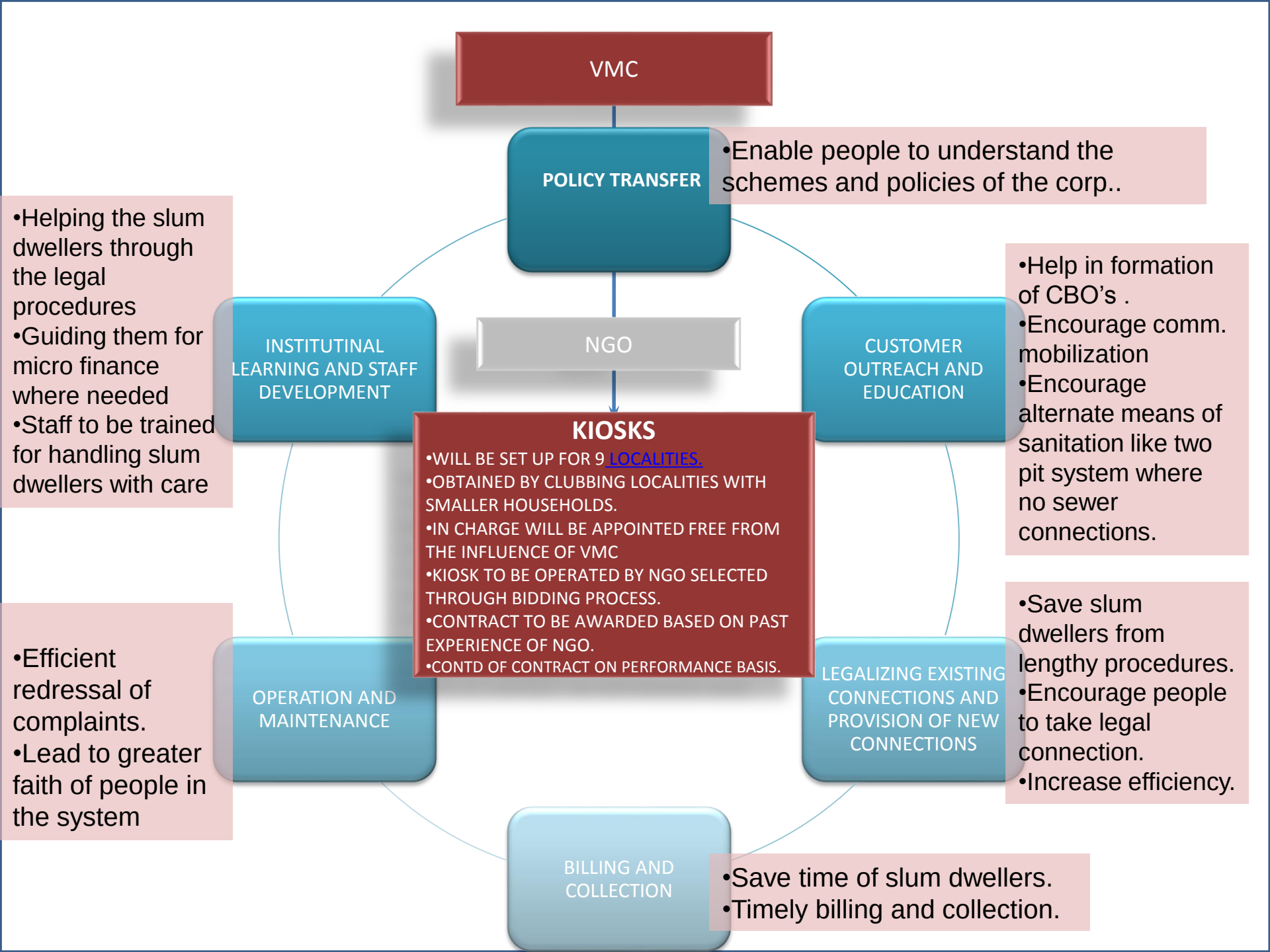
- **Registration system** for CBO's.
- **Provision of funds** to the CBO - Awareness campaigns, Community services & Office Space.
- **Empowering** the CBO - Bill collection and distribution - Decentralizing the system

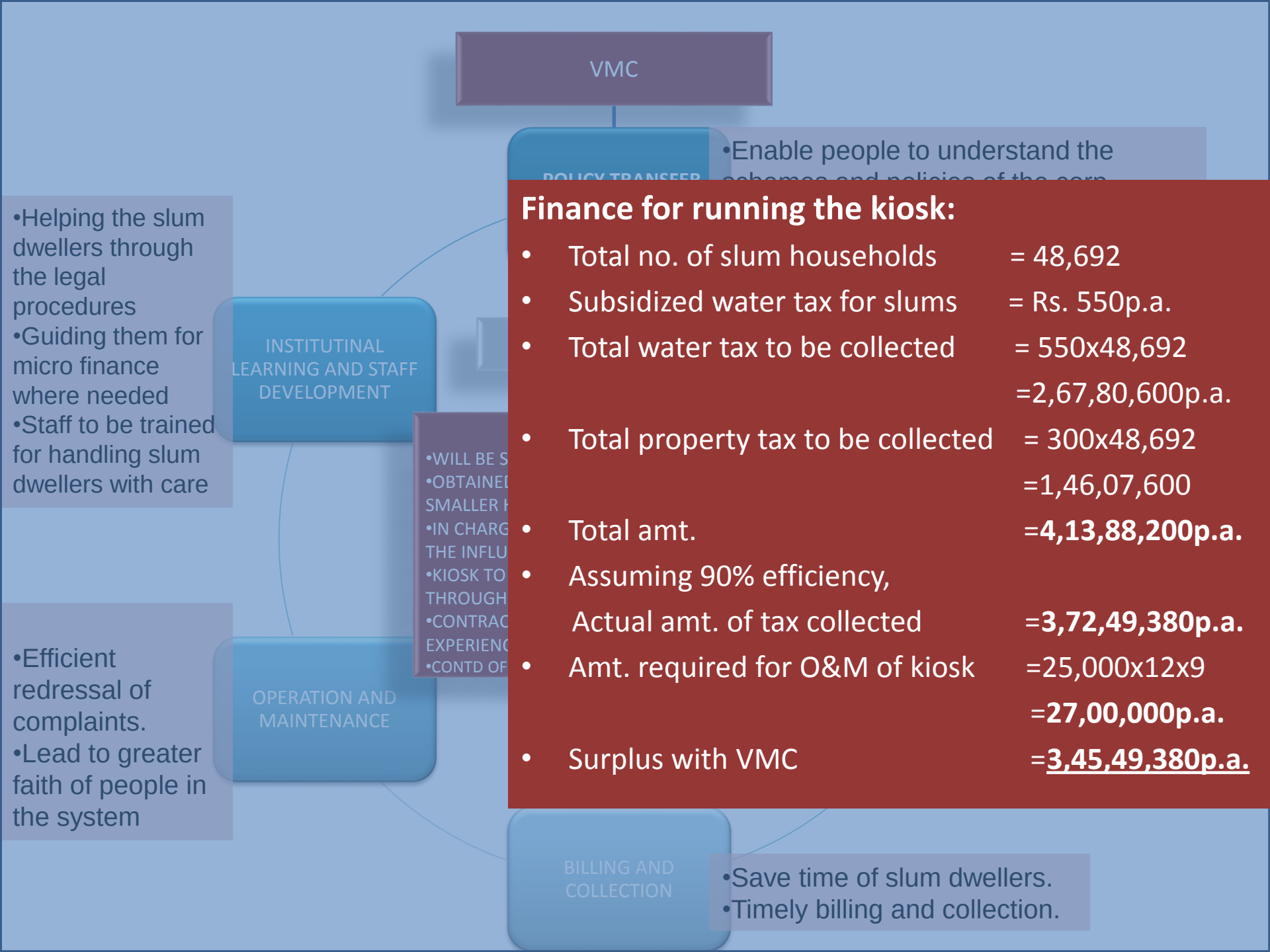
Overall sector development

- Water resources should be **protected**.
- **Data flow and management** of system - Under single administration body.
- Strengthen the practice of **participatory planning - demand-driven approach**.
- Develop, disseminate and implement **equity guidelines at national level**.

MODEL



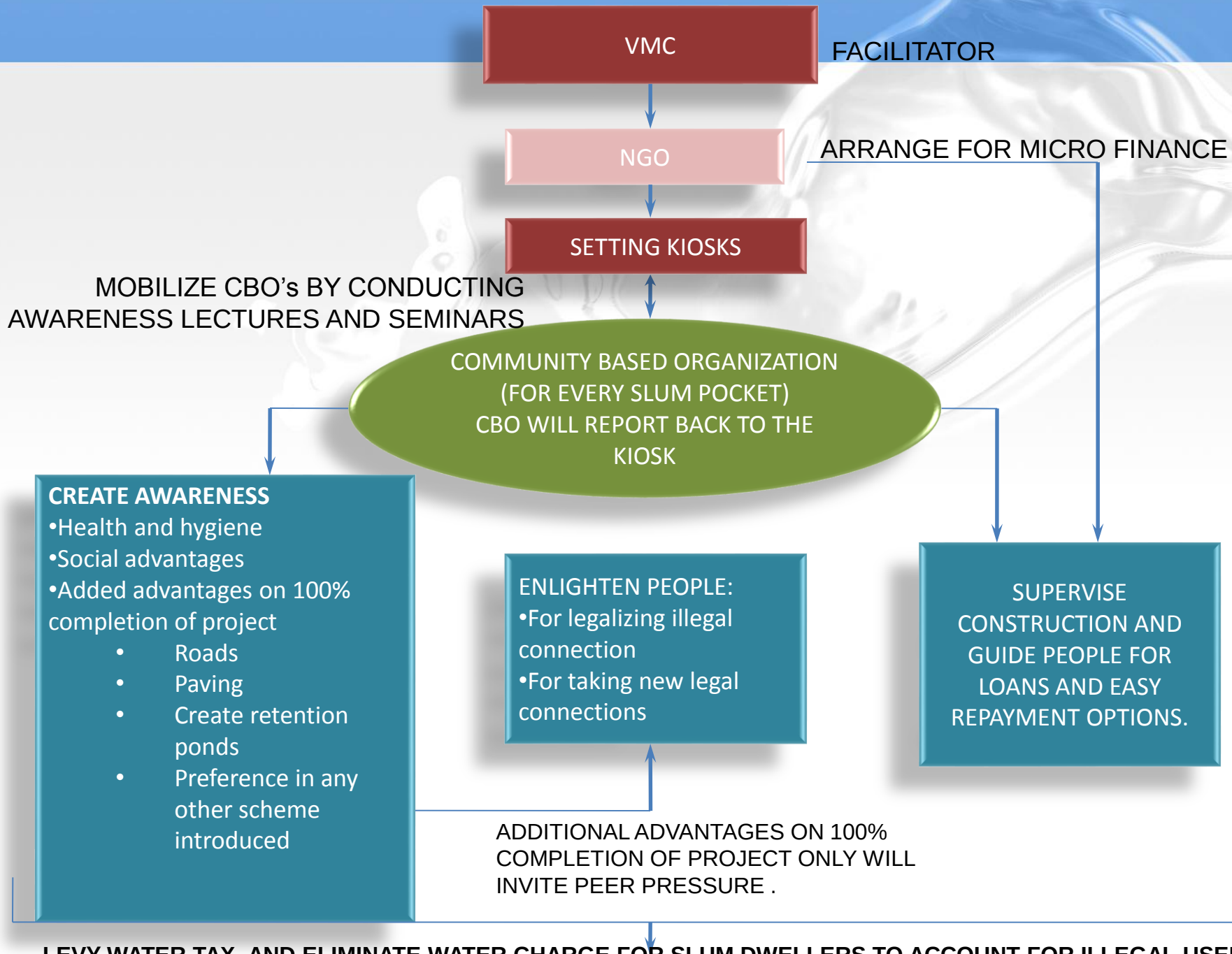

VMC
POLICY TRANSFER
•Enable people to understand the schemes and policies of the corp..
•Helping the slum dwellers through the legal procedures
•Guiding them for micro finance where needed
•Staff to be trained for handling slum dwellers with care
INSTITUTINAL LEARNING AND STAFF DEVELOPMENT
NGO
CUSTOMER OUTREACH AND EDUCATION
•Help in formation of CBO's .
•Encourage comm. mobilization
•Encourage alternate means of sanitation like two pit system where no sewer connections.
KIOSKS
•WILL BE SET UP FOR 9 LOCALITIES.
•OBTAINED BY CLUBBING LOCALITIES WITH SMALLER HOUSEHOLDS.
•IN CHARGE WILL BE APPOINTED FREE FROM THE INFLUENCE OF VMC
•KIOSK TO BE OPERATED BY NGO SELECTED THROUGH BIDDING PROCESS.
•CONTRACT TO BE AWARDED BASED ON PAST EXPERIENCE OF NGO.
•CONTD OF CONTRACT ON PERFORMANCE BASIS.
•Efficient redressal of complaints.
•Lead to greater faith of people in the system
OPERATION AND MAINTENANCE
LEGALIZING EXISTING CONNECTIONS AND PROVISION OF NEW CONNECTIONS
•Save slum dwellers from lengthy procedures.
•Encourage people to take legal connection.
•Increase efficiency.
BILLING AND COLLECTION
•Save time of slum dwellers.
•Timely billing and collection.



Finance for running the kiosk:

- Total no. of slum households = 48,692
- Subsidized water tax for slums = Rs. 550p.a.
- Total water tax to be collected = 550x48,692
  =2,67,80,600p.a.
- Total property tax to be collected = 300x48,692
  =1,46,07,600
- Total amt. =**4,13,88,200p.a.**
- Assuming 90% efficiency,
  Actual amt. of tax collected =**3,72,49,380p.a.**
- Amt. required for O&M of kiosk =25,000x12x9
  =**27,00,000p.a.**
- Surplus with VMC =**3,45,49,380p.a.**

MODEL


VMC
FACILITATOR
NGO
ARRANGE FOR MICRO FINANCE
SETTING KIOSKS
MOBILIZE CBO's BY CONDUCTING AWARENESS LECTURES AND SEMINARS
COMMUNITY BASED ORGANIZATION (FOR EVERY SLUM POCKET) CBO WILL REPORT BACK TO THE KIOSK
CREATE AWARENESS
•Health and hygiene
•Social advantages
•Added advantages on 100% completion of project
• Roads
• Paving
• Create retention ponds
• Preference in any other scheme introduced
ENLIGHTEN PEOPLE:
•For legalizing illegal connection
•For taking new legal connections
SUPERVISE CONSTRUCTION AND GUIDE PEOPLE FOR LOANS AND EASY REPAYMENT OPTIONS.
ADDITIONAL ADVANTAGES ON 100% COMPLETION OF PROJECT ONLY WILL INVITE PEER PRESSURE .
LEVY WATER TAX, AND ELIMINATE WATER CHARGE FOR SLUM DWELLERS TO ACCOUNT FOR ILLEGAL USERS

Way Forward

- The sustainability of any program depends on its outreach.
- To what extent can it touch the lives of people.
- Efficiency is of utmost concern to gain people's faith in the system
- Only goals which are achievable should be set.
- Achieving them within the specified time period for maintaining a reliable system is necessary.

NAVSARI

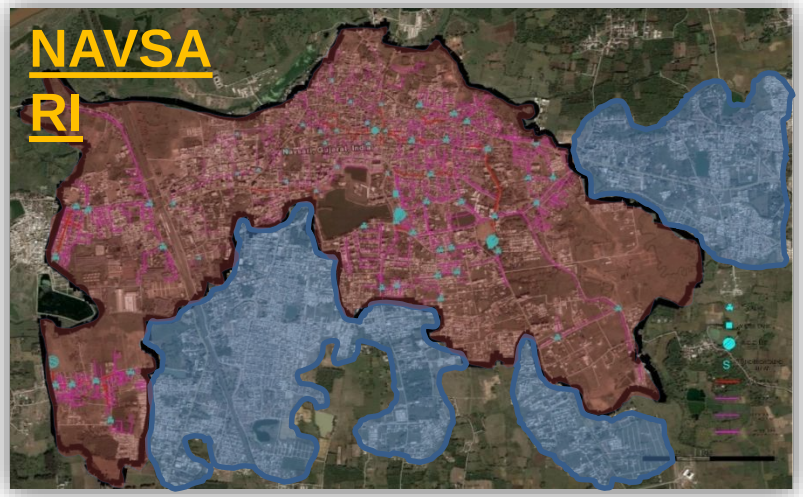
Performance Monitoring Program

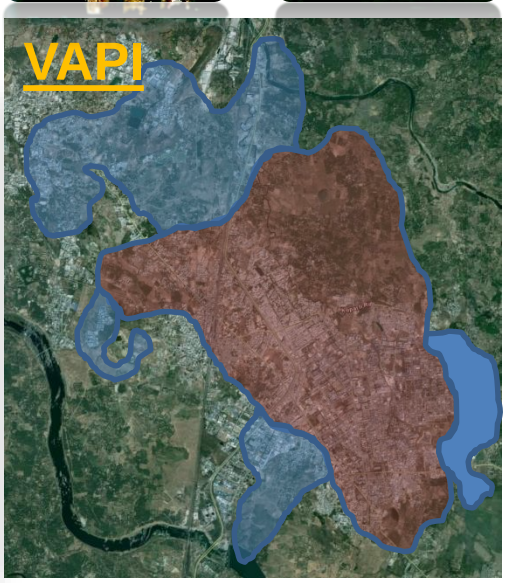
PERI-URBAN AREAS (OUTGROWTH)

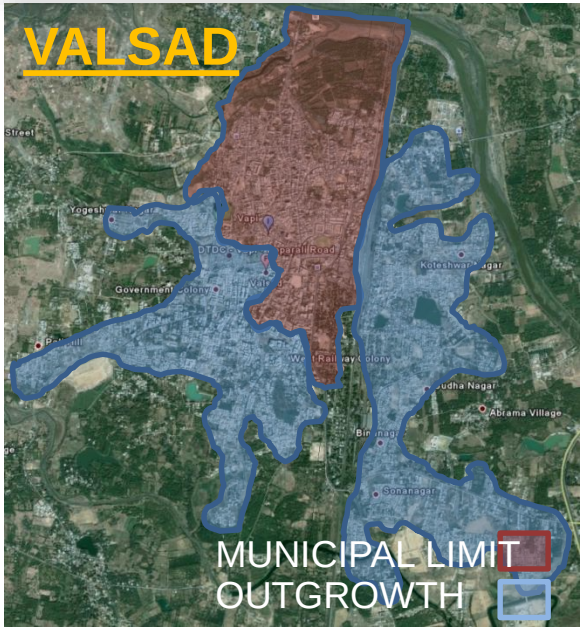
City Outside The Municipal Limit

OR OUTGROWTH

MUNICIPALITY	OUTGROWTH
NAVSARI- 134017	Chhapra,, Chovisi- 28233
VAPI- 17032	VAPI INA- 6581
VALSAD- 70679	Pardi- 30079







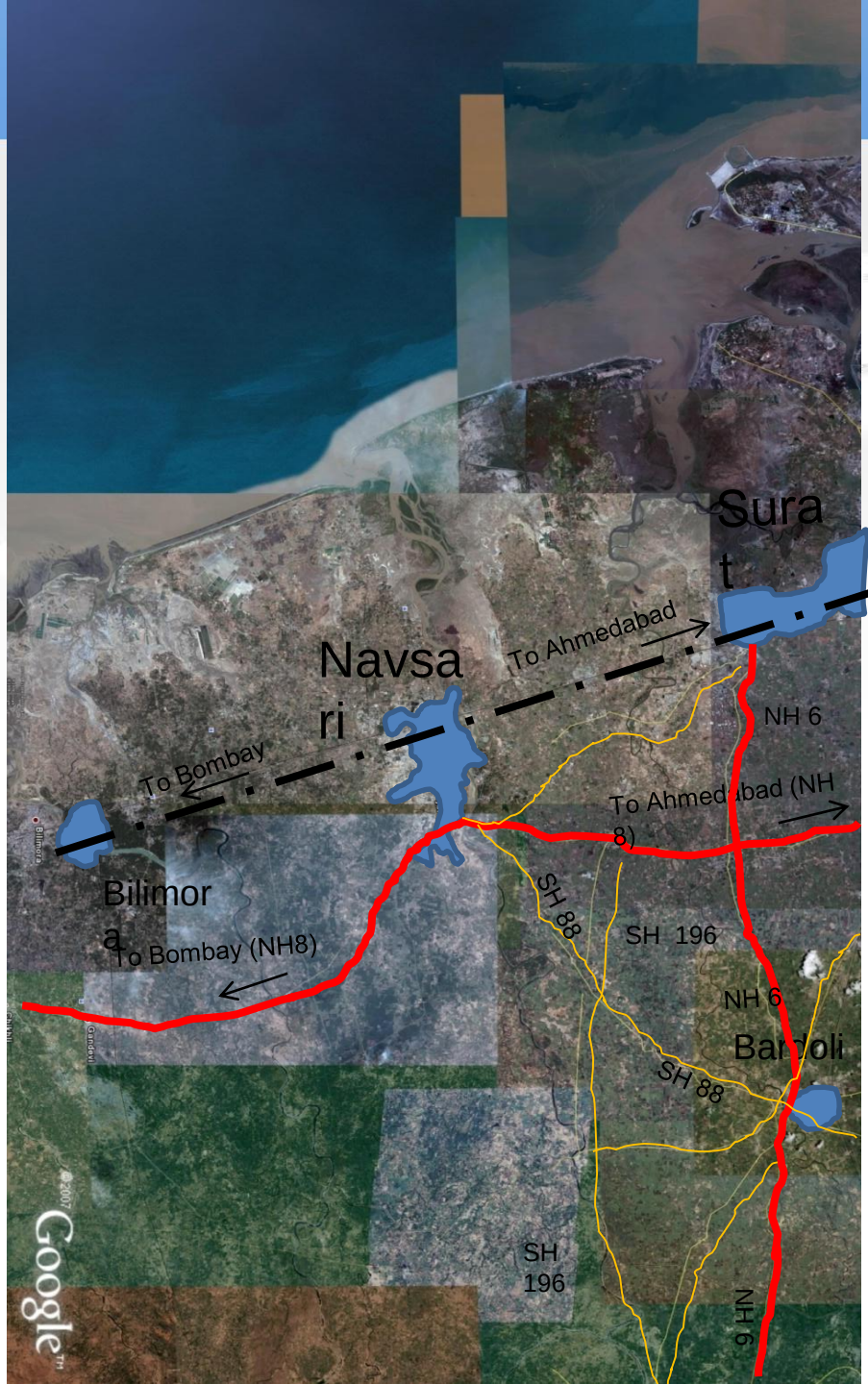
WHY CONSIDERED PERI- URBAN AREAS (OUTGROWTH)

Already using the resources of ULB	Inefficient Gram Panchayat	Eligible for basic infrastructure
• By the means of their own bore wells. • And also using other infrastructure.	• Lacks in technical staff as well as skilled staff. • Insufficient funds, as no source of income.	• More dependent on municipality • Same need of basic service like ULB • As income increases, demand increases.

As All These Issues Are The Major Concern Towards Any Habitable Condition, So It Is Important To Considered Them, For Provision Of Basic Services. NAVSARI, A City In South Gujarat Facing Similar Kind Of Situation, Has Been Taken As Case Study, So As To Make ULBs Efficient In Resolving These Kind Of Situation.

CITY PROFILE

- Municipality: A class
- Area : 9 sq km (900 hac)
- Population: 2,08,531 (2008)
- No. Of Household: 45,929
- Avg. HH size: 4.80
- Slum population: 33,171 (20%)
- Water supply zones: 4
- No. of wards: 15
- No. of E.S.R.: 4
- No. of Underground sump: 4
- State level award (1997-98): initiative in implementation of environment friendly surface water scheme.



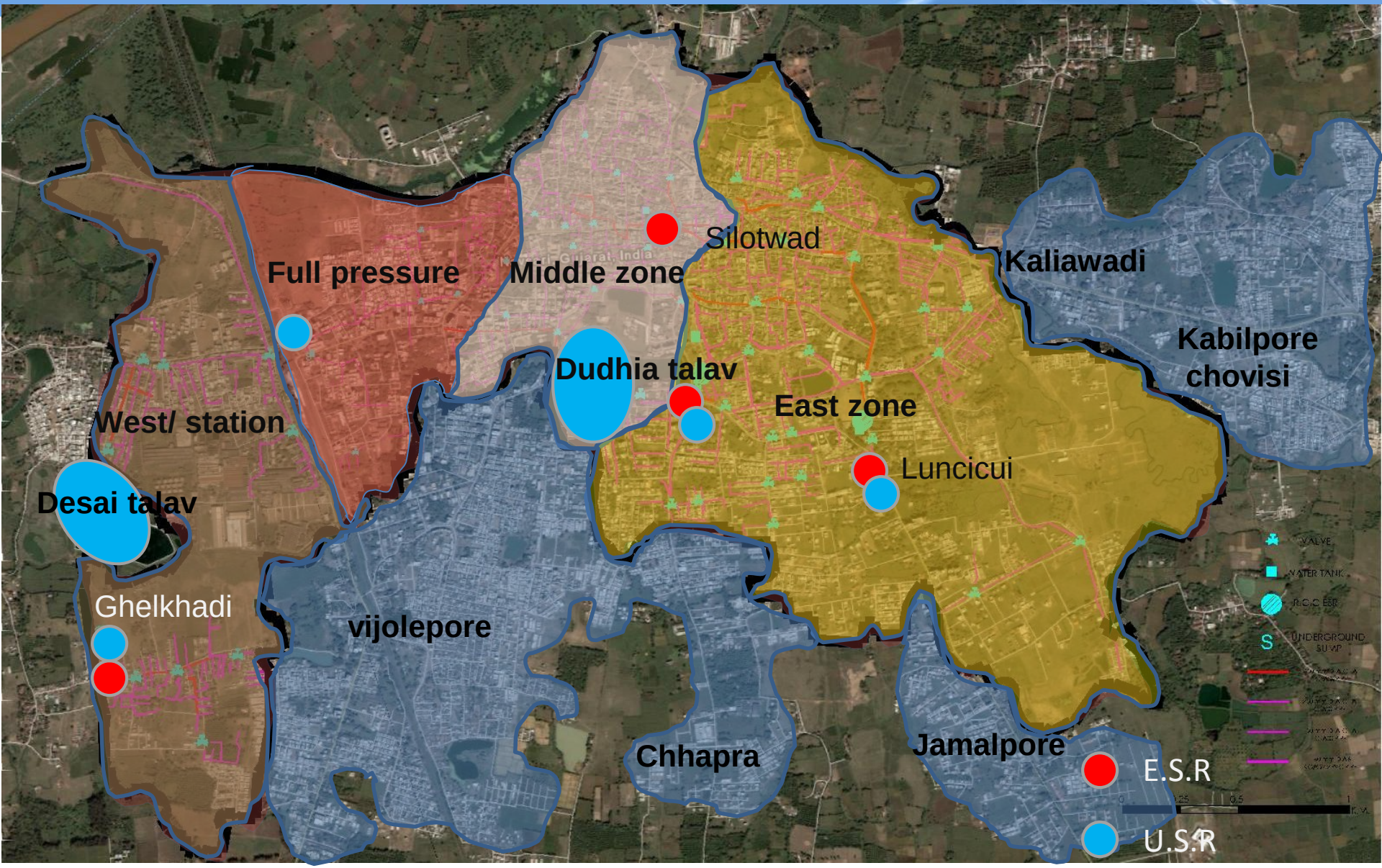
ZONE WISE DETAIL

Type of source	Details of plant	Installed Capacity	Present Avg W/S
Kakrapar Project canal	Ambika water works	41 MLD	23.2 MLD
Sub-surface source	13 No. of bore wells	10 MLD	6.6 MLD

Zone	Population	Surface (MLD)	under ground (MLD)	Avg water supply (MLD)	Per capita supply (lpcd)	No. Of Hrs supply
East	70450	7.15	4.03	11.18	158.7	3 hrs 15 min
Middle	49600	5.95	0.29	6.24	125.8	3 hrs 15 min
Full pressure	23500	3.4	-	3.40	144.7	7 hrs 30 min
West/ Station	57300	6.7	2.31	9.00	157	6 hrs 00 min
Total	200850	23.2	6.63	29.82	146.6	20 hrs

- *Full pressure zone is getting water supply for 7 hrs 30 min, with 100% pipe network.*
- *Avg. water supply is about 146 lpcd.*
- ***Inequity in terms of quantity, supply hrs, in distribution network etc***

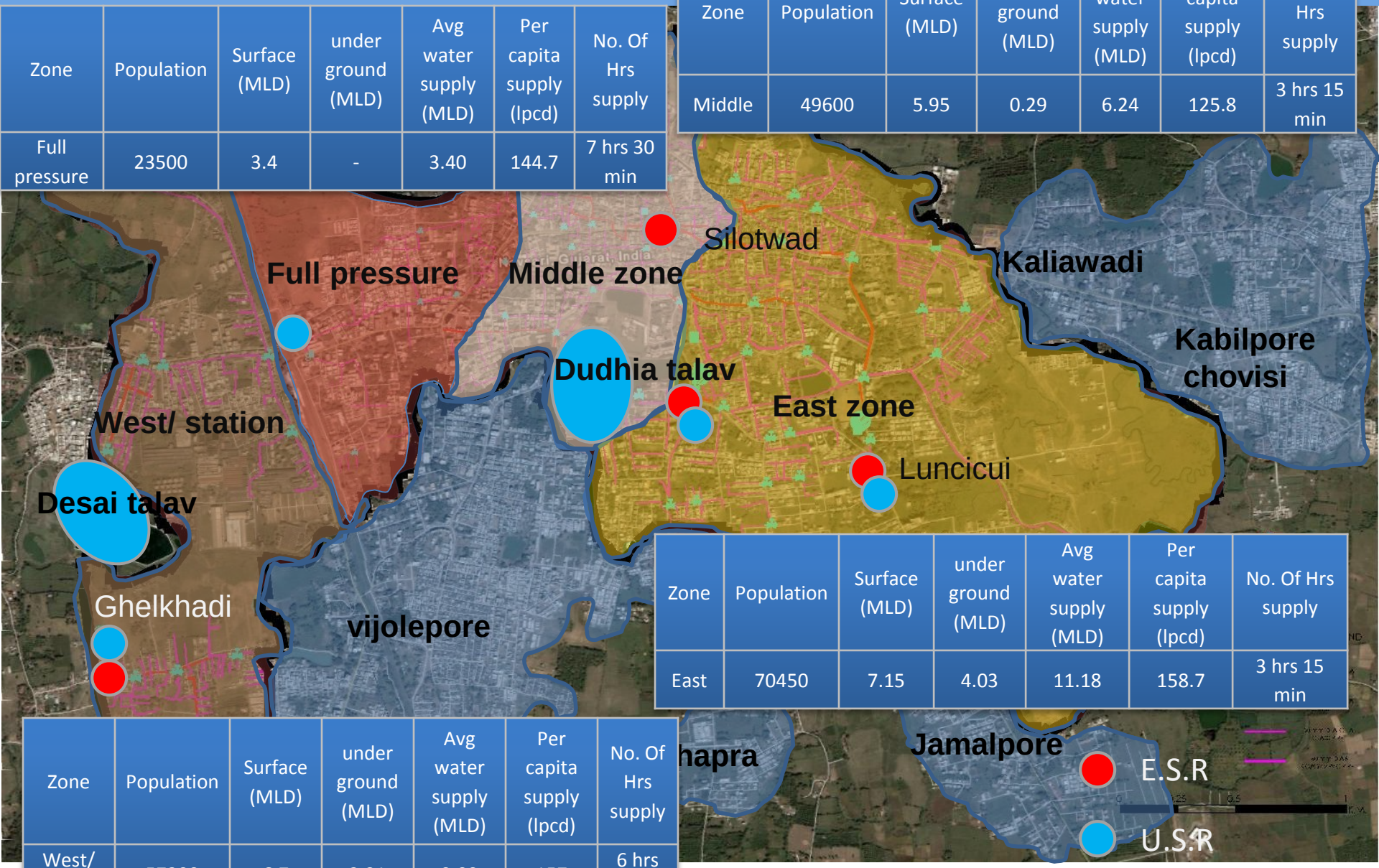
NAVSARI OUTGROWTH



NAVSARI OUTGROWTH

Zone	Population	Surface (MLD)	under ground (MLD)	Avg water supply (MLD)	Per capita supply (lpcd)	No. Of Hrs supply
Full pressure	23500	3.4	-	3.40	144.7	7 hrs 30 min

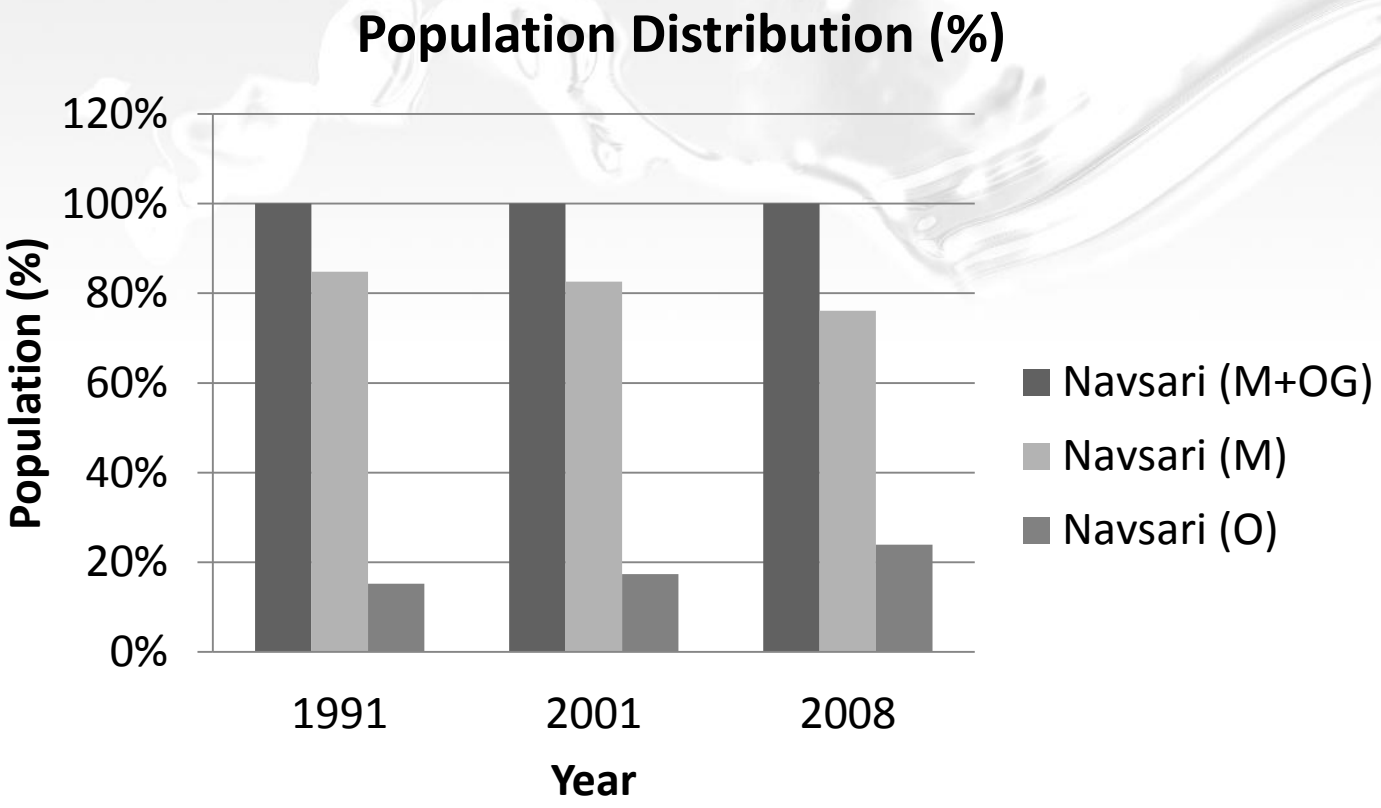
Zone	Population	Surface (MLD)	under ground (MLD)	Avg water supply (MLD)	Per capita supply (lpcd)	No. Of Hrs supply
Middle	49600	5.95	0.29	6.24	125.8	3 hrs 15 min



Zone	Population	Surface (MLD)	under ground (MLD)	Avg water supply (MLD)	Per capita supply (lpcd)	No. Of Hrs supply
East	70450	7.15	4.03	11.18	158.7	3 hrs 15 min

Zone	Population	Surface (MLD)	under ground (MLD)	Avg water supply (MLD)	Per capita supply (lpcd)	No. Of Hrs supply
West/ Station	57300	6.7	2.31	9.00	157	6 hrs 00 min

POPULATION DISTRIBUTION & TARIFF STRUCTURE



POPULATION DISTRIBUTION & TARIFF STRUCTURE

Year	Detail	Household	Total Population	Area (Ha)	Density (Per/Ha)
2008	Navsari (M+OG)	56648	274020		
	Navsari (M)	**45929**	**208531**	**900.00**	**231.70**
	Navsari (O)	10719	65489		
	Jamalpore (OG)	1425	6720	62.00	108.39
	Chovisi (OG)	2349	12024	94.00	127.91
	Chhapra (OG)	3433	15101	53.00	284.92
	Kabilpore (OG)	4587	20917	107.00	195.49
	Kaliawadi (OG)	2124	10727	124.00	86.51

- *No difference in population distribution*
- *Peri – Urban have same urban fabric & same need as people in ULB*

Village Name	Average Taxes								Total Avg HH Tax
	Property Tax	Water Tax	Sanitation Tax	Drainage Tax	Education Tax	Tax Penalty	Cleanliness Tax	Light Tax	
Jamalpore	544	N.A.	N.A.	N.A.	N.A.	N.A.	164	65	773
Chhapra	388	N.A.	N.A.	N.A.	N.A.	N.A.	67	N.A.	455
Chovisi	295	N.A.	N.A.	N.A.	N.A.	N.A.	102	69	466
Kabilpore	327	N.A.	N.A.	N.A.	N.A.	N.A.	89	23	439
Navsari Municipality	376	179	141	176	405	3	N.A.	N.A.	1279

- ***Inequity in Service level & Tariff***

The Scenario Clearly Highlights The Issue Of INEQUITY Between The People Residing Inside The ULB Limit (Within Municipal Limit) And Outside The Limit (OUTGROWTH).

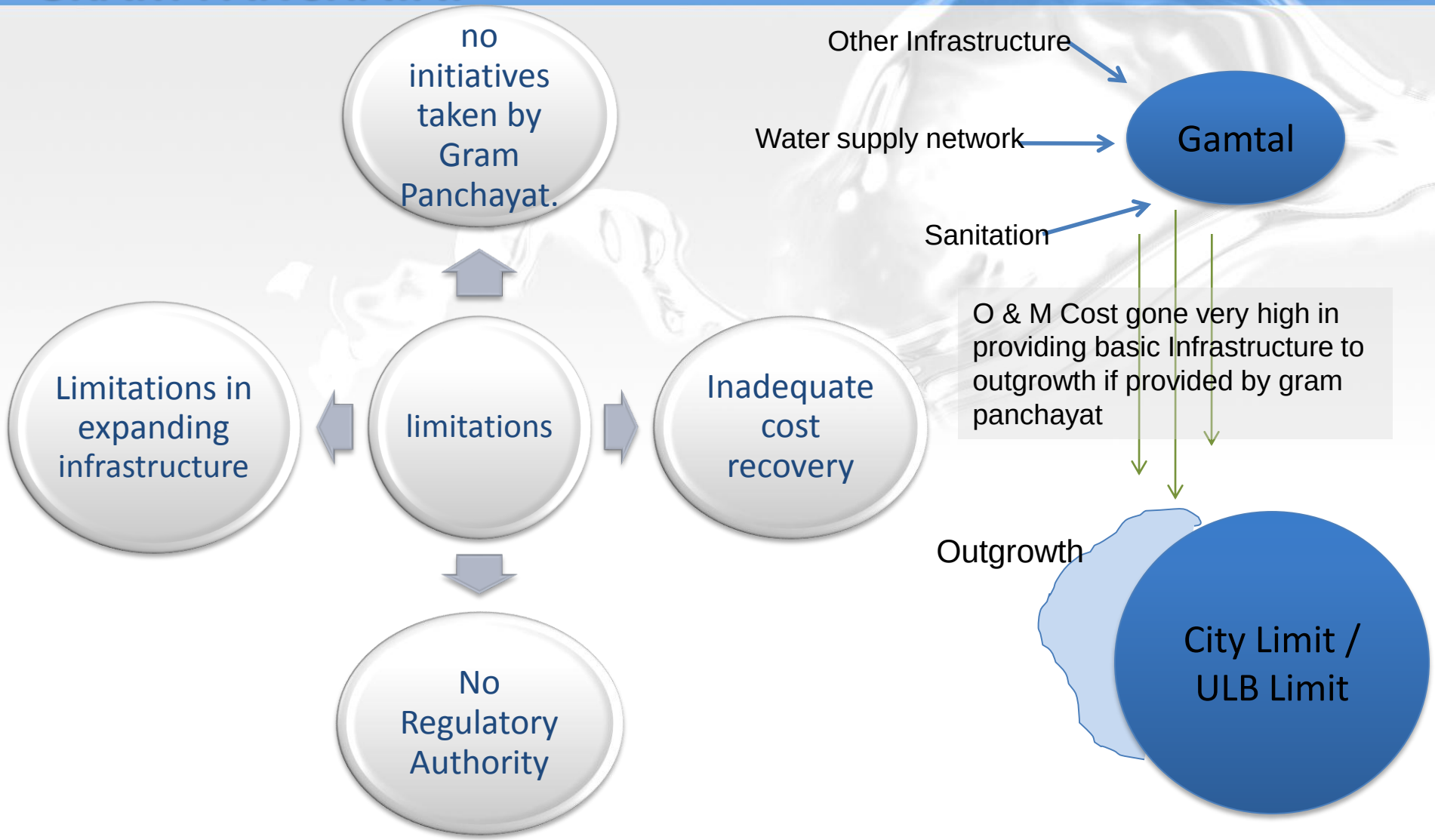
So To Overcome This Kind Of Situation What Would Be The Possible Solutions

Outgrowth

- *Gram Panchayat*
- *Implement Area Development Authority*
- *Extending ULB Limit*

GRAM PANCHAYAT

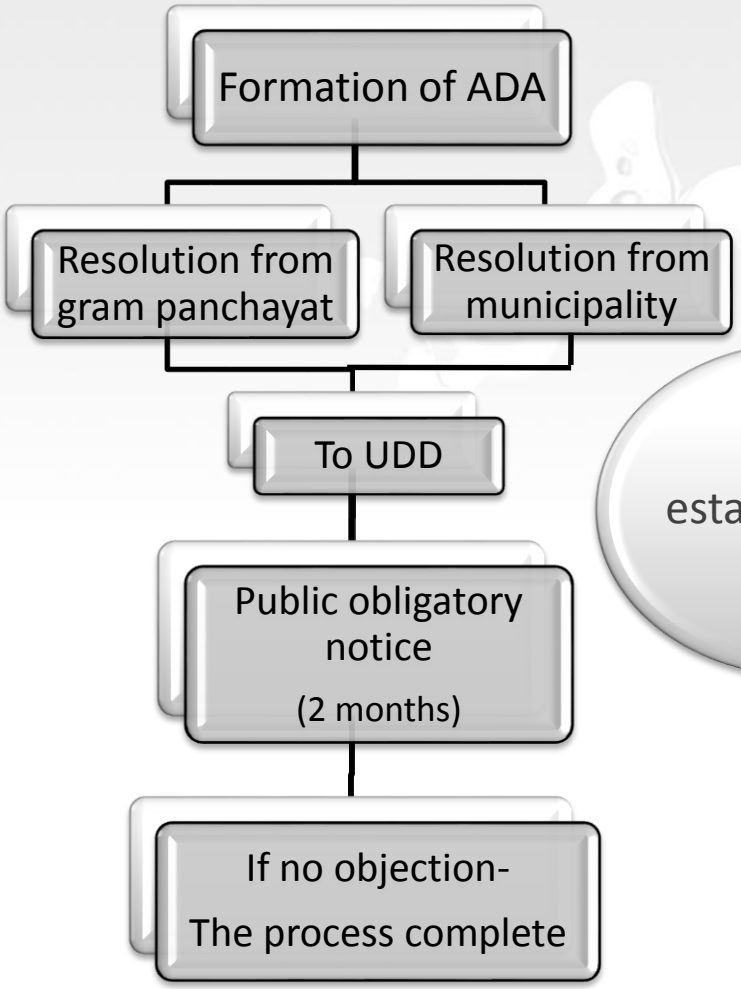
Limitations

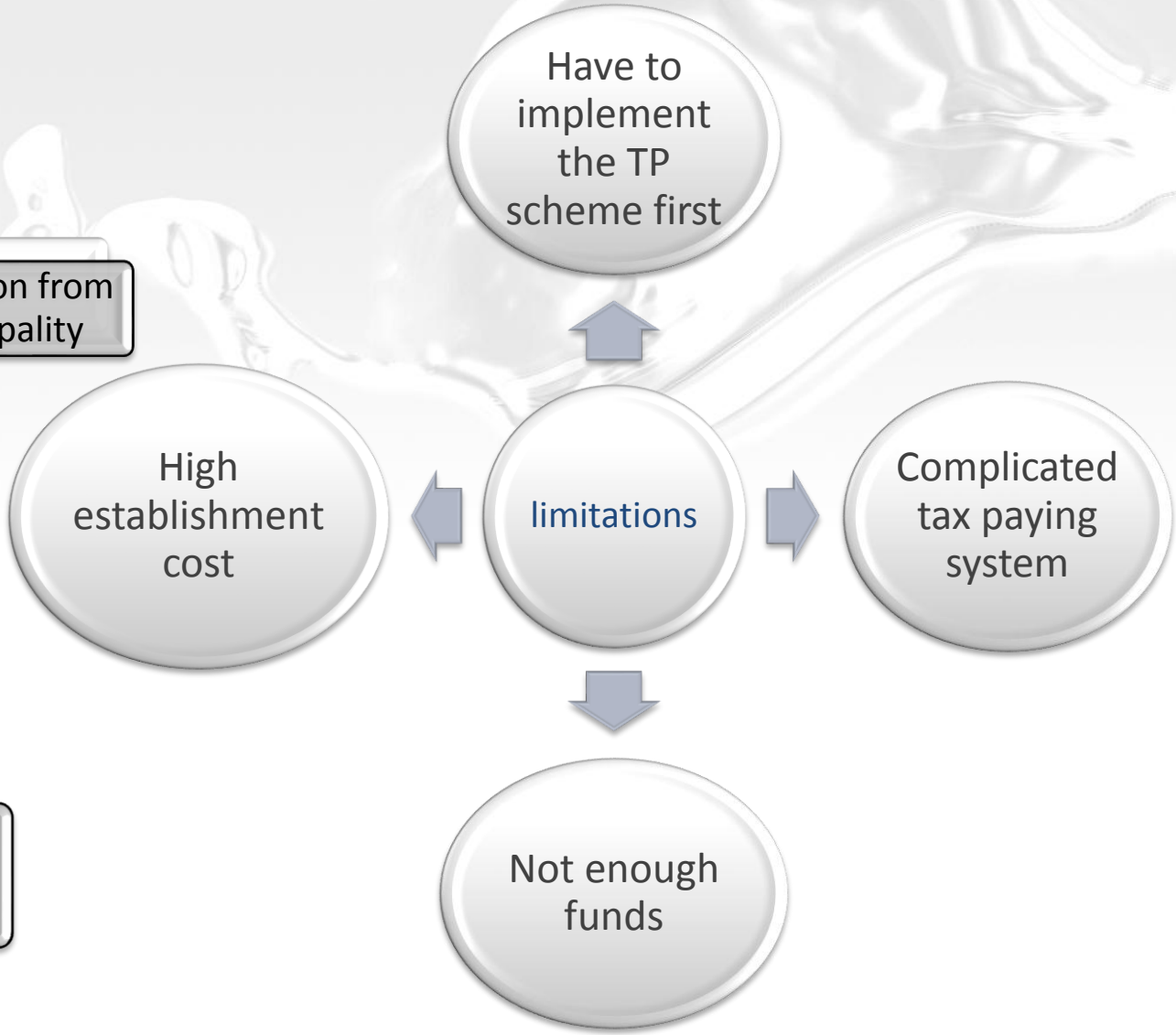


- *O & M Cost Gone High In Providing Basic Infrastructure, As The Distance From Gamtal To Outgrowth Areas Is More As Compared To Municipality.*
- *Limitations In Maintaining The Infrastructure, As Gram Panchayat Lacks In Manpower, Also In Skilled Labour.*

IMPLEMENT ADA

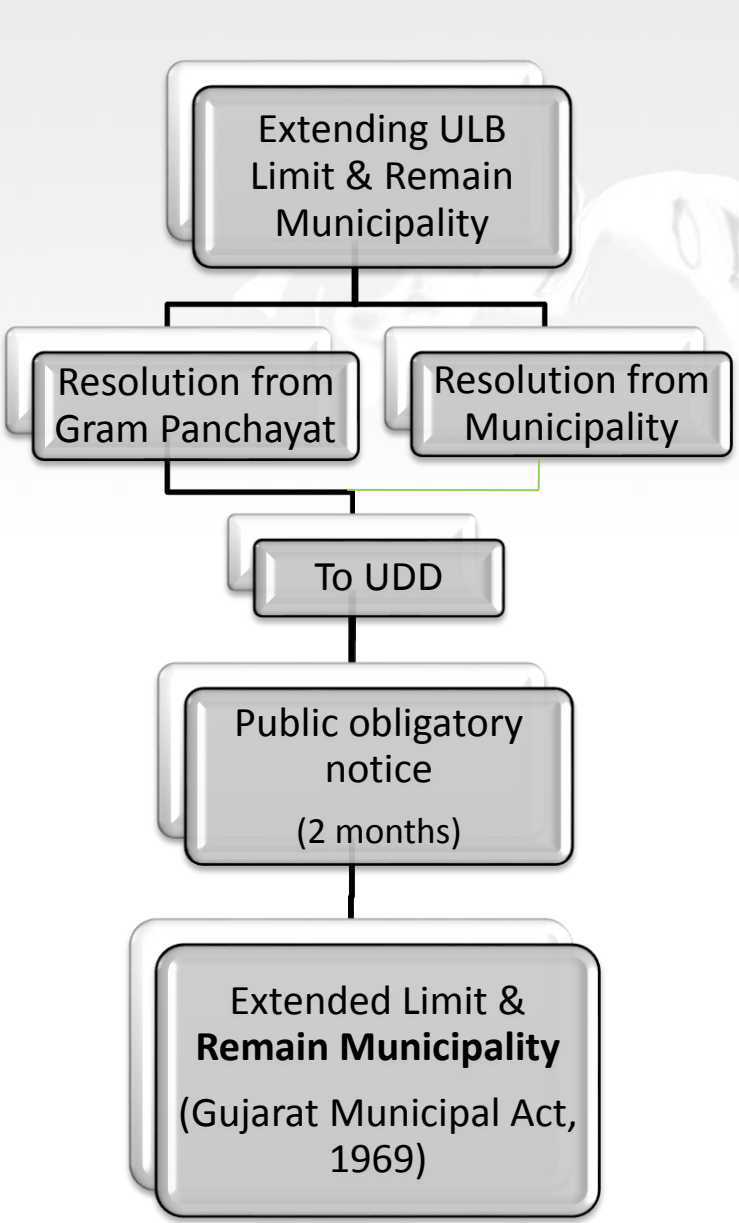
Limitations

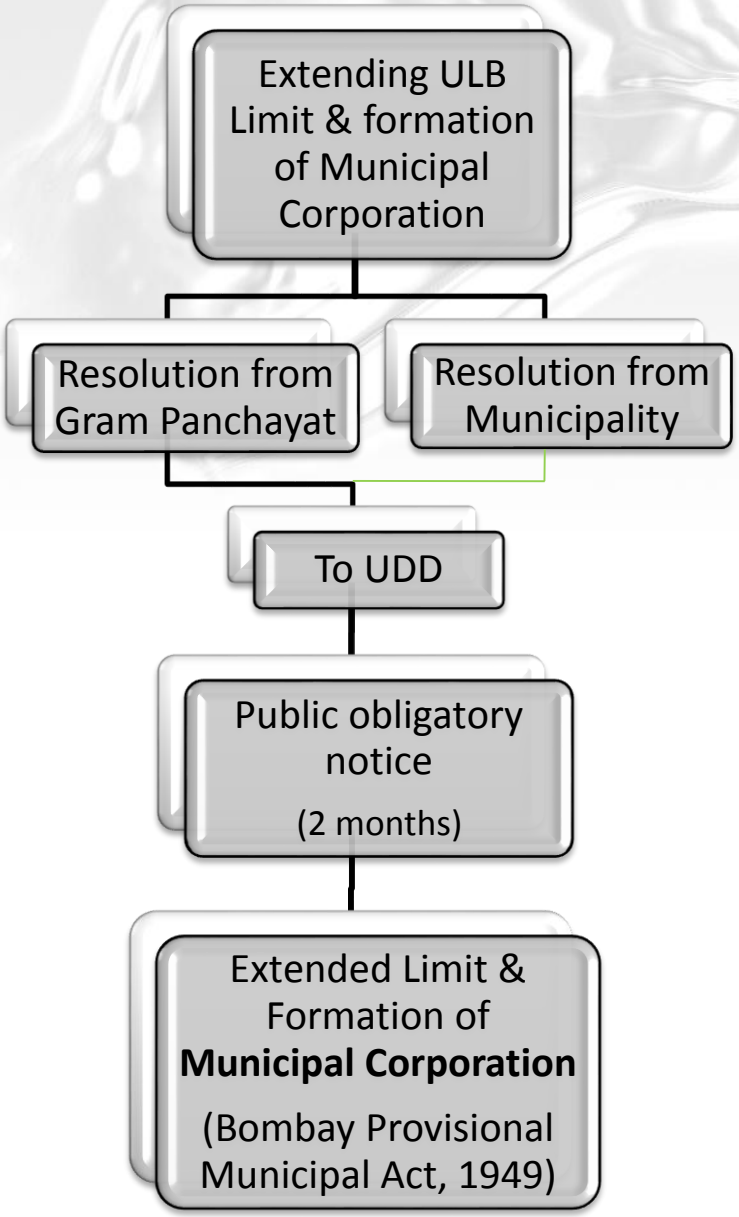




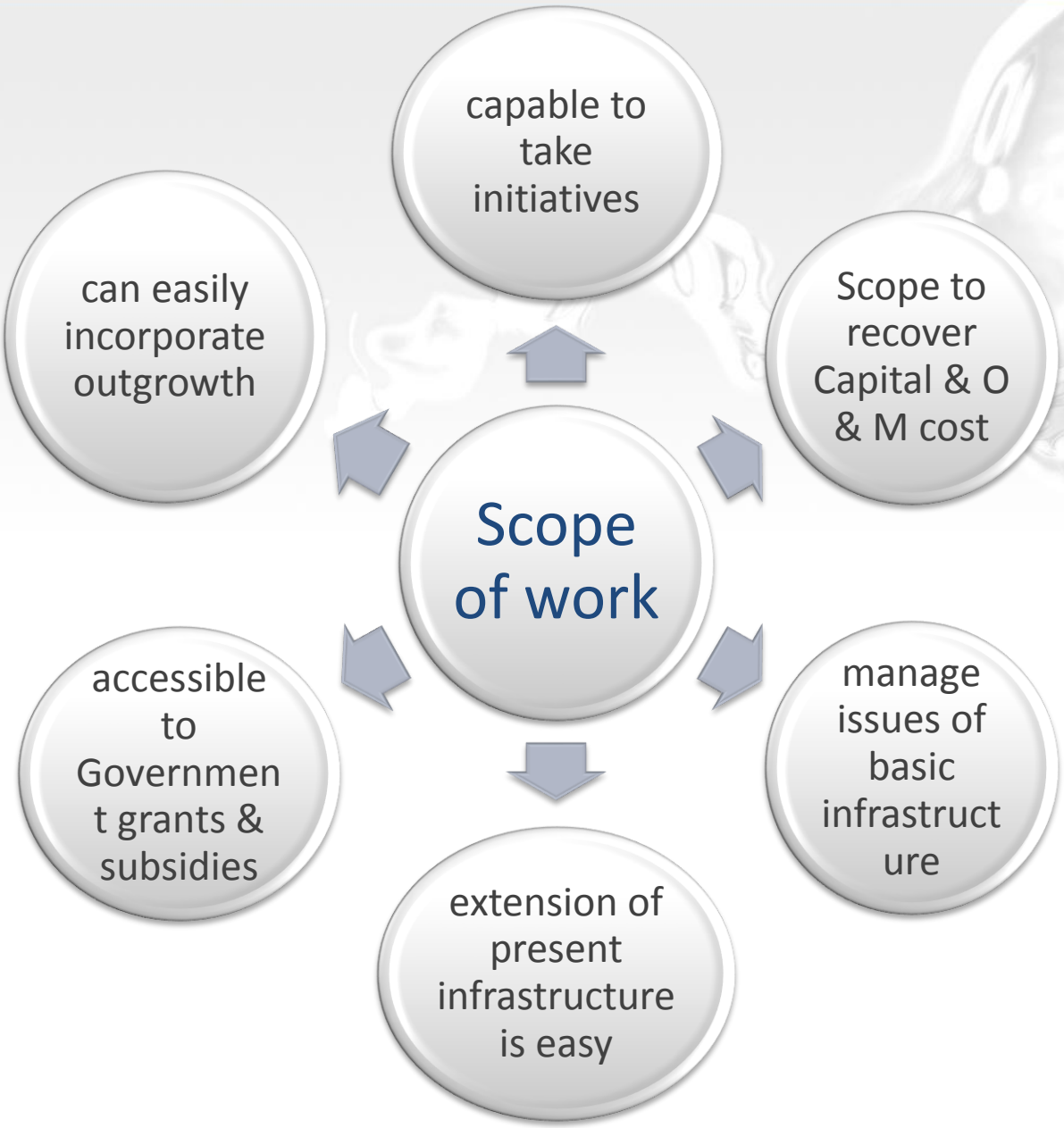
- *Hence, This Option Of Implementing The ADA Is* Financially Not Sustainable *& Viable In Terms Of Equity.*

EXTENDING ULB LIMIT





EXTENDING ULB LIMIT



- *Hence, The Option Of Extending The ULB Limit And Include Outgrowth In Municipal Limit Look More Definite And Viable, Financially As Well As Socially.*
- *Provision Of Basic Services, With Equity, Better O & M, 100% Coverage With Collection, Looks Possible With This Option.*

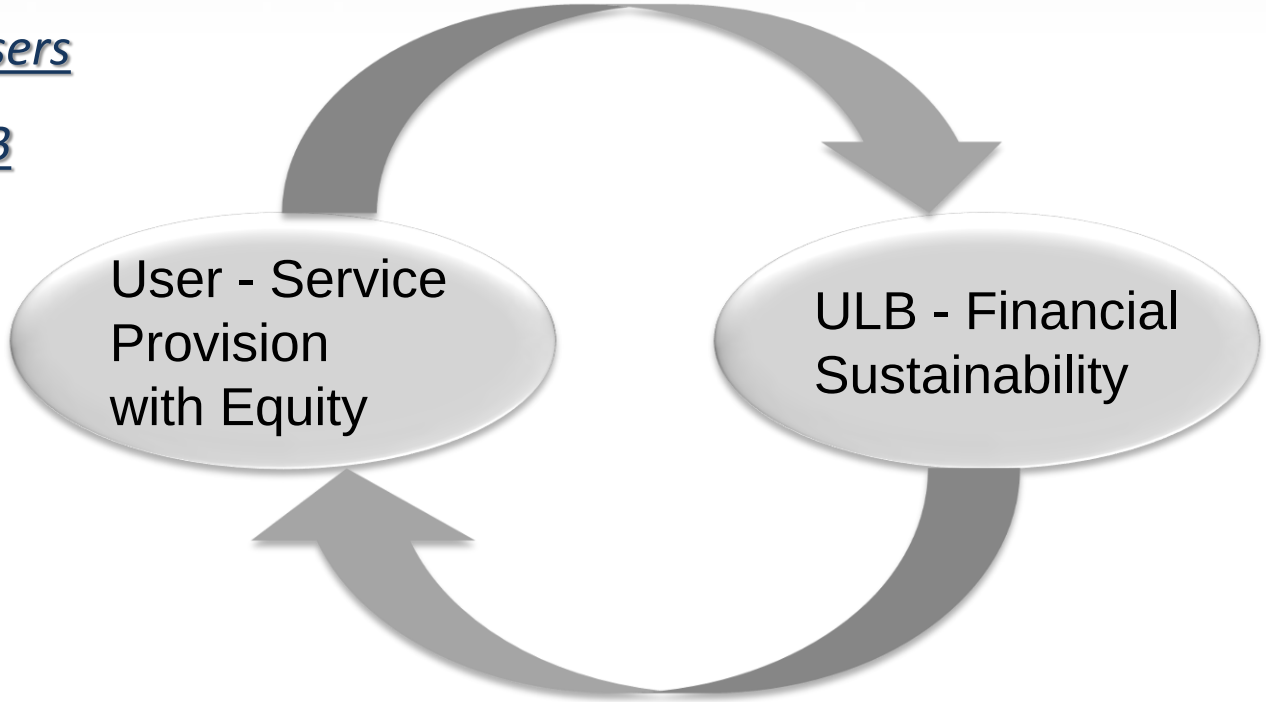
These Comparative Analysis Shows That The Equity In Terms Of Basic Services, In Terms Of People Residing Inside The ULB Limit And In Outgrowth, And In Financial Terms, Can Be Achieved More Strongly , If The Municipal Limit Is Extended And Cover Up The Outgrowth Also.

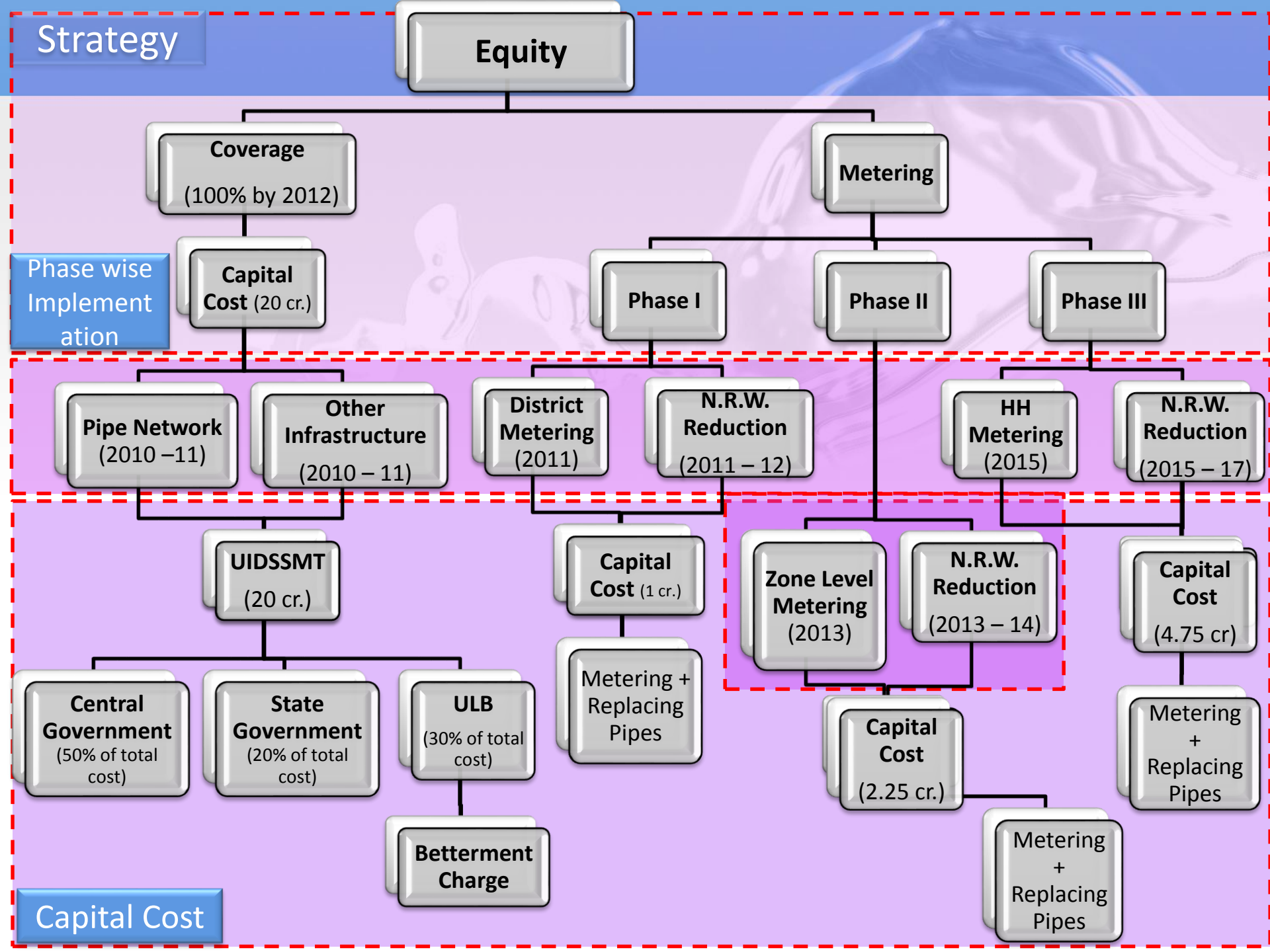
Scope of work – By Extending ULB Limit

Bring equity amongst users

Financial viability of ULB

O & M Recovery




Strategy
Equity
Coverage
(100% by 2012)
Metering
Phase wise Implement ation
Capital Cost (20 cr.)
Phase I
Phase II
Phase III
Pipe Network
(2010 –11)
Other Infrastructure
(2010 – 11)
District Metering
(2011)
N.R.W. Reduction
(2011 – 12)
HH Metering
(2015)
N.R.W. Reduction
(2015 – 17)
UIDSSMT
(20 cr.)
Capital Cost (1 cr.)
Zone Level Metering
(2013)
N.R.W. Reduction
(2013 – 14)
Capital Cost
(4.75 cr)
Central Government
(50% of total cost)
State Government
(20% of total cost)
ULB
(30% of total cost)
Metering + Replacing Pipes
Capital Cost
(2.25 cr.)
Metering + Replacing Pipes
Betterment Charge
Metering + Replacing Pipes
Capital Cost

EXISTING AND FUTURE INFRASTRUCTURE DEMAND

WATER SUPPLY DEMAND

YEAR	POPULATION	NO OF HH	WATER DEMAND (LPCD)	MLD
2008	274023	57088	38363220	38
2015	319176	66495	44684590	45
2025	390667	81389	54693319	54

The present water supply demand is 38 MLD and the projected demand for the year 2025 would be 54 MLD.

ESTIMATED PROJECT COST

DESCRIPTION	PRESENT (2008)	CAPACITY REQUIRED (2025)	COST (IN CRORES)
ESR	43.8 MLD	20 MLD	1.3
SUMP	62.3 MLD	20 MLD	1.1
TREATMENT PLANT	36.0 MLD	10 MLD	1
FILTRATION PLANT	10.0 MLD	5 MLD	3.15
PUMP SETS			0.3
TRUNCK LINE/NETWORK			7.5
METERING	None	District, zone & HH Metering	5.65
TOTAL COST			20

The Total Cost Required To Develop The Desired Infrastructure Is 14.35 Crore. It Includes ESR, Sump, Filtration Plant etc.

- *As ULB is not so financially efficient, so these project would be send to UIDSSMT, which has provision of providing the required fund under diff condition.*

PHASE WISE CAPITAL RECOVERY

- *Proposed Phase Wise Cost Recovery And The Same Phase Wise Construction Of New Infrastructure.*
- ***If, ULB levy Betterment charge on users, cost recovery will be as followed.***

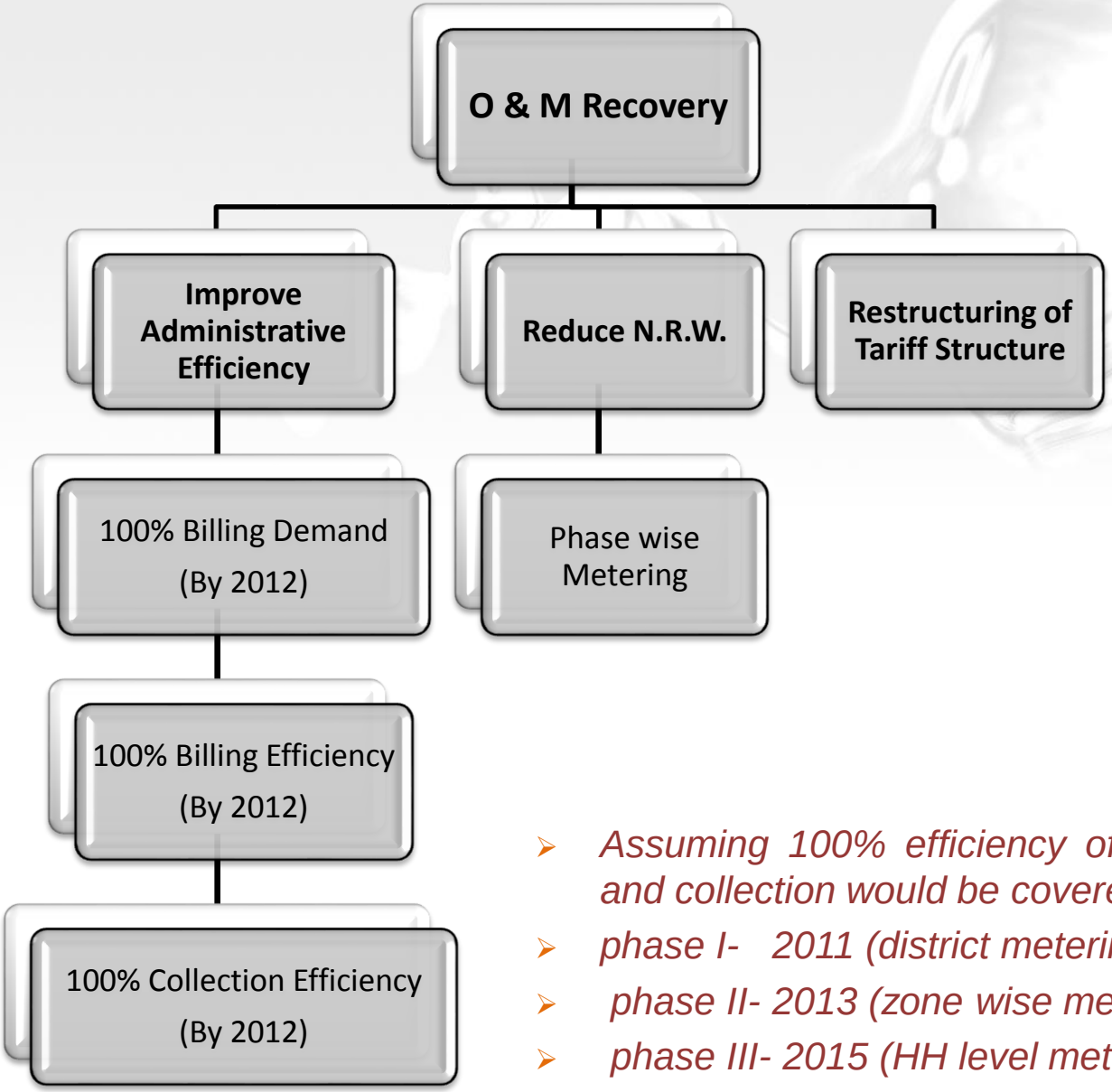
- ***CAPITAL COST RECOVERY THROUGH USERS***

Year	Population	HH	One Time Charge For 3 Yrs	Connection Charge For 3 Yrs	Total Cost /Yr	Total Cost /Month
2010	70742	14738	3774 Rs.	1200 Rs.	1700 Rs.	140 Rs.
2012	**76289**	**15894**				
2015	85225	17755	But divided into 3 yrs so 1258/yr	But divided into 3 yrs so 400/yr	For 3 yrs	/HH/MONTH FOR 3 YEARS
2020	102030	21256				
2025	121747	25364				

BY THE YEAR 2012 THE ULB WILL BE ABLE TO RECOVER THE INFRASTRUCTURE COST.

- *The Cost For Recovery Is About 140 Rs/Person/Month And Is Divided Into Three Years.*
- *To Lower The Economic Burden, And Also Peoples Will Ready To Pay Small Amount In Installments.*

PHASE WISE O & M RECOVERY



- *Assuming 100% efficiency of ULB, the billing demand and collection would be covered up by 2012.*
- *phase I- 2011 (district metering)*
- *phase II- 2013 (zone wise metering)*
- *phase III- 2015 (HH level metering)*

O & M RECOVERY – Improve Administrative Efficiency

Demand

- (Domestic Connection X Avg. Domestic Tariff) + (Non -domestic Connection X Avg. Non - Domestic Tariff)
- (32526 X 406.25/-) + (5855 X 1080/-) = **1953672/-**
- So, By 2012, Demand = 37230093/-

Billing Efficiency

- Present Billing of water tax – **8224533/-**
- Which is **22% from demanded amount**
- Should meet 100% by 2012

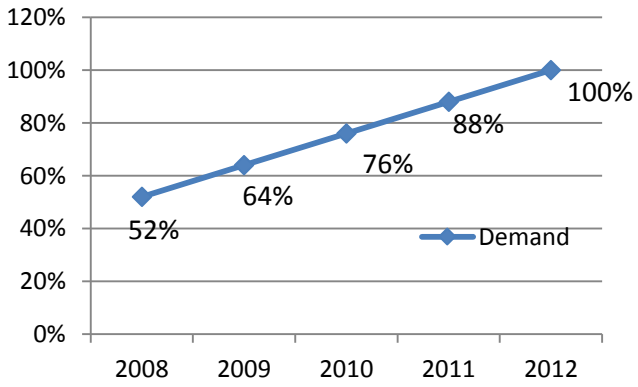
Recovery

- Present Recovery of water tax – 7474619/-
- Which is near to 91% of billed amount
- Should continue this performance

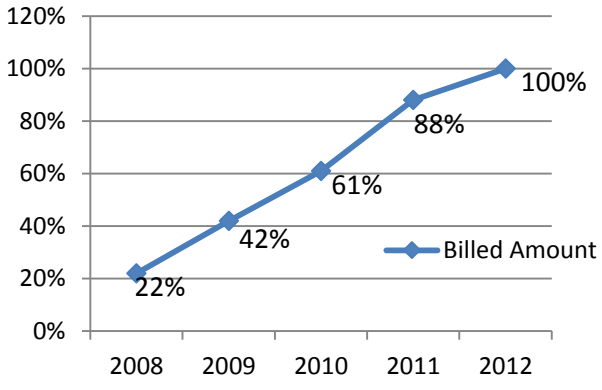
Tariff Structure - Dom	
300	Tariff 1
360	Tariff 2
425	Tariff 3
540.00	Tariff 4
406.25	**Average**

Tariff Structure - Non Domestic	
750	Tariff 1
800	Tariff 2
850	Tariff 3
1000	Tariff 4
2000	Tariff 5
1080	**Average**

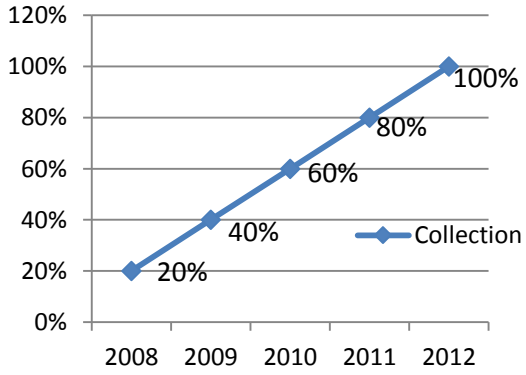
Demand



Billed Amount



Collection



O & M RECOVERY – Improve Administrative Efficiency

Demand

- (Domestic Connection X Avg. Domestic Tariff) + (Non -domestic Connection X Avg. Non - Domestic Tariff)
- (32526 X 406.25/-) + (5855 X 1080/-) = **1953672/-**
- So, By 2012, Demand = 37230093/-

Billing Efficiency

- Present Billing of water tax – **8224533/-**
- Which is **22% from demanded amount**
- Should meet 100% by 2012

Recovery

- Present Recovery of water tax – 7474619/-
- Which is near to 91% of billed amount
- Should continue this performance

Tariff Structure - Dom	
300	Tariff 1
360	Tariff 2
425	Tariff 3
540.00	Tariff 4
406.25	**Average**

Tariff Structure - Non Domestic	
750	Tariff 1
800	Tariff 2
850	Tariff 3
1000	Tariff 4
2000	Tariff 5
1080	**Average**

- *Improve Coverage & Connection*
- *Adequate data management system should be introduced*
- *Incorporate properties which are missing in billing system*
- *Reregulate tariff structure, if tariff is taken according to property*

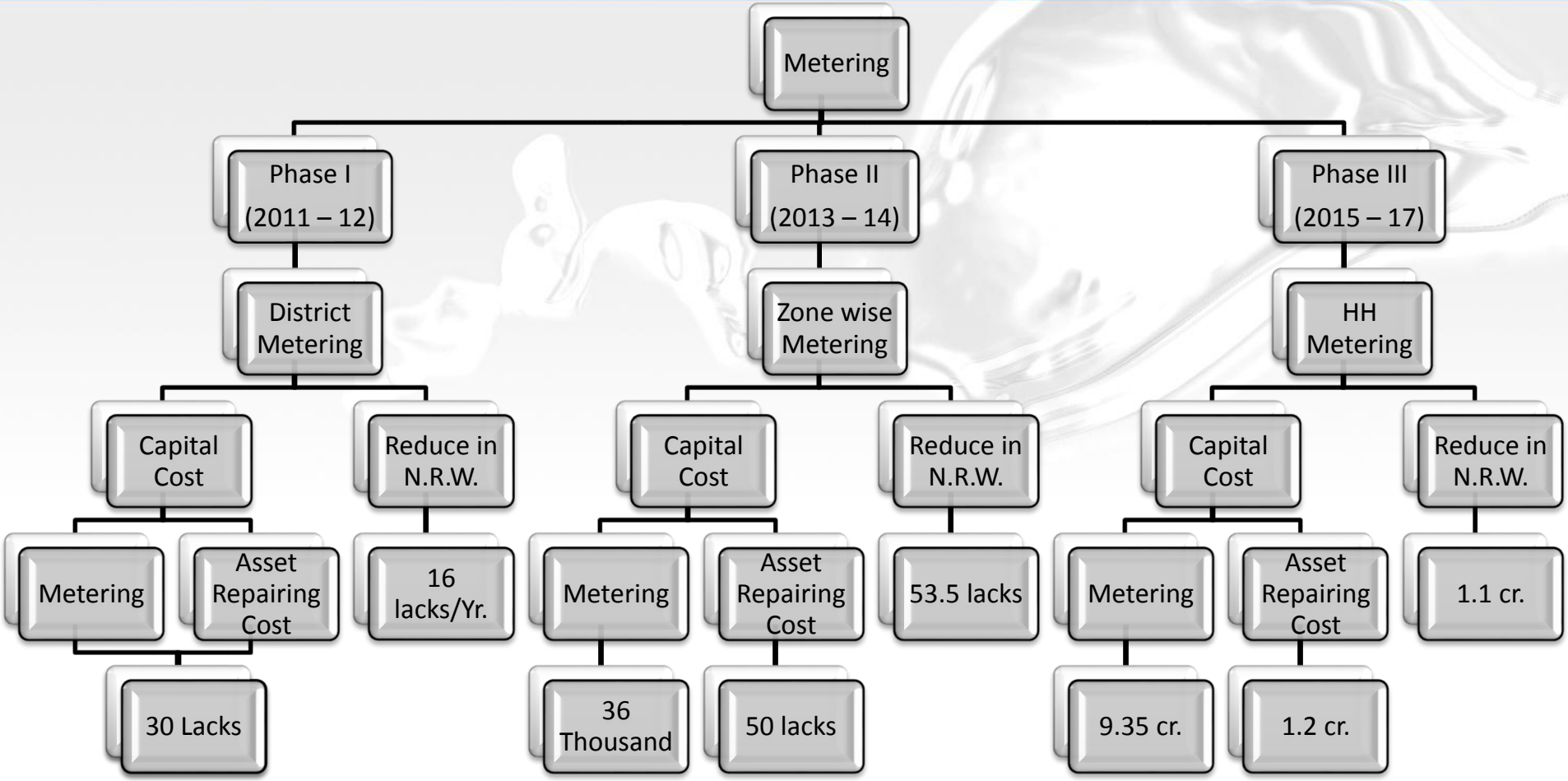
O & M RECOVERY – IMPROVE ADMINISTRATIVE EFFICIENCY

- ***100% DEMAND- COLLECTION***

Connection Should be 100 %

	2008	2009	2010	2011	2012
Connection (Total)	56702	68468	70008	71565	73140
Connection (Dom)	32526	39890	47255	54619	61983
Connection (Non Dom)	5855	7180	8506	9831	11157
Demand of Billed Amount should meet 100% as per Present Tariff Structure					
Demand (Total)	19536742	23960080	28383418	3280675[illegible]	**37230093**
Demand (Dom)	15629394	19168064	22706734	26245404	29784075
Demand (Non Dom)	3907348	4792016	5676684	6561351	7446018
Billed amount Should meet the Demand by 100 %					
Billed Amount	8224533	15475923	22727313	2997870[illegible]	**37230093**
Billed Amount (Dom)	6744117	12690257	18636397	24582537	30528677
Billed Amount (Non Dom)	1480416	2785666	4090916	5396167	6701417
Collection efficiency should be 100 %					
Collection	7474619	14913488	22352356	2979122[illegible]	**37230093**
Collection (Dom)	6129188	12229060	18328932	24428804	30528677
Collection (Non Dom)	1345431	2684428	4023424	5362420	6701417

O & M RECOVERY – REDUCE N.R.W.



- *Till 2017, same tariff system – with property tax*
- *2015 – 17: monitoring stage*
- *After 2017: Tariff as per meter*
- *O & M should meet in 2017 so* ***rest gap in o & m – bill amount will meet by rescheduling of tariff***

Reduction in N.R.W. & Rescheduling of Tariff Structure

	2008	2009	2010	2011	2012
N.R.W. Cost	5490732	7094207	7253732	7415080	7578275
O & M Expenditure	28928000	37375934	38216394	39066456	39926254
Capital Expenditure		30000000	25000000	3000000	
Cost Reduction in O & M					1515655
Total O & M Cost	28928000	37375934	38216394	39066456	38410599
Billed (Dom)	6744117	13578575	19940945	24582537	30528677
Billed (Non Dom)	1480416	2980663	4377281	5773898	7170516
Billed (Total)	8224533	16559238	24318225	30356435	37699193
85% Collection Efficiency	6990853	14075352	20670491	25802970	32044314
Arrears		1418732	2856469	4194894	5236485
Connection / HH (Dom)	32526	39890	47255	54619	61983
Tariff/Connection (Dom)	207.35	340.40	421.99	450.08	492.53
Connection (Non Dom)	5855	7180	8506	9831	11157
Tariff/Connection (Non Dom)	252.86	387.96	480.96	548.87	600.65

Reduced O & M due to reduction in N.R.W.

Rescheduling of tariff

Reduction in N.R.W. & Rescheduling of Tariff Structure (cont.)

	2013	2014	2015	2016	2017
N.R.W. Cost	7743369	10283536	10503259	10725615	10950668
O & M Expenditure	40796054	41676124	42566595.17	43467736	44379812
Capital Expenditure	36000	5000000	93572094	12000000	
Cost Reduction in O & M	1657081	5141768	5619244	6139878	10950668
Total O & M Cost	39138973	36534355	36947351.54	37327858	33429144
Billed (Dom)	30833963	31142303	31453726	31768263	32085946
Billed (Non Dom)	7268611	7775666	8297087	8833217	9384406
Billed (Total)	38102574	38917969	39750813.53	40601481	41470353
85% Collection Efficiency	32387188	33080274	33788191	34511259	34949800
Arrears	6503111	6572694	6713349	6857015	7003755
Connection / HH (Dom)	63333	64700	66082	67481	68897
Tariff/Connection (Dom)	486	481	475	470	465
Connection (Non Dom)	11400	11646	11895	12147	12401
Tariff/Connection (Non Dom)	637	667	697	727	756

Assumptions: 1. Inflation Rate is 7%

2. N.R.W. % is taken accordingly as per the distribution network %

3. Arrears will be collected by 15% increase in billed amount

4. Non Domestic connections are taken by the past trend %, with respect to total connections

Reduced O & M due to reduction in N.R.W.

Rescheduling of tariff

NAVSARI

PIP for Equity

METHODOLOGY:

Present Scenario

- Profile, Location, Programs

Problem Identification

- Coverage, Infrastructure, NRW, Consumer's Point of View

Policy Interventions

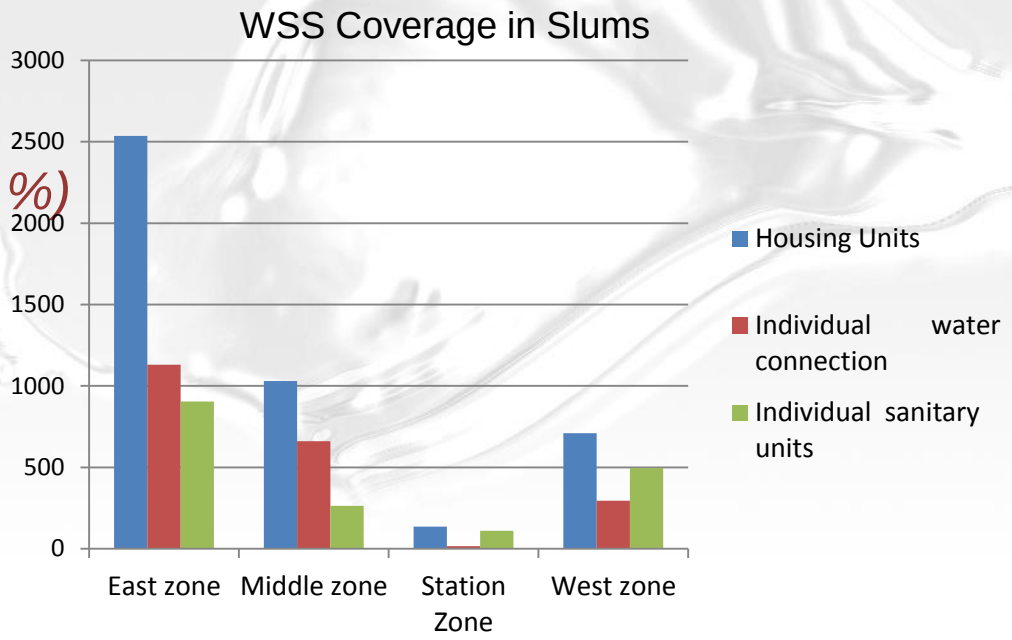
- 100% Connection, Revised Tariff, Administrative Reform

Implementation Framework

- Policy implementation with Financial Sustainability

PRESENT SCENARIO:

- *Navsari population- 2,08,531*
- *Slum population- 22570 (13.23 %)*
- *No. of slums- 27*
- *No. of household- 4411*
- *water connections- 2100*
- *Public stand post -131*
- *Individual toilets- 1774*

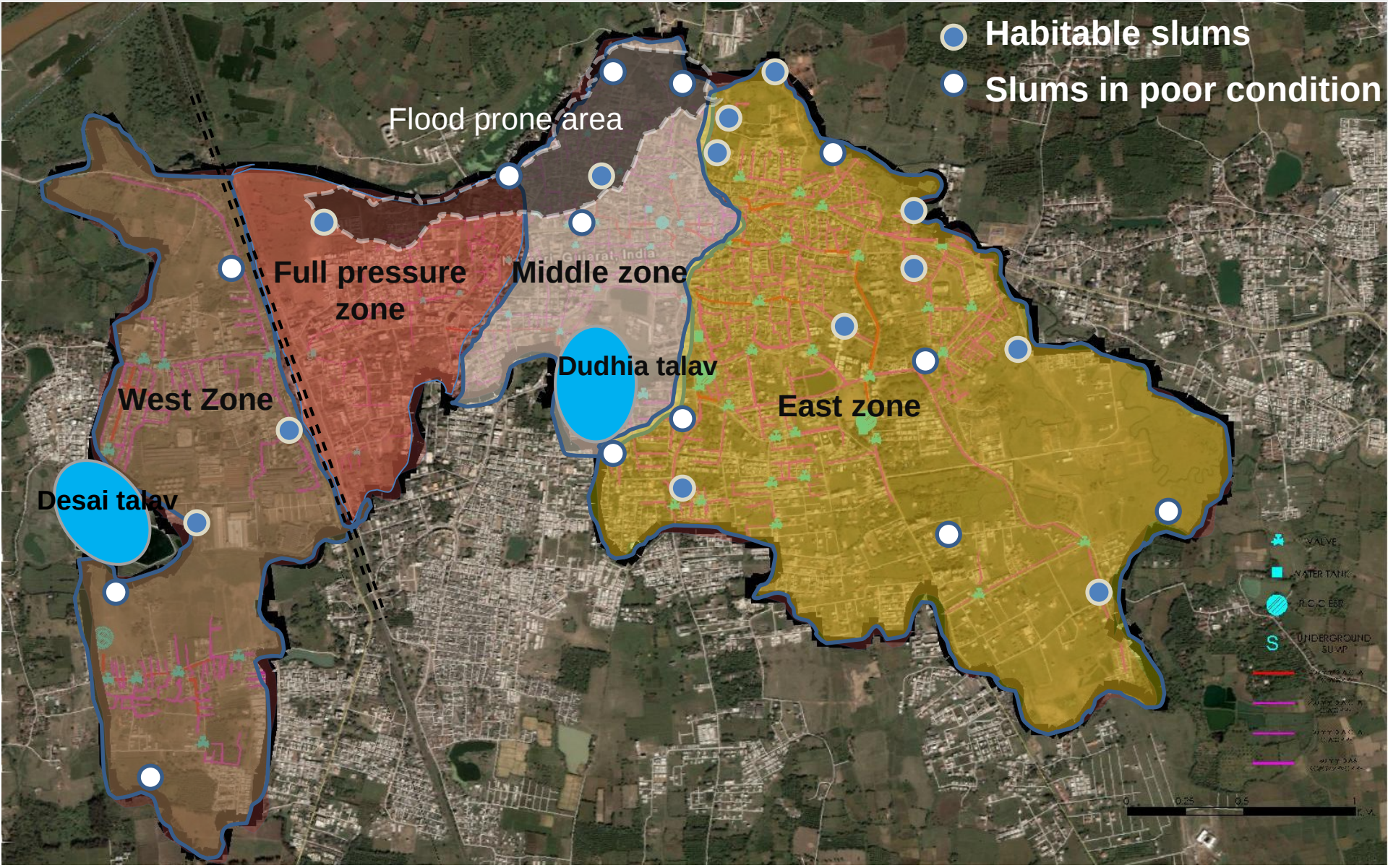


WSS Coverage in Slums

	Housing Units	water connection	sanitary units	(toilet blocks)
East zone	2535	1130	905	172
Middle zone	1030	660	264	19
Full pressure	136	15	110	0
West/Station	710	295	495	22
Total	4411	2100	1774	213

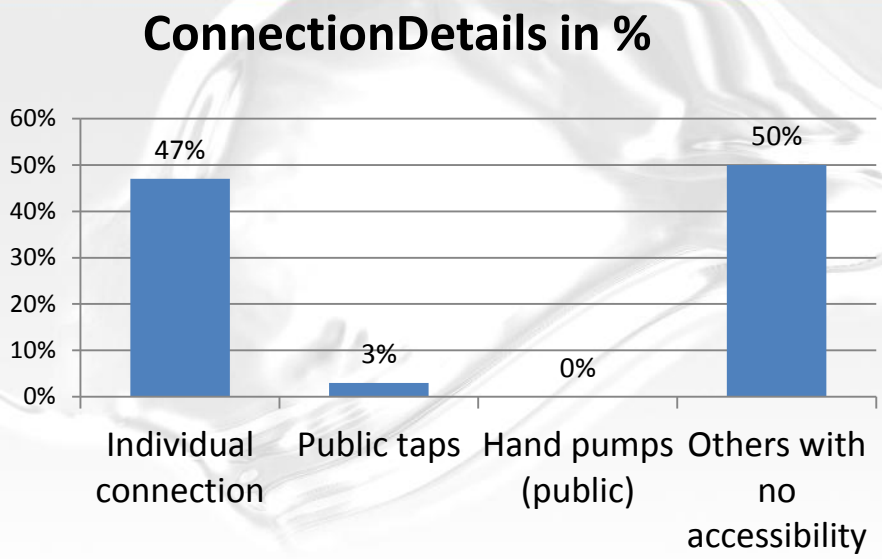
The condition of full pressure zone is very poor as compared to the other zone in terms of water connection. Otherwise approx 50% of HH are covered.

SLUM LOCATION:



IHSDP PROGRAM

- *Implemented in 2 Phases.*
- *No. of slums to be relocated– 17*
- *Population: 16411*
- *No. of household- 3331*
- *Phase 1- 992 HH have been relocated at 4 different location*
- *Legal land tenure.*
- *Priority to slums which are in flood prone areas.*
- *Phase 2- consideration of Other remaining clusters.*



•Current level of water supply system- including Identification of deficiency.

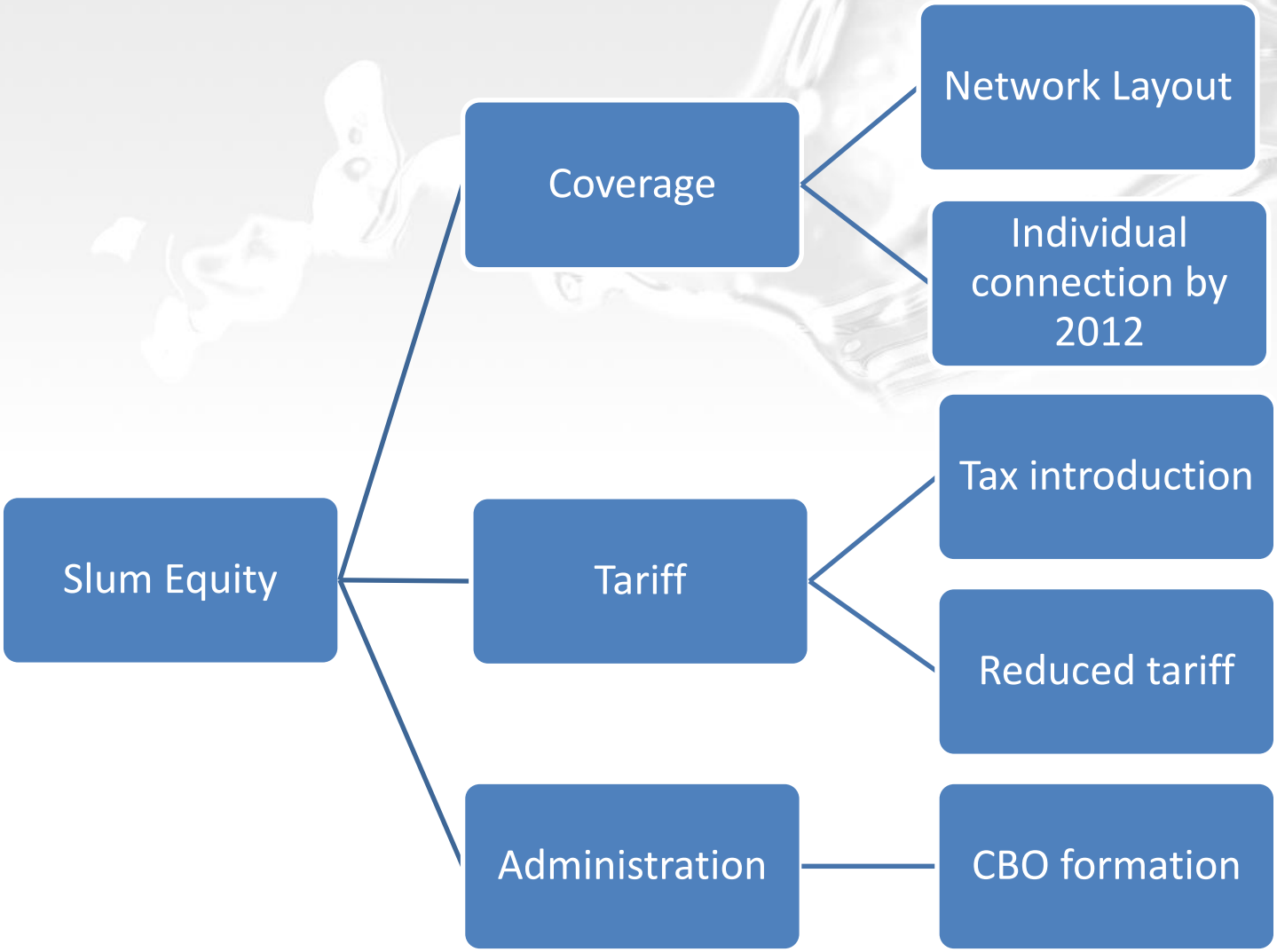
SR. NO.	NAME OF SLUM	NO. OF HOUSES	INDIVIDUAL CONNECTION	PUBLIC TAPS	HAND PUMPS (PUBLIC)	NO ACCESSIBILI
1	Dasera Tekri	432	237	17	-	178
2	EWS Plot	112	48	6	-	58
3	Kashiwadi	192	176	-	-	16
4	EWS Plot	256	-	-	-	256
	TOTAL	992	461	23	-	508

(Source:IHSDP report,Sthapati consultancy)

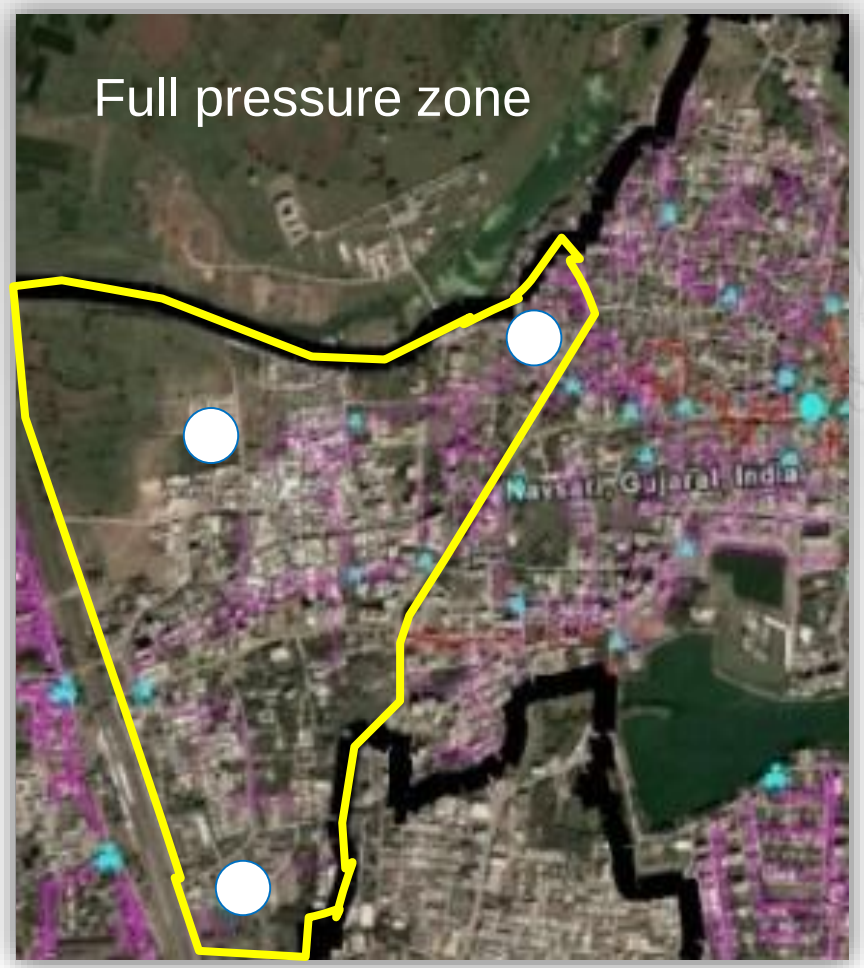
ISSUES:

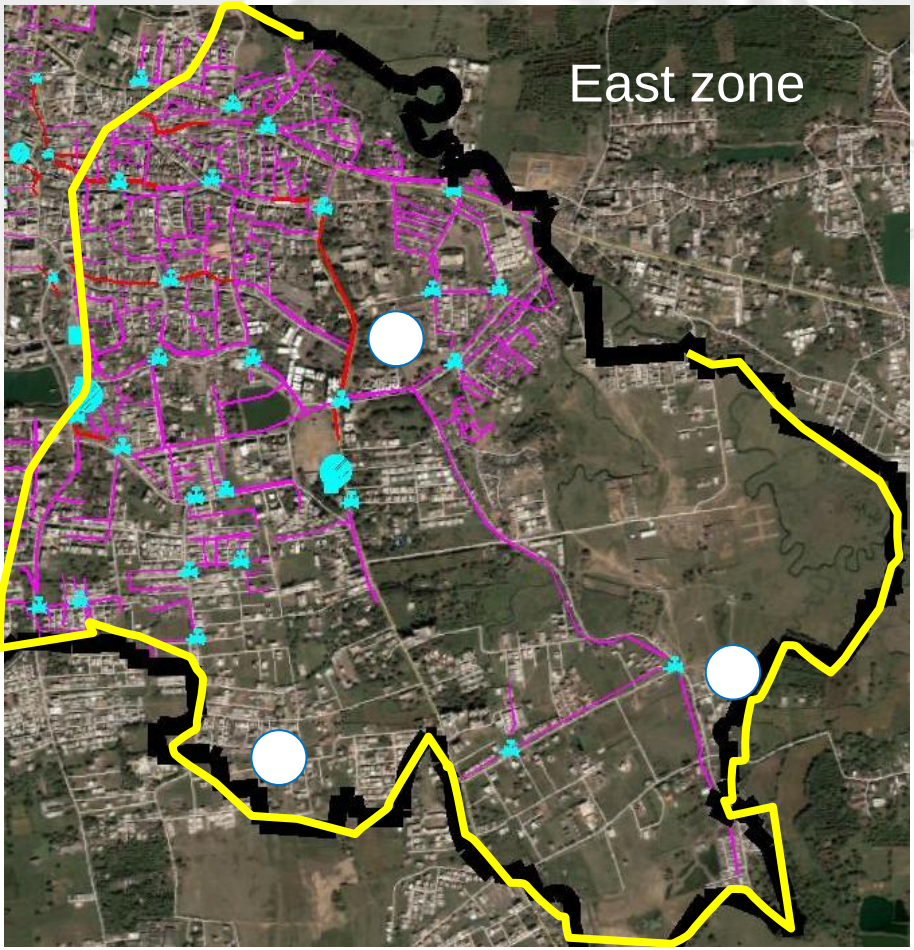
- *Poor network to provide connection.*
- *Difference in supply hours.*
- *High Initial cost and one time charge.*
- *25% of NRW .*
- *Had to pay more taxes, after legal tenure.*
- *Volatile process for taking connection.*
- *No awareness program or pro-poor policy for slum.*

POLICY FRAMEWORK:



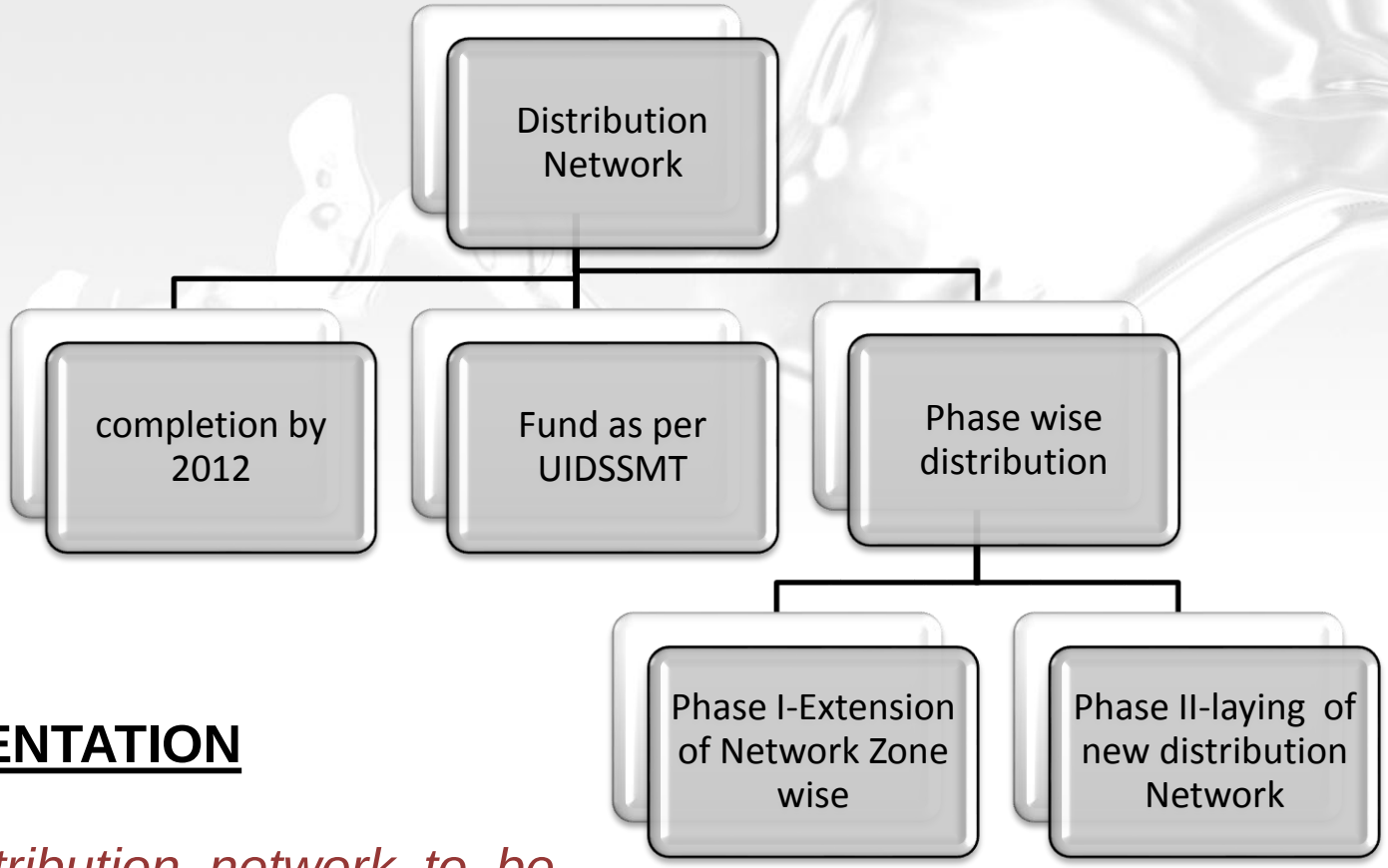
POLICY INTERVENTION: COVERAGE





- *Poor network in full pressure zone and east zone*
- *No 450 mm dia. Pipe line with 7hrs 15mins water supply*

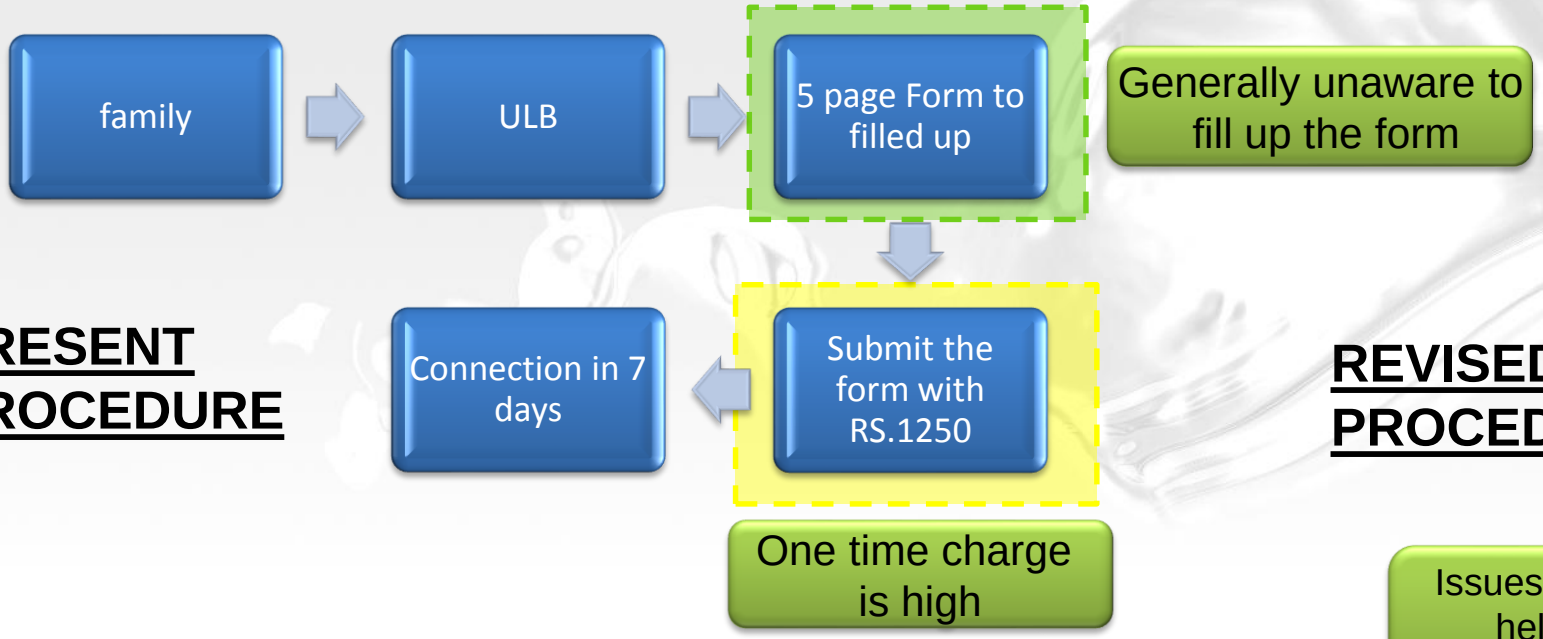
COVERAGE:

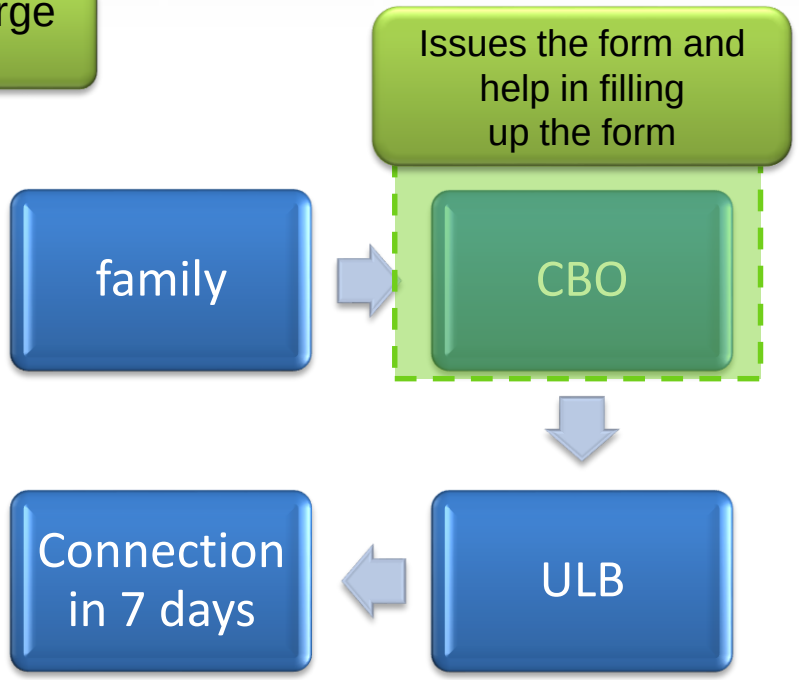


IMPLEMENTATION

- *The distribution network to be completed by 2012.*
- *Fund as per UIDSSMT: 50% Central, 20% state, 30% Consumer.*

RESTRUCTURED INITIAL CONNECTION COST

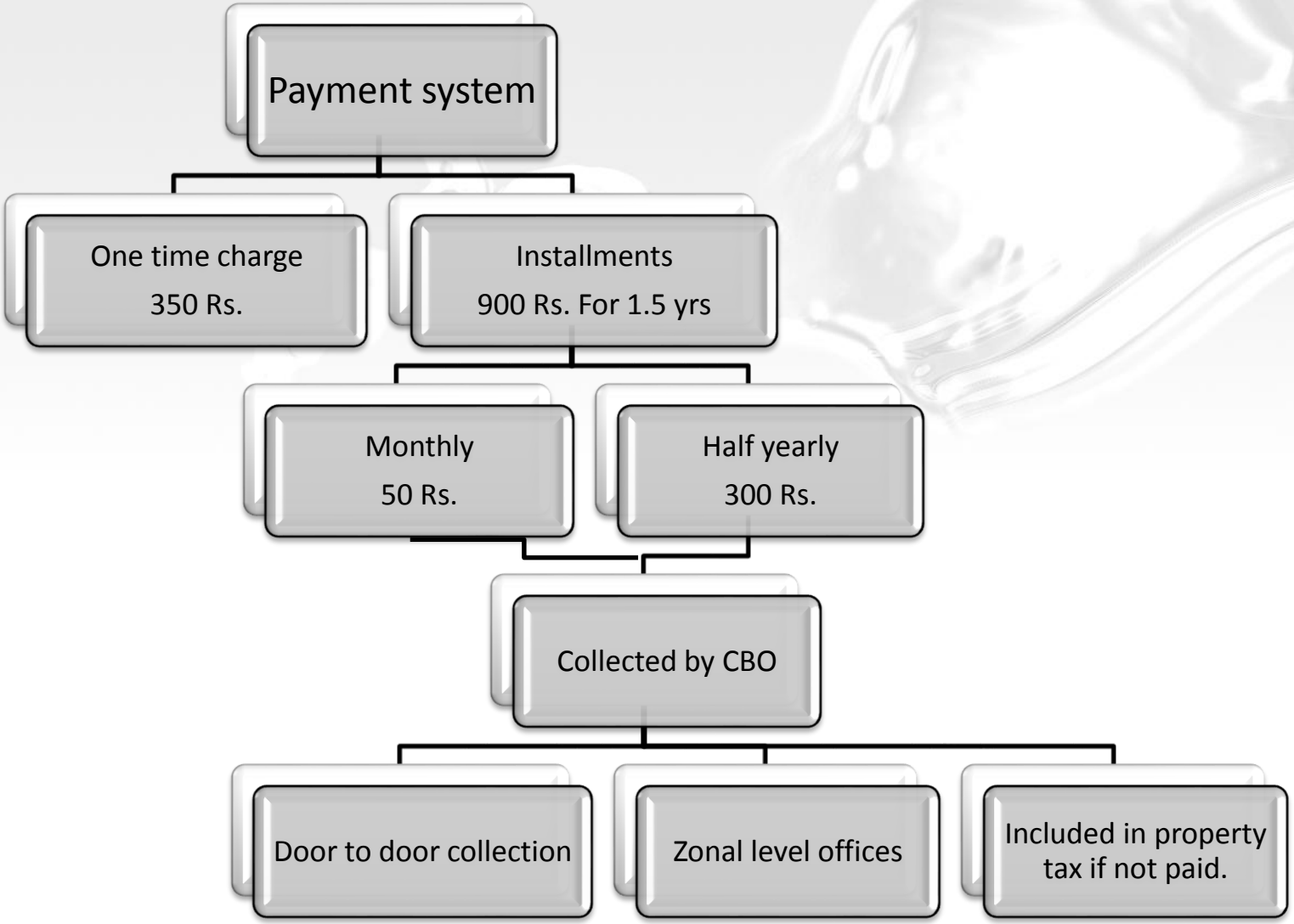




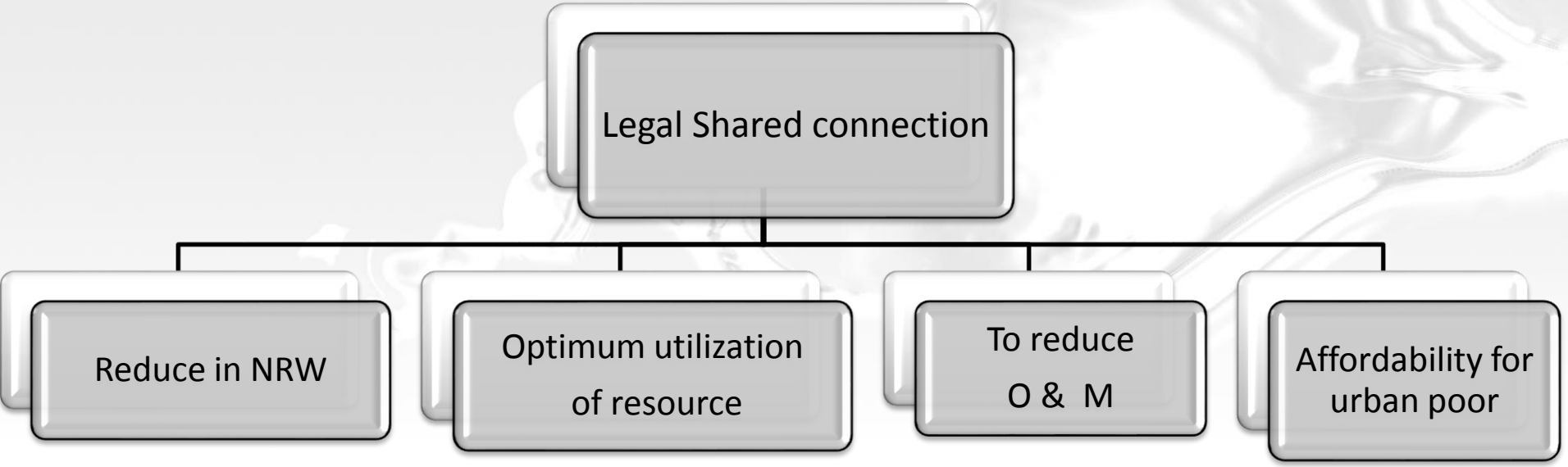
OBJECTIVE

- *To increase connection by cutting down the initial cost of connection charge and achieve 100% by 2012*

RESTRUCTURED INITIAL CONNECTION COST



PROVISION FOR SHARED CONNECTION



CRITERIA

- *Common wall(since IHSDP housing is proposed)*
- *Equal area(since IHSDP housing is proposed)*
- *Max no. 2*
- *Tax paid will be equal to CBO*
- *Bond for mutual understanding has to be signed by two families*
- *For any kind of disputes, CBO will handle with awareness programme*

INTRODUCTION OF WATER TAX

Water Tax is been levied on every household irrespective of water connection

Tax on the basis of 1. Property Tax
2. water
3. Drainage
4. Cleanliness
5. Education

TOTAL TAX		2009
Description	**Factor**	**Cost(in rs)/year**
property tax		210.00
water tax		148
Drainage tax	4	124
cleaning Tax	4	124
education Tax		360
Total cost/yr		**966**
Tax/month		81

Advantages:

- *Change in mindset of people to take individual connection.*
- *Tax is been collected by CBO under ULB.*
- *Reduction of NRW by increasing legal connection*

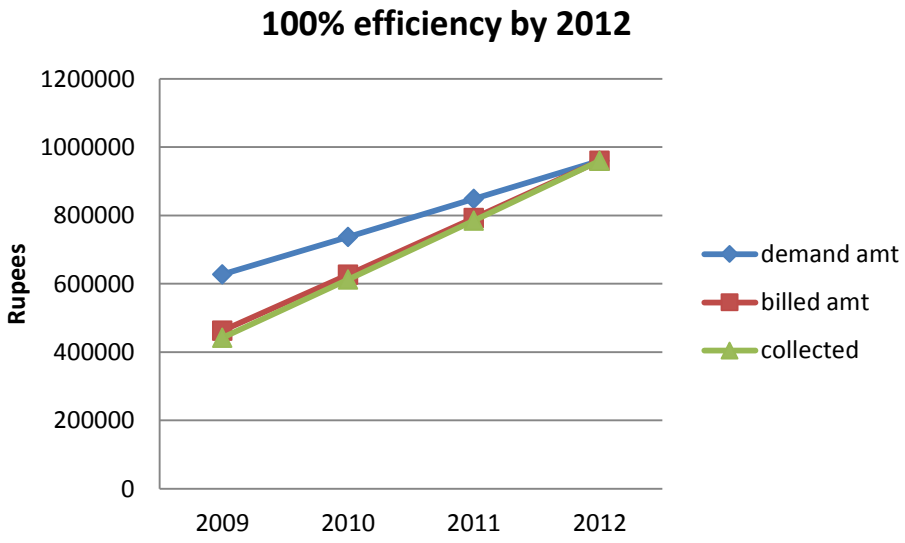
CROSS SUBSIDIZED WATER TARIFF

Year	2009	2010	2011	2012
% covered	66	77	89	100
Tariff/ conn/yr	148	174	194	210

Other taxes including property tax

180 Rs/year -25-30 sq m
240 Rs/year- 30-40 sq m

Target-2012



- *100% Recovery & services are achieved by 2012*
- *PMS is been done by CBO upto 2015*
- *If 100% recovery continues, public stand post will be removed from 2015 onwards*

CROSS SUBSIDIZED WATER TARIFF

Target-2017

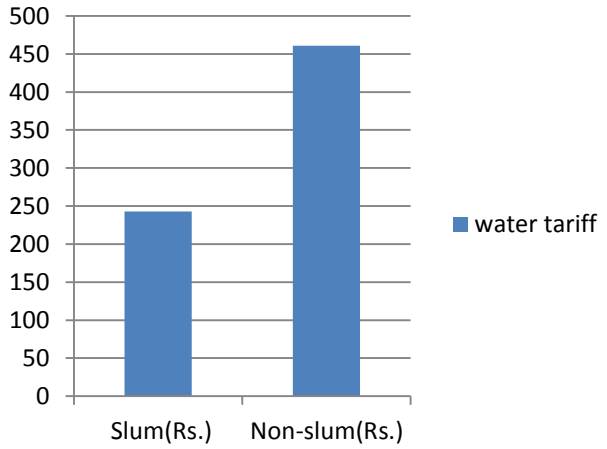
3% increase in tariff of slum per year

Year	2012	2013	2014	2015	2016	2017
Tax	210	216	223	229	236	243
Deficit in O&M (Slum)	2086763	2064373	2040678	2015909	1990032	1166287
O&M increase in financial balance sheet	40497363	41203347	38575034	38963261	39317889	34595431
Collection	32044314	32387188	33080274	33788192	34511259	35249800

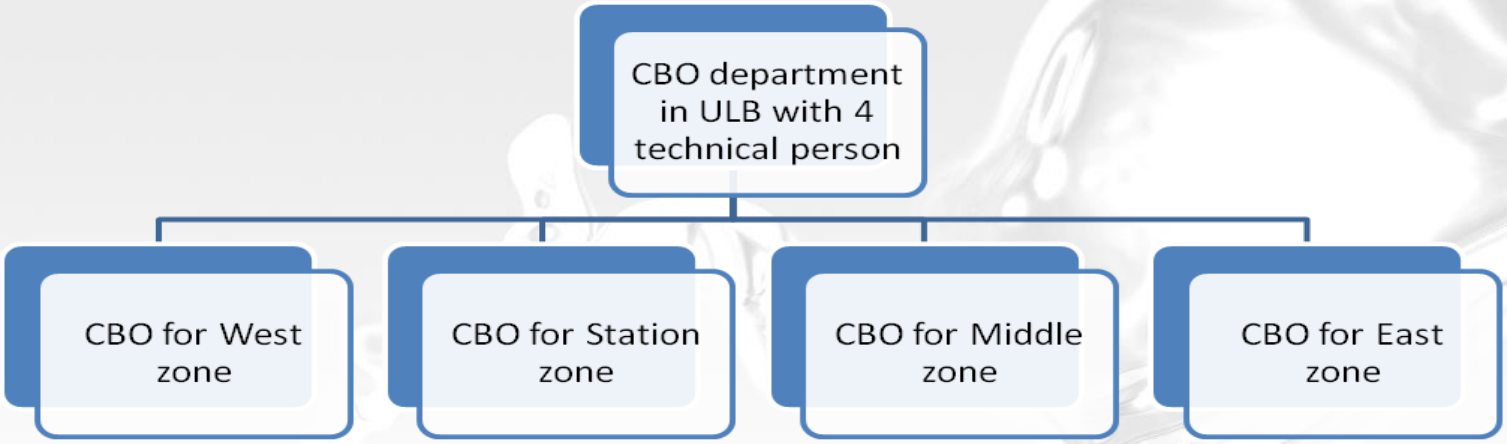
EQUITY

- *Recovery of O & M by cross subsidizing with municipal balance sheet by 2017.*
- *Otherwise the hype in tax will be 11.5 per year.*
- *After 2017 metering is introduced.*

Comparison of water tariff

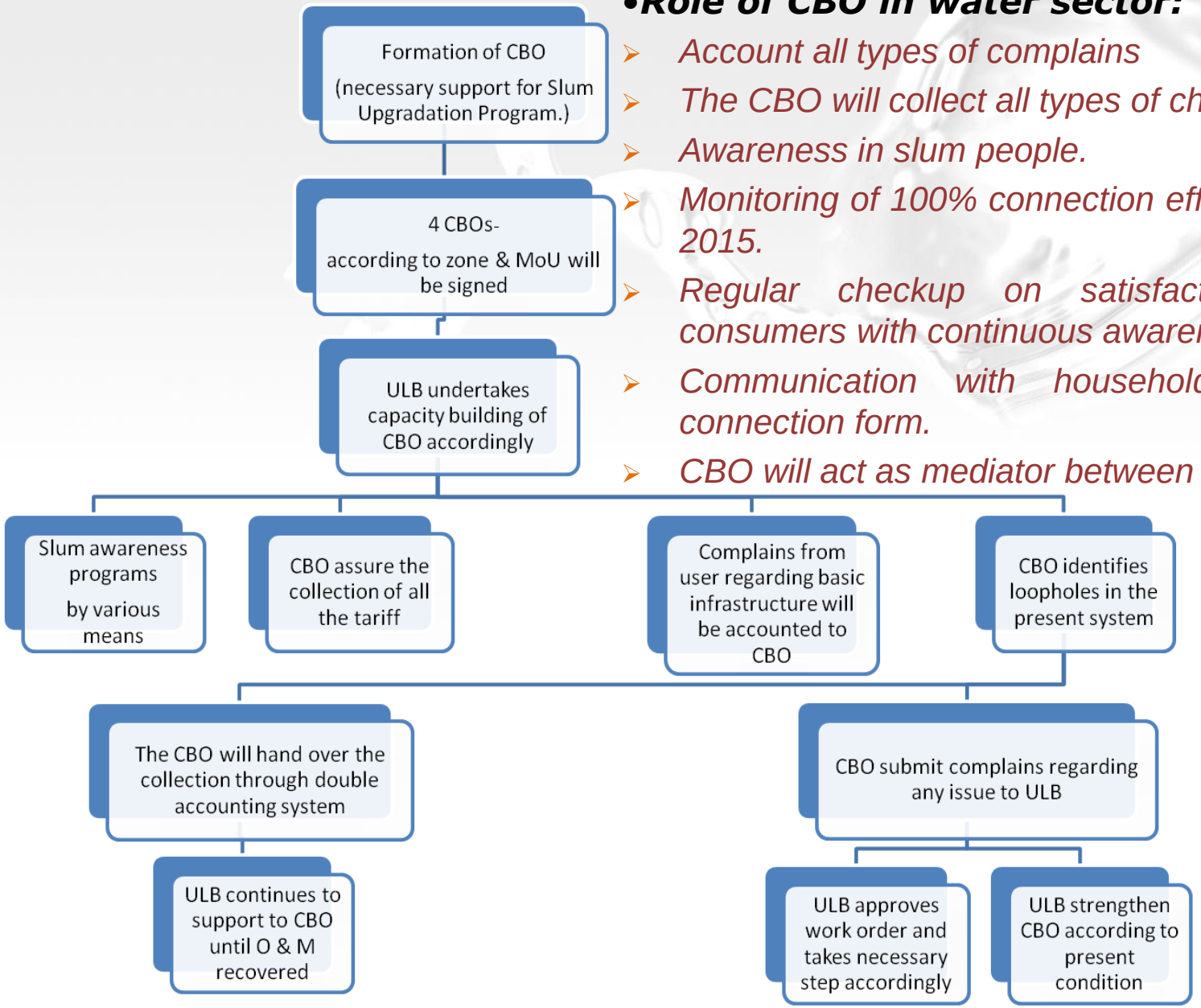


ADMINISTRATIVE REFORM



- *Each zonal CBO will have 1 man & 1 woman representative from each zone. They should be selected according to their knowledge about the sector or qualification. Otherwise they will be going to elected.*
- *The salary of CBO members will be Rs.5000/-.*
- *The CBO department with 4 technical person will be: 1 person (Water supply), 1 person (Sanitation), 1 person (Road), 1 person (Electricity).*

ADMINISTRATIVE REFORM



- ***Role of CBO in water sector:***
  - *Account all types of complains*
  - *The CBO will collect all types of charges*
  - *Awareness in slum people.*
  - *Monitoring of 100% connection efficiency from 2013 to 2015.*
  - *Regular checkup on satisfaction level of the consumers with continuous awareness of people.*
  - *Communication with household regarding water connection form.*
  - *CBO will act as mediator between ULB & Consumer.*

BAVLA

Performance Improvement Programme for Financial Sustainability

BY
AASIM • ABHINAV • BHAVIN

Overview

Bavla – Water Supply Sector

City Profile

Demographic Profile

Population
30871
(census 2001)

Avg. HH Size 5
Total 6265
(Census2001)

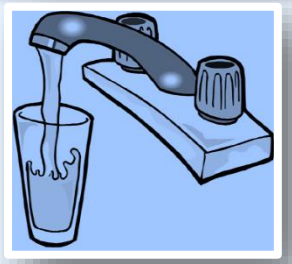
Area
23.1 sq.km

Industries
120 Rice Mills

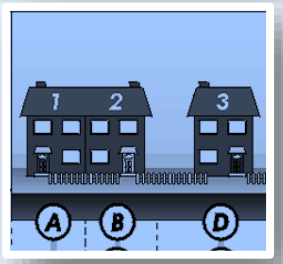
Water Supply

Annual Rainfall
402.4 mm

Source of water
8 Tube well (G.W.)



Total Connections
5195



HH Coverage
70%

Sanitation

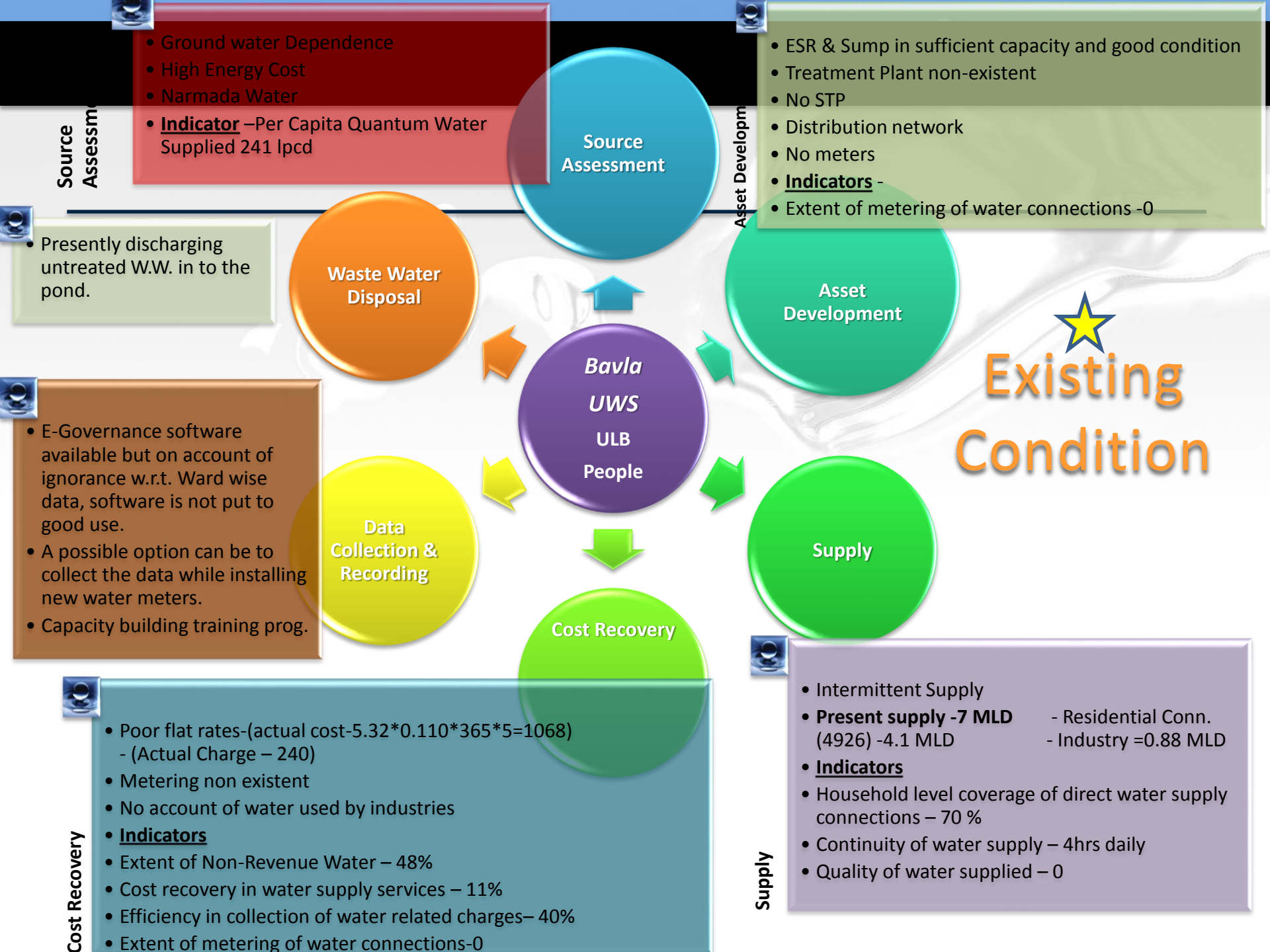
Open Surface Drain

Disposal of Night Soil- Septic Tank

Nos. of Toilets
4000

HH Coverage
64%

Existing Condition



Source Assessment

- Ground water Dependence
- High Energy Cost
- Narmada Water
- **Indicator** –Per Capita Quantum Water Supplied 241 lpcd

Asset Development

- ESR & Sump in sufficient capacity and good condition
- Treatment Plant non-existent
- No STP
- Distribution network
- No meters
- **Indicators** -
- Extent of metering of water connections -0

Waste Water Disposal

- Presently discharging untreated W.W. in to the pond.

Data Collection & Recording

- E-Governance software available but on account of ignorance w.r.t. Ward wise data, software is not put to good use.
- A possible option can be to collect the data while installing new water meters.
- Capacity building training prog.

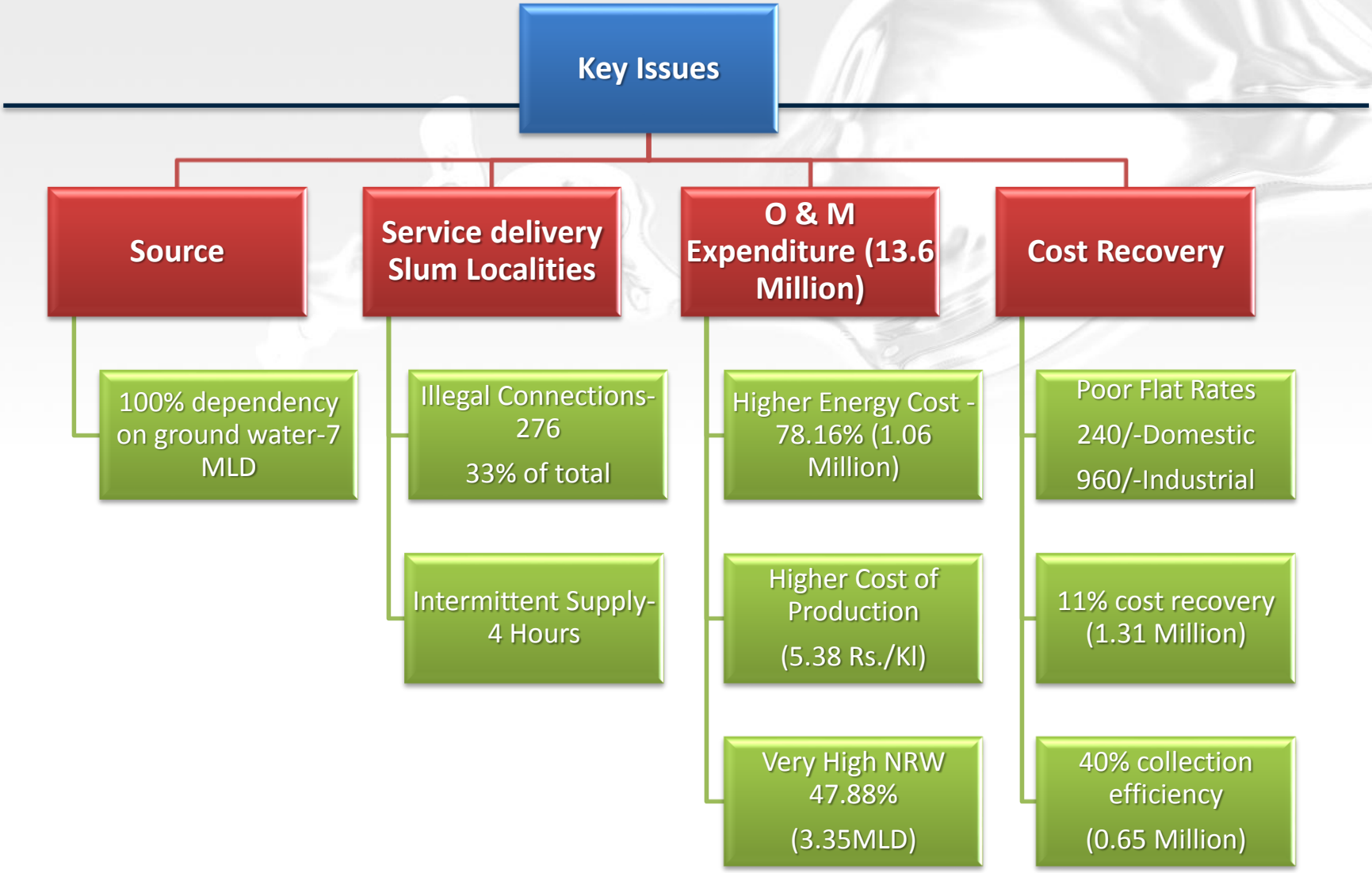
Cost Recovery

- Poor flat rates-(actual cost-5.32*0.110*365*5=1068) - (Actual Charge – 240)
- Metering non existent
- No account of water used by industries
- **Indicators**
- Extent of Non-Revenue Water – 48%
- Cost recovery in water supply services – 11%
- Efficiency in collection of water related charges– 40%
- Extent of metering of water connections-0

Supply

- Intermittent Supply
- **Present supply -7 MLD** - Residential Conn. (4926) -4.1 MLD - Industry =0.88 MLD
- **Indicators**
- Household level coverage of direct water supply connections – 70 %
- Continuity of water supply – 4hrs daily
- Quality of water supplied – 0

Focus Areas of Intervention

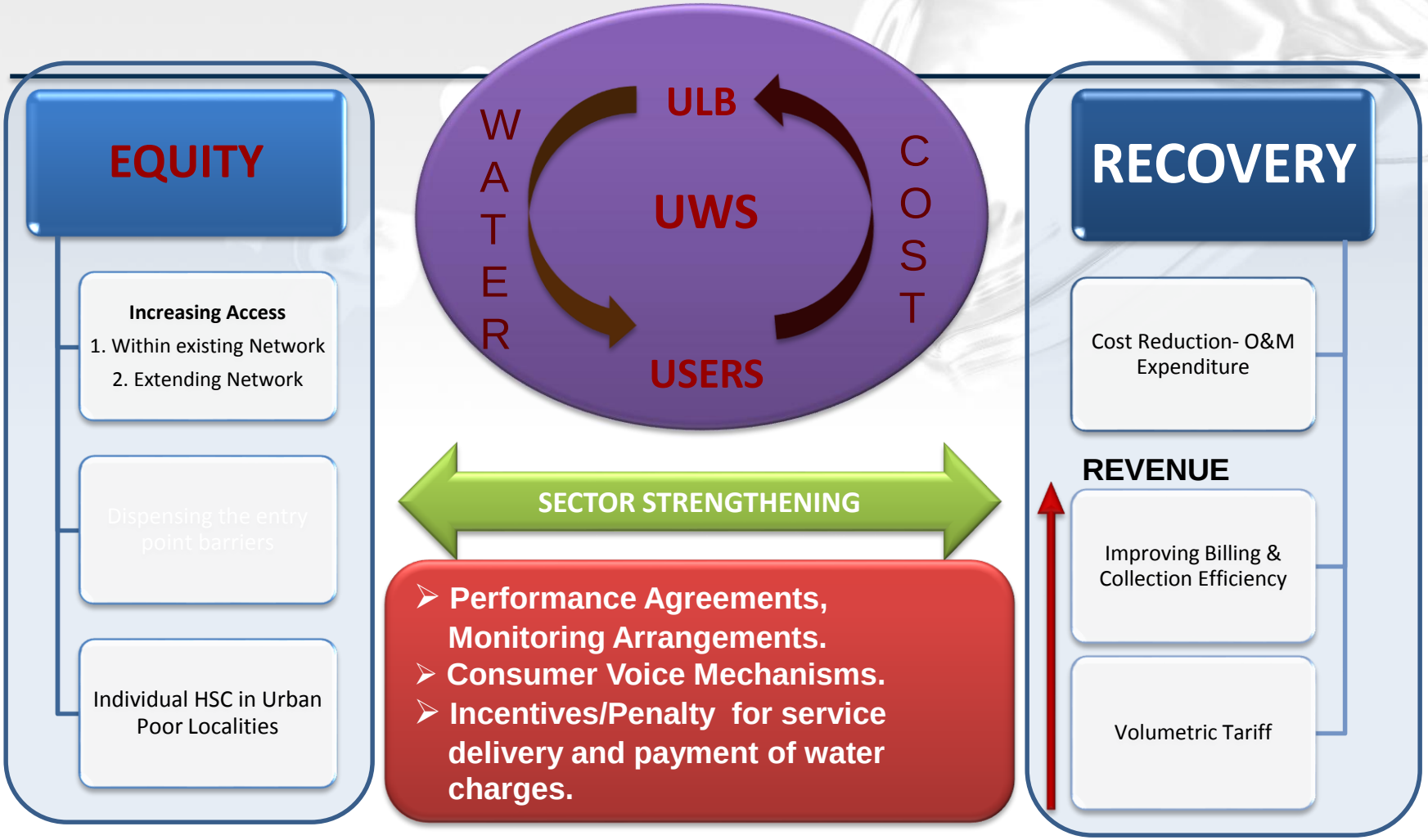


Plan to Improve Services

Bavla – Water Supply

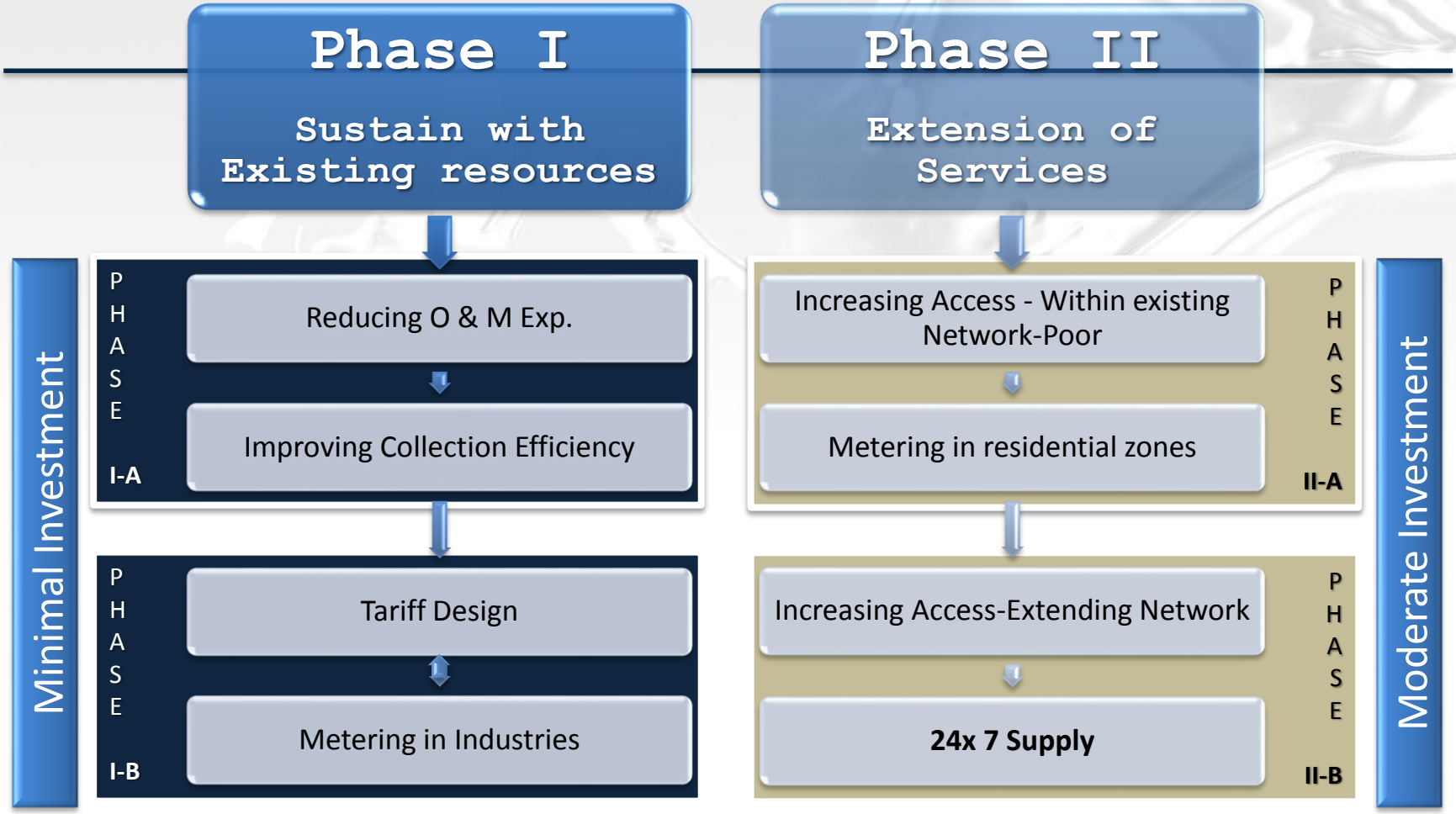
EQUITABLE SERVICES PROMOTING
SUSTAINABLE

COST RECOVERY ⟷ REVENUE STRATEGIES



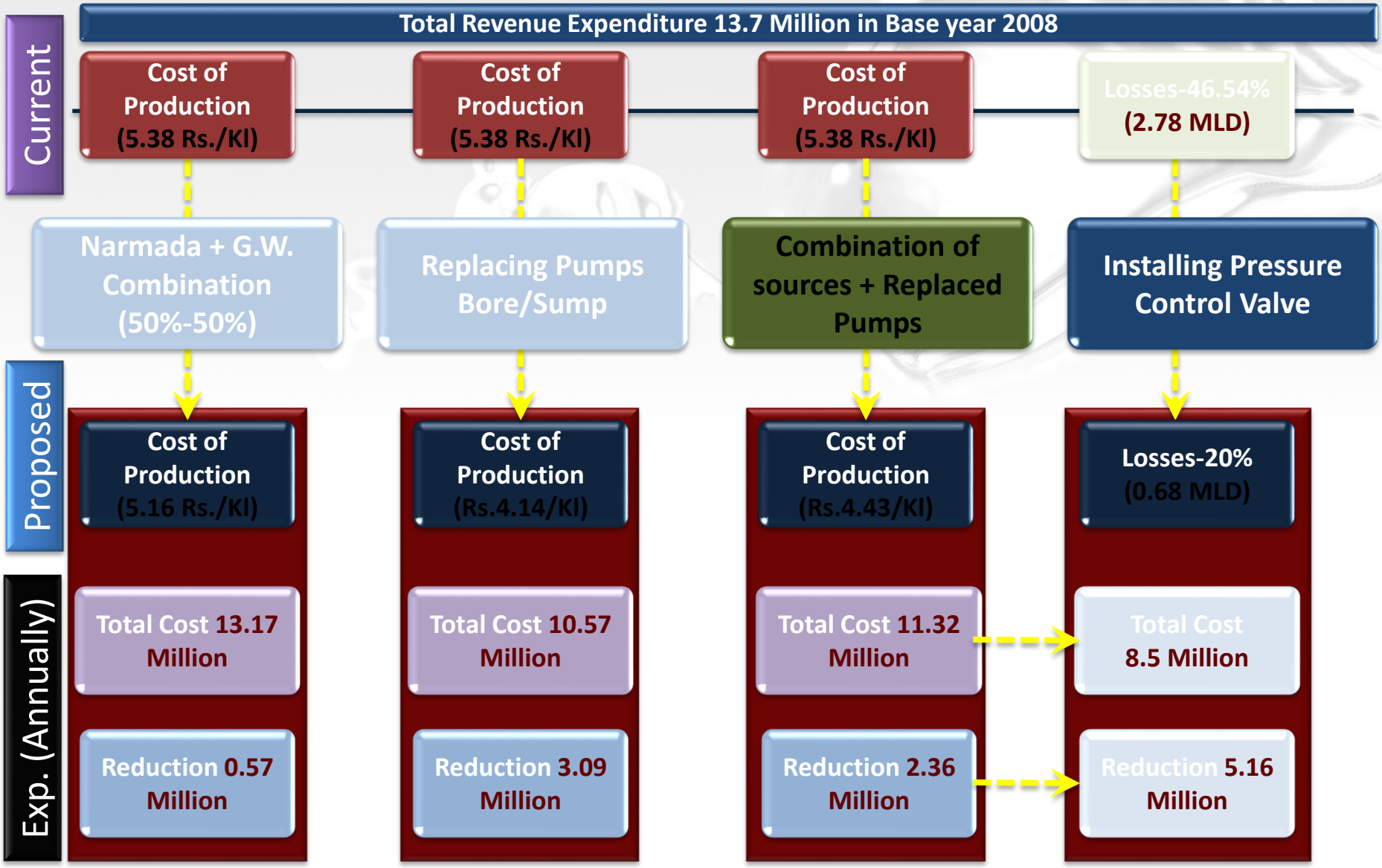
CONCEPT

Action Plan


Phase I
Sustain with Existing resources
Phase II
Extension of Services
Minimal Investment
PHASE I-A
Reducing O & M Exp.
Improving Collection Efficiency
PHASE I-B
Tariff Design
Metering in Industries
Increasing Access - Within existing Network-Poor
Metering in residential zones
PHASE II-A
Increasing Access-Extending Network
24x 7 Supply
PHASE II-B
Moderate Investment

Reducing O & M Expenditure

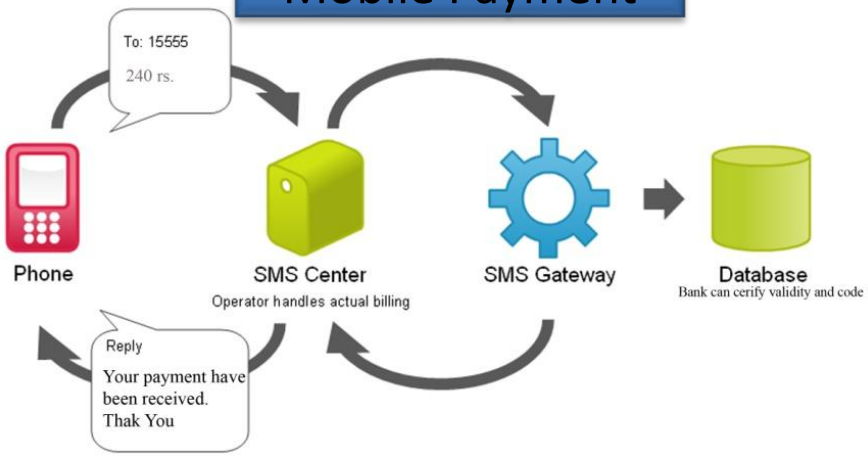
Phase-I A



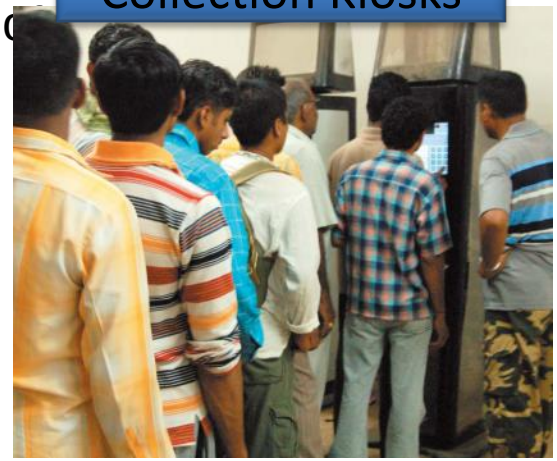
Improving Collection Efficiency

- Collection must be increased to 90-95%
- Tools to Improve collection efficiency
  - Collection Kiosks
  - Payment through Mobile – EASY PAYMENT
  - Biannual collection
  - Involve Private sector for collection (performance management contract)

Mobile Payment



Collection Kiosks



Metering in Industries

Phase-I B

Current Year-08		2009	2015	2020
Flat Rate -960 rs. per industry annually	Analog Water Meter 	Charge 6rs./Kl	Charge 7.9rs./Kl	Charge 9.6rs./Kl
Industrial Revenue 0.105 Million	Metering + Volumetric Tariff	Industrial Revenue 1.64 Million	Industrial Revenue 4.11 Million	Industrial Revenue 6.56 Million
Share in Total Revenue Income 7.9%	Consumption Share-20% (0.88Mld)  Non-Mechanical Water Meter	Share in total Revenue income 50.98%	Share in total Revenue income 35%	Share in total Revenue income 37.42%
Actual cost to provide water to a Industry 3168kl x 5.38/kl = 17,045 rs.				

Increasing Access – Phase II A

Urban Poor

Equity Issues in Slums

Equity in Water Supply for Urban Poor

- Quantum of Supply — LPCD ✓
- Hours of Supply — Hours ✓
- Water Connections — Legal Coverage

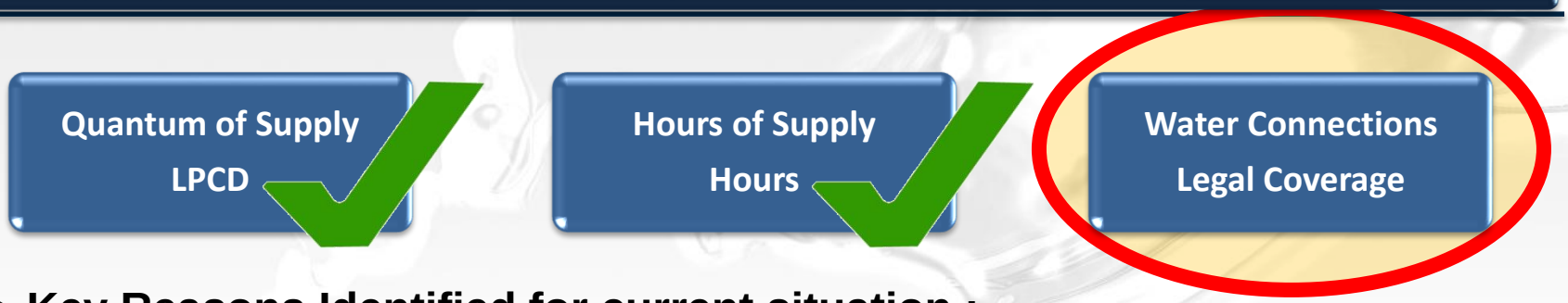
Procedure

ULB

Applicant Poor

Equity Issues in Slums

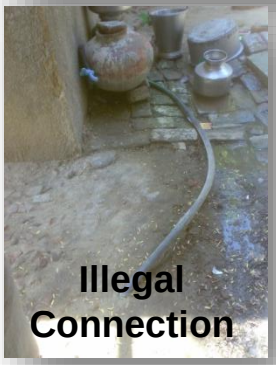
Equity in Water Supply for Urban Poor

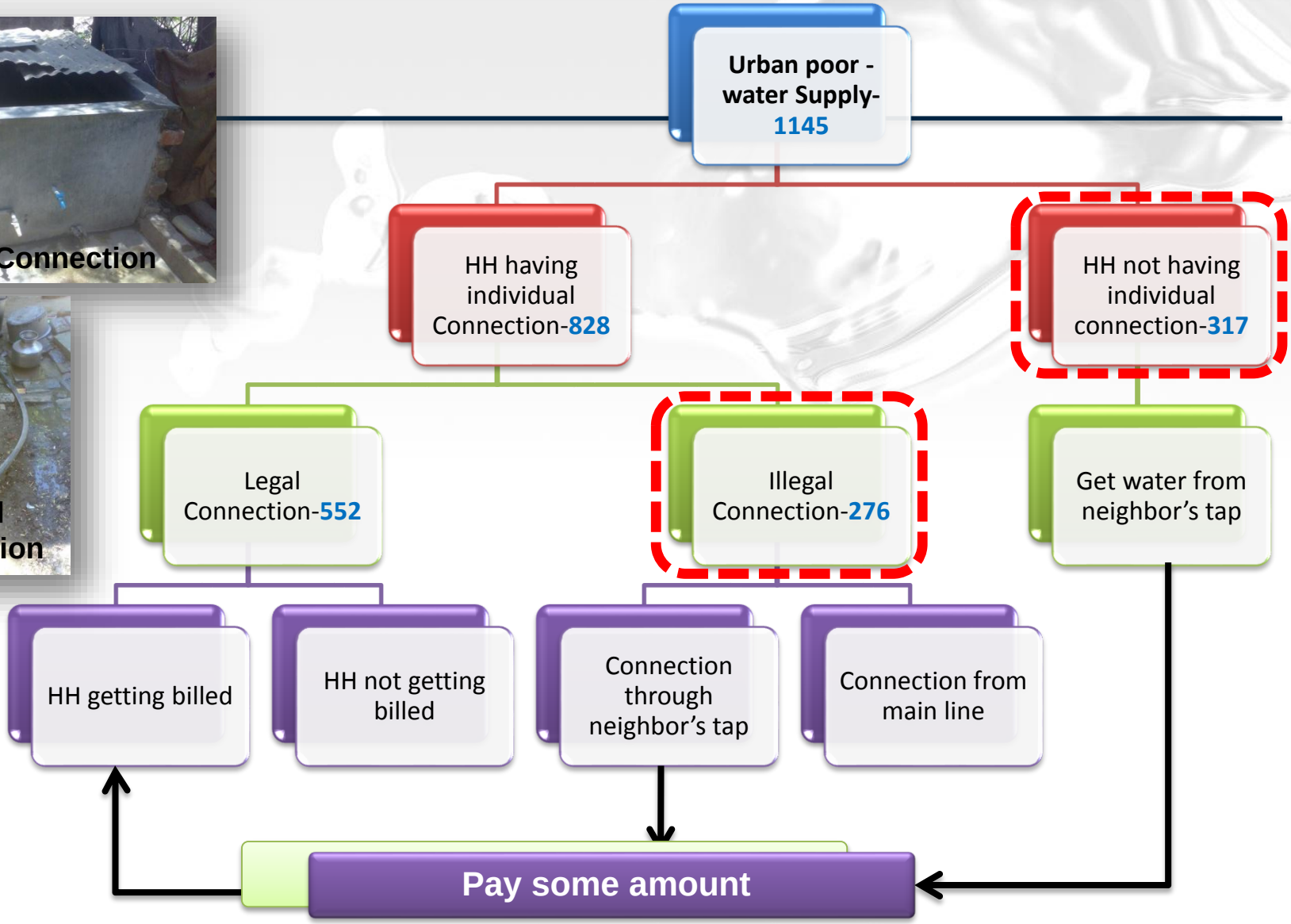


➢ **Key Reasons Identified for current situation :**

- Water connection is given against the **submission of property tax bill**.
- Majority H.H. are **not enrolled on Property Tax roll** of the ULB. The entry point to get a water connection is difficult for the urban poor.
- **Distribution infrastructure does exist**, but variable infrastructure costs for getting individual connection has eluded most H.H. from taking connections. *(500-1000) Rs., Source: Primary Survey)*
- Rehabilitation plans by the Govt. at times creates insecurity and inhibits them for investing to get a water connection.

Water in Urban Poor Localities





Process of Connecting Urban Poor to Water Network

Revenue collection from Slum

- **Special Technical Cell**
  - Other Water Works
- Collection in-charge (Slums)
  - Collection Kiosks
- Collection Officer for individual Slums

Step 1: Site visits by Technical Cell Engineer

↓

Step 2: Assess the costs involved in giving individual HSC's and resolve matters of subsidy

↓

Step 3: Policy decisions – Dispense proof of property bill as entry point. Uniform connection rates, Citizen card.

↓

Step 4: Meter all the Legal Connections. Assess water demand and place upper limits.

↓

Step 5: Distribute application forms and collect token connection fee

Tariff for Urban Poor

	Water Quantity	Connection Charge(Rs.)	Actual Cost to Supply water per HH Annually	Tariff-Annually (Rs./year)
Current Situation Year 2008	110 lpcd	Fixed Cost (260-Harijan) (500-General) + Variable cost (550 to 1000Rs.) + Other costs	1068	Flat rate – 240
Proposed Situation Year 2009	**135 lpcd**	**Fixed Cost (260-Harijan) (500-General)**	1210	**Flat rate-360**
Proposed Situation Year 2020	**135 lpcd**	**Fixed Cost (260-Harijan) (500-General)**	**1330**	**Flat rate-685***

* The slum H.H. have been metered but are charged flat as charging them volumetrically will cost them very high. But if they consume more than the stipulated limit, they will be charged directly proportional to the usage and at actual cost of production per kl of water

Metering - Phase II A

Residential Zone

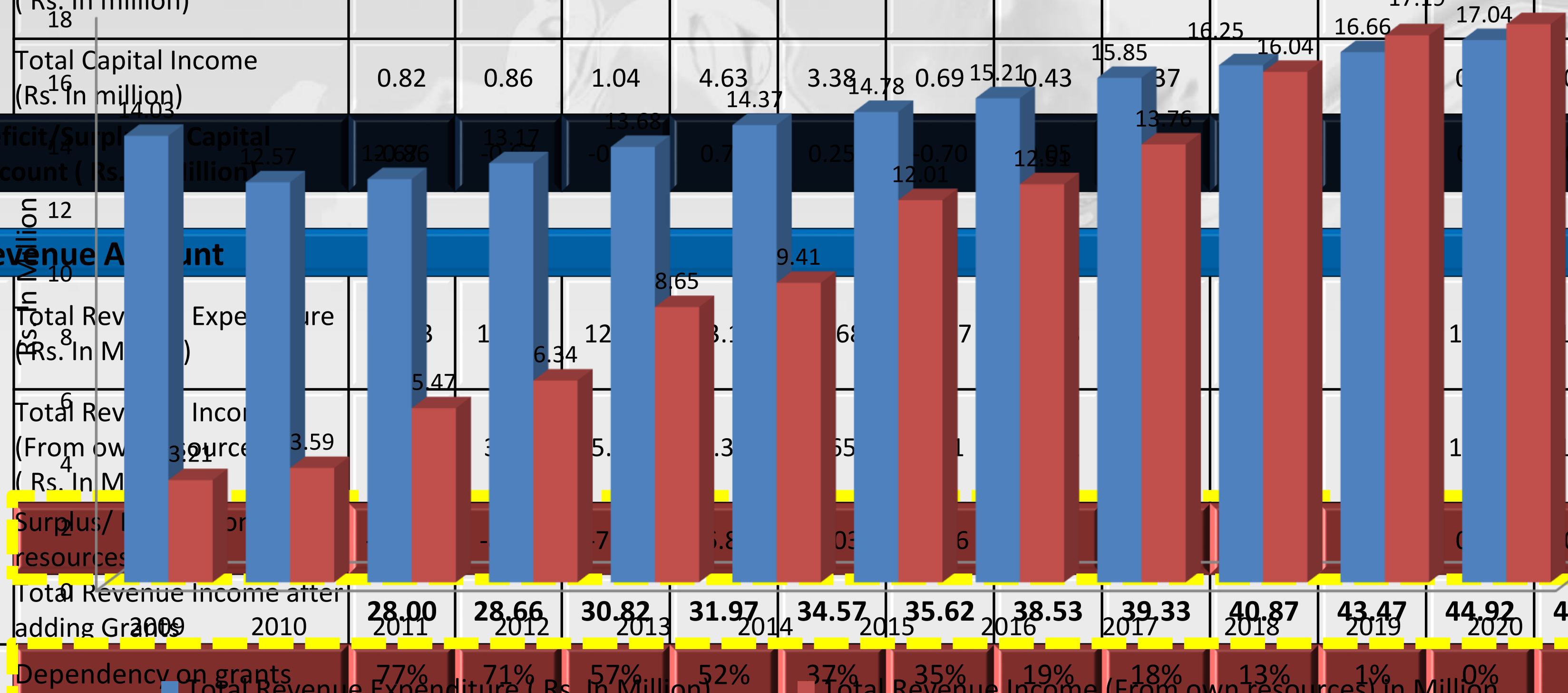
Metering in Residential Zone

Phase-II A

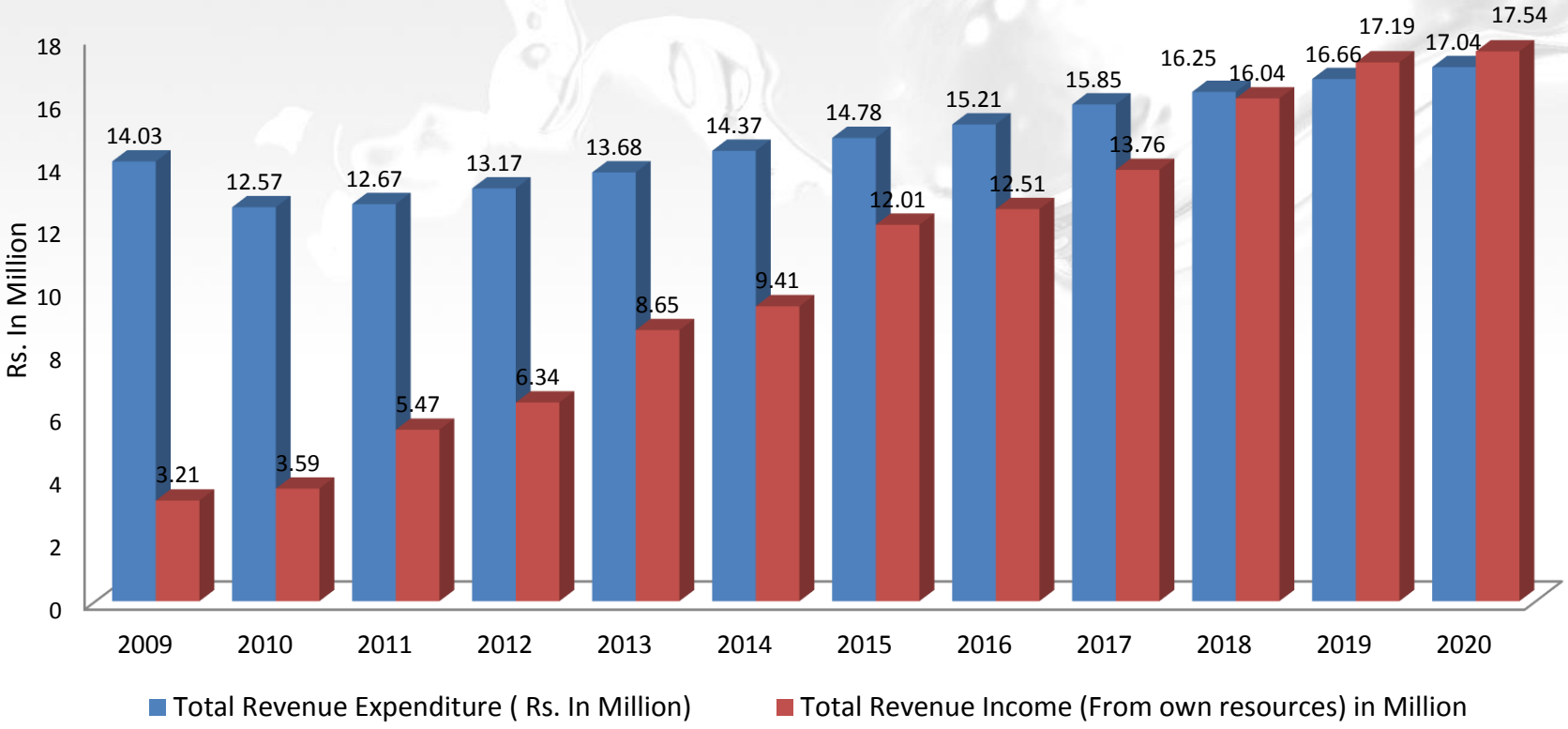
Current Year-08		2009	2015	2020
Flat Rate -240rs. per HH annually	Analog Water Meter 	Flat rate-360rs. Per HH annually	Charge 4.50 rs./Kl	Charge 5.40rs./Kl
Domestic Revenue 1.31 Million	Metering + Volumetric Tariff	Domestic Revenue 1.49 Million	Domestic Revenue 7.88 Million	Domestic Revenue 10.9 Million
Share in Total Revenue Income 87%	 Non-Mechanical Water Meter	Share in total Revenue income 46%	Share in total Revenue income 66%	Share in total Revenue income 62%
Actual cost to provide water to a HH 200kl x 5.38/kl = 1080 rs.				

Financial Summary

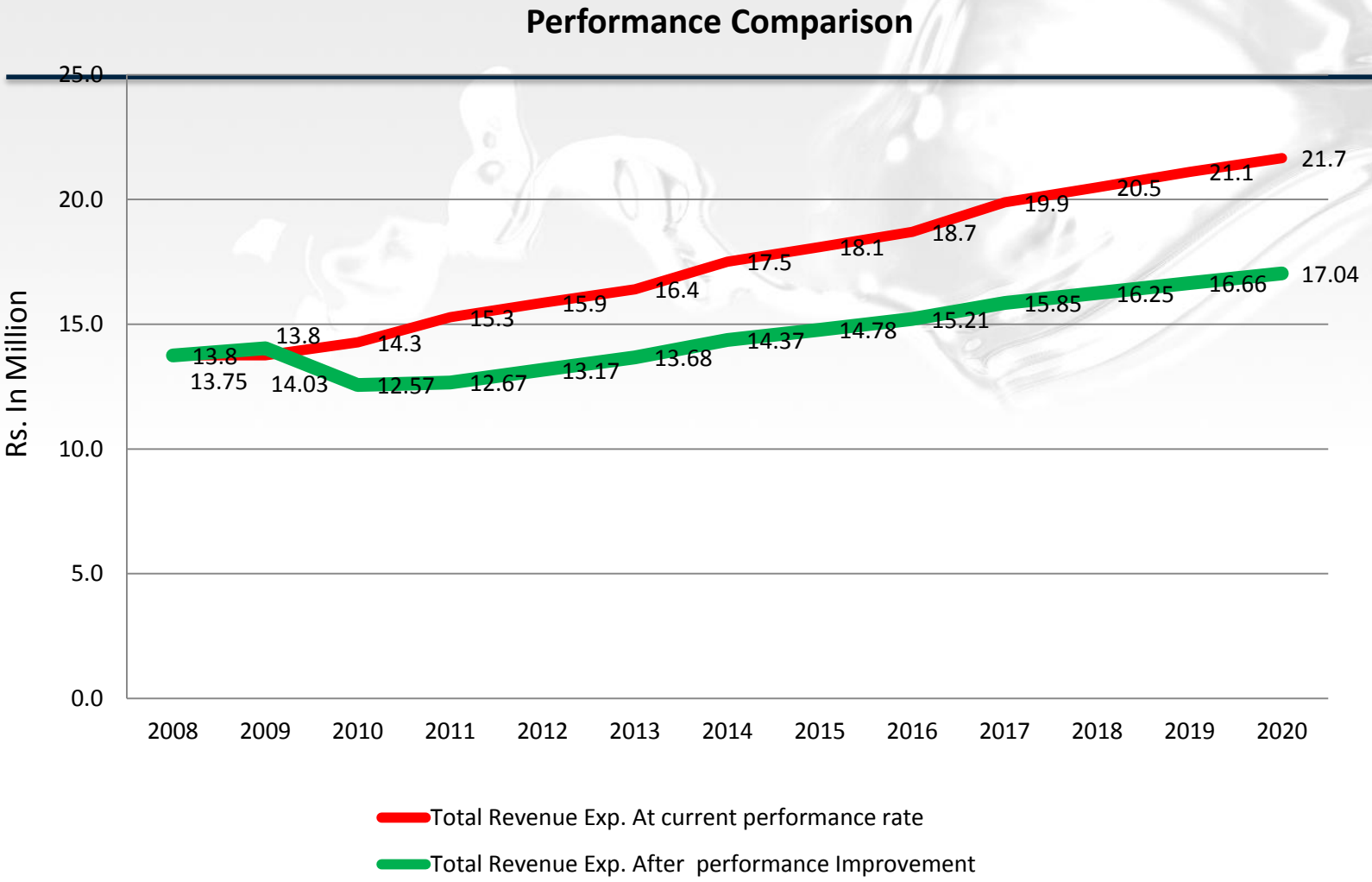
Financial Operation Plan	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Capital Account												
Total Capital Expenditure (Rs. In million)	1.69	1.53	1.29	3.91	3.13	1.40	0.38	0.34	0.34	0.34	0.34	0.35
Total Capital Income (Rs. In million)	0.82	0.86	1.04	4.63	3.38	0.69	0.43	[illegible]	[illegible]	[illegible]	[illegible]	0.39
Deficit/Surplus in Capital Account (Rs. In Million)	[illegible]	[illegible]	[illegible]	[illegible]	0.25	-0.70	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.04
Revenue Account												
Total Revenue Expenditure (Rs. In Million)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Revenue Income (From own resources) (Rs. In Million)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Surplus/ Deficit from own resources	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.50
Total Revenue Income after adding Grants	28.00	28.66	30.82	31.97	34.57	35.62	38.53	39.33	40.87	43.47	44.92	45.59
Dependency on grants	77%	71%	57%	52%	37%	35%	19%	18%	13%	1%	0%	0%
Deficit/Surplus in Revenue Account (Rs. In Million)	13.96	16.09	18.15	18.80	20.90	21.25	23.74	24.12	25.02	27.22	28.27	28.55
Deficit/Surplus in ULB account	13.10	15.42	17.91	19.52	21.15	20.55	23.79	24.15	25.06	27.26	28.31	28.59



Financial Summary

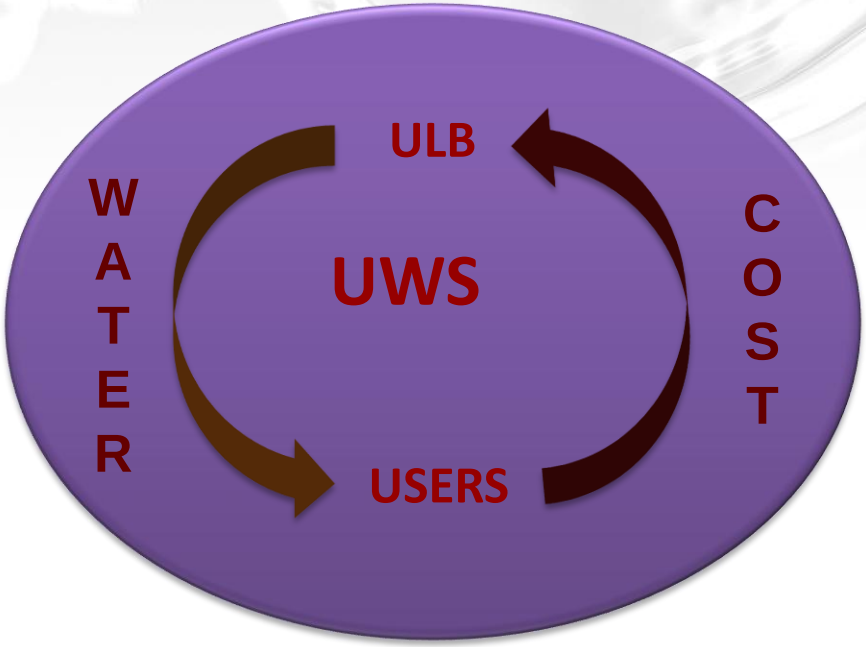


Comparison


Performance Comparison
Rs. In Million
25.0
20.0
15.0
10.0
5.0
0.0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
13.8
13.8
14.3
15.3
15.9
16.4
17.5
18.1
18.7
19.9
20.5
21.1
21.7
13.8
13.75
14.03
12.57
12.67
13.17
13.68
14.37
14.78
15.21
15.85
16.25
16.66
17.04
Total Revenue Exp. At current performance rate
Total Revenue Exp. After performance Improvement

GOAL Achieved

EQUITABLE SERVICES ⟷ COST RECOVERY REVENUE STRATEGIES ⟷ SUSTAINABLE REVENUE STRATEGIES

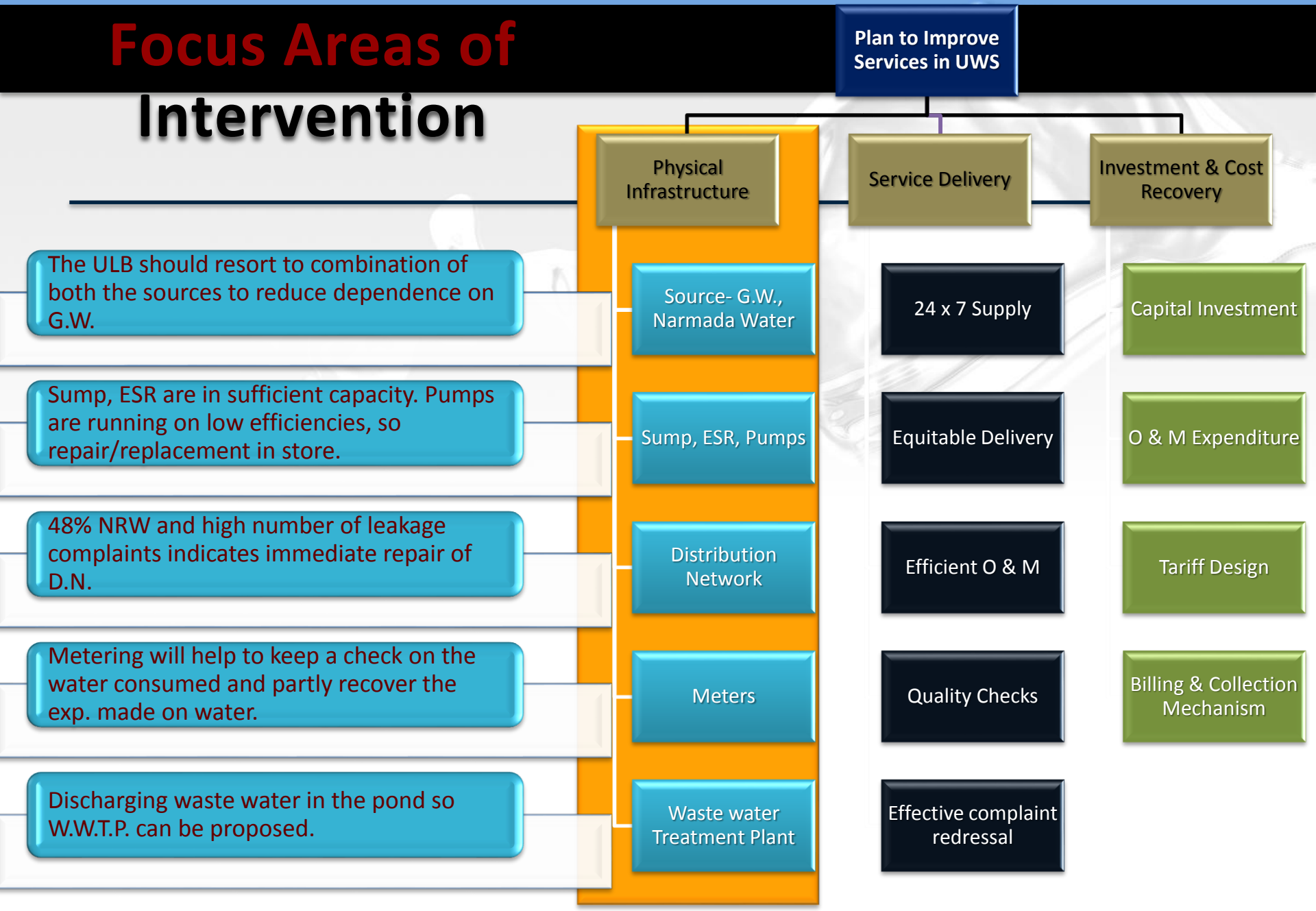


Over to Next Group

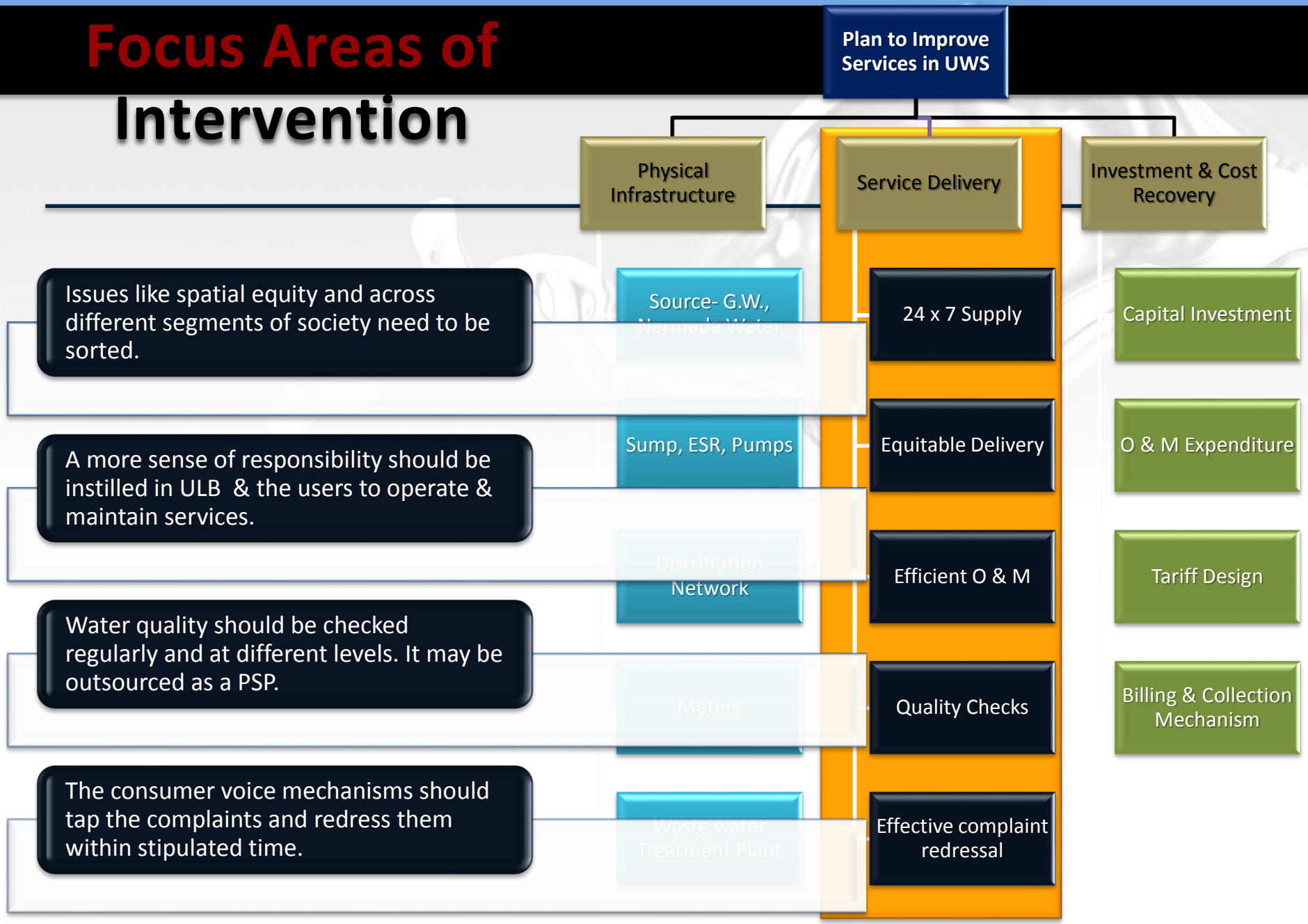
Indicators Considered

Sr.no	Categories	Performance Indicator		Data Required			Formula	Value
		Indicator	Unit	Data	Unit	Data		
1	Access & Coverage	Household level coverage of direct water supply connections	%	Total number of households in the service area (a)	Number	6921	Coverage = [(b/a)*100]	71%
				Total number of households with direct water supply connection (b)	Number	4926		
2	Service Level & Quality	Per capita quantum of water supplied	(lpcd)	Water supplied to the distribution system (a)	litres per month	6032000	(a/c)/b	245 lpcd
				Population served (b)	Number	24630		
				Number of days in the month (c)	Number	30		
				Additional information in respect of areas where water is supplied at a rate less than 70 lpcd	(lpcd)			
		Quality of water supplied	%	Total number of water samples in a month (a)	Number per month	N.A.	Quality of water supply = [(b / a)*100]	N.A.
				Number of samples that meet the specified potable water standards in that month (b)	Number per month			
		Continuity of water supply	Hours per day	Average hours of pressurized supply per day (a)	Hours	4	The average of the seven days should be considered for that month.	4
3	Efficiency and cost recovery	Extent of Non-Revenue Water	%	Total water produced and put into the transmission and distribution system (a)	million litres per day (or) month	7000000	Non-Revenue Water = [((a - b) / a)*100]	48%
				Total water sold (b)	million litres per day (or) month	3677300		
		Cost recovery in water supply services	%	Total annual operating expenses (a)	Rs Crores per annum	11787445	Cost recovery = [(b / a) * 100]	11%
				Total annual operating revenues (b)	Rs Crores per annum	1319401		
		Efficiency in collection of water related charges	%	Current revenues collected in the given year (a)	Rs. Crores per annum	1339279	Collection Efficiency = [(a / b) * 100]	40%
				Total operating revenues billed during the given year (b)	Rs. Crores per annum	3333399		
		Extent of metering of water connections	%	Total number of direct service connections (a)	Number		Extent of metered connections = [(c + d)/ (a + b)]*100	0
				Total number of public standposts (b)	Number			
				Number of metered direct service connections (c)	Number			
				Number of metered public stand posts (d)	Number			
4	Customer Services	Efficiency in redressal of customer complaints (24 hrs)	%	Total number of water supply related complaints received per month (a)	Number per month	23	Efficiency in redressal of complaints = [(b / a)*100]	100%
				Total number of complaints redressed within the month (b)	Number per month	23		
5	EQUITY	Coverage of water supply connections in 'slum settlements'	%	Total number of slum households in the service area (a)	Number	1145	Coverage = [(b/a)*100]	Not available
				Total number of slum households with direct water supply connection (b)	Number	not available		

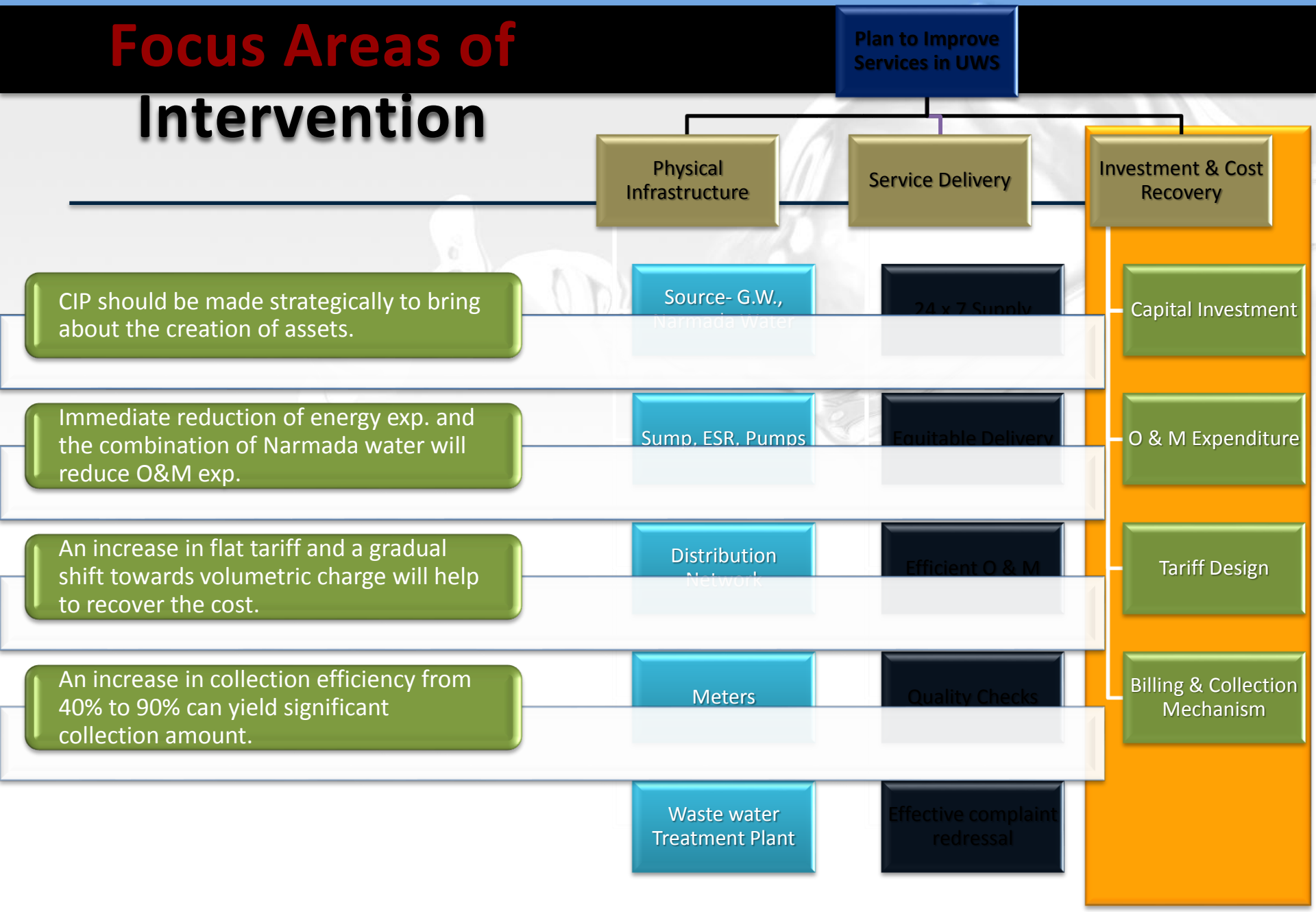
Focus Areas of Intervention



Focus Areas of Intervention



Focus Areas of Intervention



Reducing O & M Expenditure

Phase-I A

- **Source of water:** Cost of supply of KL of ground water vis-à-vis Narmada Water.

  - Cost of pumping water from sump to OHT is around 1/5 to the cost of pumping the same amount of water from Bore to Sump.

COST IMPLICATION: COMBINATION OF SOURCES OF WATER (2009)										
	Population	HH	Domestic Water Demand (kl)	Borewell Water	Narmada Water	Cost of Ground water (Rs/kl)	Cost of Narmada water (Rs/kl)	Cost (Rs/Kl)	Total Cost Annually (Million)	Difference (Million)
	35372	7074	4780	100%	0%	5.38	4.93	5.38	13.68	
1	35372	7074	4780	10%	90%	5.38	4.93	4.98	12.71	1.03
2	35372	7074	4780	30%	70%	5.38	4.93	5.07	12.94	0.80
3	35372	7074	4780	50%	50%	5.38	4.93	5.16	13.17	0.57
4	35372	7074	4780	70%	30%	5.38	4.93	5.25	13.40	0.34

Cost to provide Water to a Household				
	Consumption	Cost per KL	annual Cost (HH)	Difference
Current Scenario	110	5.38 /-	1080 /-	
Supply with Combination 1	110	5.07 /-	1017/-	63/-
Supply with Combination 2	110	5.16 /-	1035/-	45/-

Reducing O & M Expenditure

- **Higher Energy Expenditure:**

  - Less efficient pumps consume more electricity
  - Current water supply is 100% dependent on ground water-When ground water level goes down, the pumps are made to run for longer duration, leading to higher energy costs.

ENERGY CONSUMPTION OF PUMPS (Rs. In Million)						
Sr. No	Bore Name	Current Efficiency	Total Exp. (Rs/Month)	Proposed Efficiency	Total Exp. (Per Month)	Reduction in Exp. (Annually)
1	Rupal	65%	0.09	85%	0.07	0.26
2	Srinagar	43%	0.13	85%	0.07	0.80
3	Havada	35%	0.04	85%	0.02	0.28
4	Madhuvan	49%	0.07	85%	0.04	0.35
5	Trimurti	75%	0.12	85%	0.10	0.17
6	Ramnagar	53%	0.02	85%	0.01	0.08
7	Cinema		0.01		0.01	0.00
8	Yogeshwar	48%	0.07	85%	0.04	0.35
Total			**0.55**		**0.35**	**2.29**

Reducing O & M Expenditure

Phase-I A

- **Distribution Network:** Pressure control valves must be installed at each junction, so during supply period, pipes don't break due to higher pressure of mass supply of water and hence UFW can be reduced. By reducing UFW to 20% (Ideal Case for Indian Cities) from 48% will reduce the expenditures by around **4.2 million** annually as per the current cost of production.

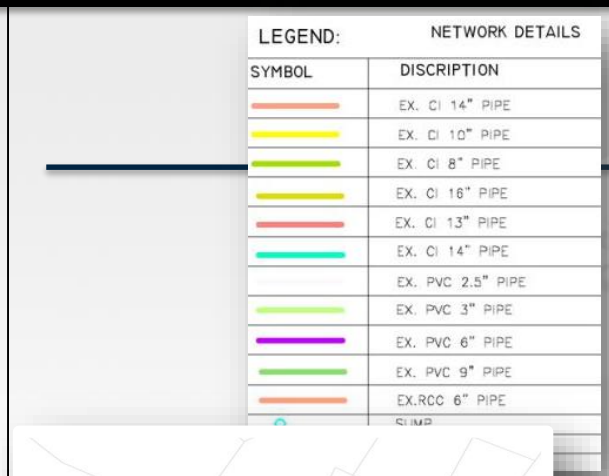
Without reducing NRW													
				MLD	NRW (MLD)	NRW (MLD)	Total supply	Cost/ KL (Current)	Cost Per KL (Total)	Cost per KL of Ground water (After Installing new Pumps)	Cost per KL (after All Changes)	Total Cost (in Million)	Reduction in Expenditure (in Million)
Borewell Water	Narmada Water	2008	Current Scenario	3.42	48.77%	3.41	7.00	--	--	5.38	--	13.68	
30%	70%	Scenario 1	New cost with current supply	3.42	48.77%	3.41	7.00	5.38	5.07	4.14	4.54	11.61	2.07
50%	50%	Scenario 2		3.42	48.77%	3.41	7.00	5.38	5.16	4.14	4.43	11.32	2.36
70%	30%	Scenario 3		3.42	48.77%	3.41	7.00	5.38	5.25	4.14	4.31	11.02	2.66
After Reducing NRW													
30%	70%	Scenario 1	Current Demand	3.42	20%	0.68	4.10	5.38	5.07	4.14	4.54	6.81	6.87
50%	50%	Scenario 2		3.42	20%	0.68	4.10	5.38	5.16	4.14	4.43	6.64	7.04
70%	30%	Scenario 3		3.42	20%	0.68	4.10	5.38	5.25	4.14	4.31	6.46	7.21

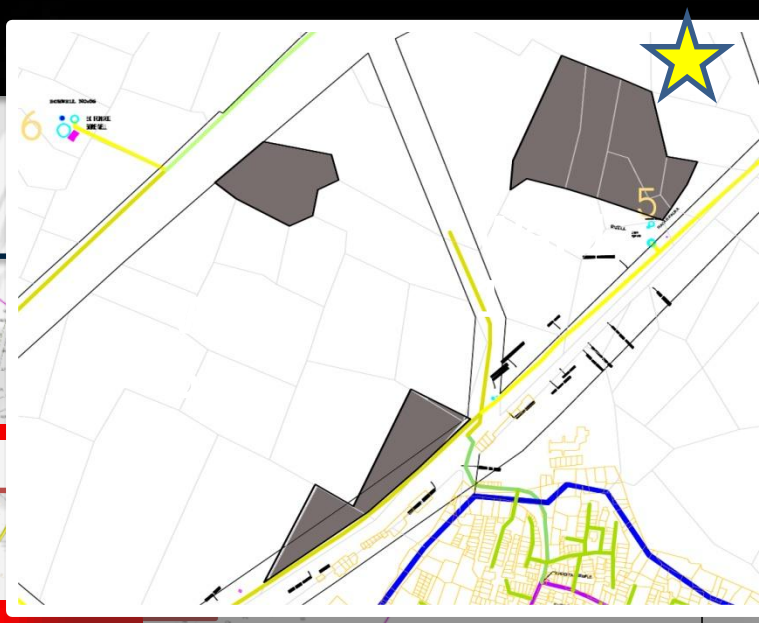
Metering in Industries

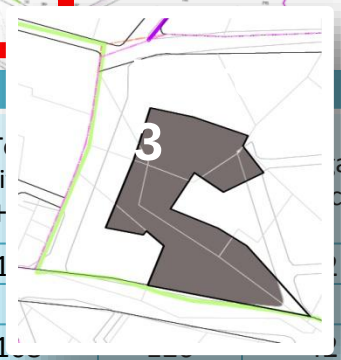
- Currently industrial consumption is average =8 tonnes x 1.1KL x 365 days= 3168 KL.
- Industries are charged at 960 Rs. annually, while the actual consumption cost is 3168 x 5.38=17,045/-
- Conclusion : Industrial connections must be metered urgently and charged at higher rates comparatively to existing rates.

	Year	2009	2011	2013	2015	2017	2019	2020
Industrial Demand	Total Demand with NRW (MLD)	1.056	1.336	1.474	1.782	2.104	2.234	2.279
	Nos. of Industrial Connection	100	112	124	135	145	154	157
Cost of water per KL (in Rs.)		5.49	4.96	4.85	4.82	4.81	4.82	4.83
Revenue Income	Volumetric Rate (Rs./KL)	6	6.60	7.26	7.99	8.78	9.66	9.66
	Increase in Rate	--	10%	10%	10%	10%	10%	10%
	Revenue Collected from Industries (Rs. In million)	**1.64**	**2.41**	**3.03**	**4.11**	**5.40**	**6.43**	**6.56**
	Share in Total Revenue income	**50.98%**	**44.09%**	**35.02%**	**34.23%**	**39.24%**	**37.44%**	**37.42%**

Existing Situation in Slums







Ward

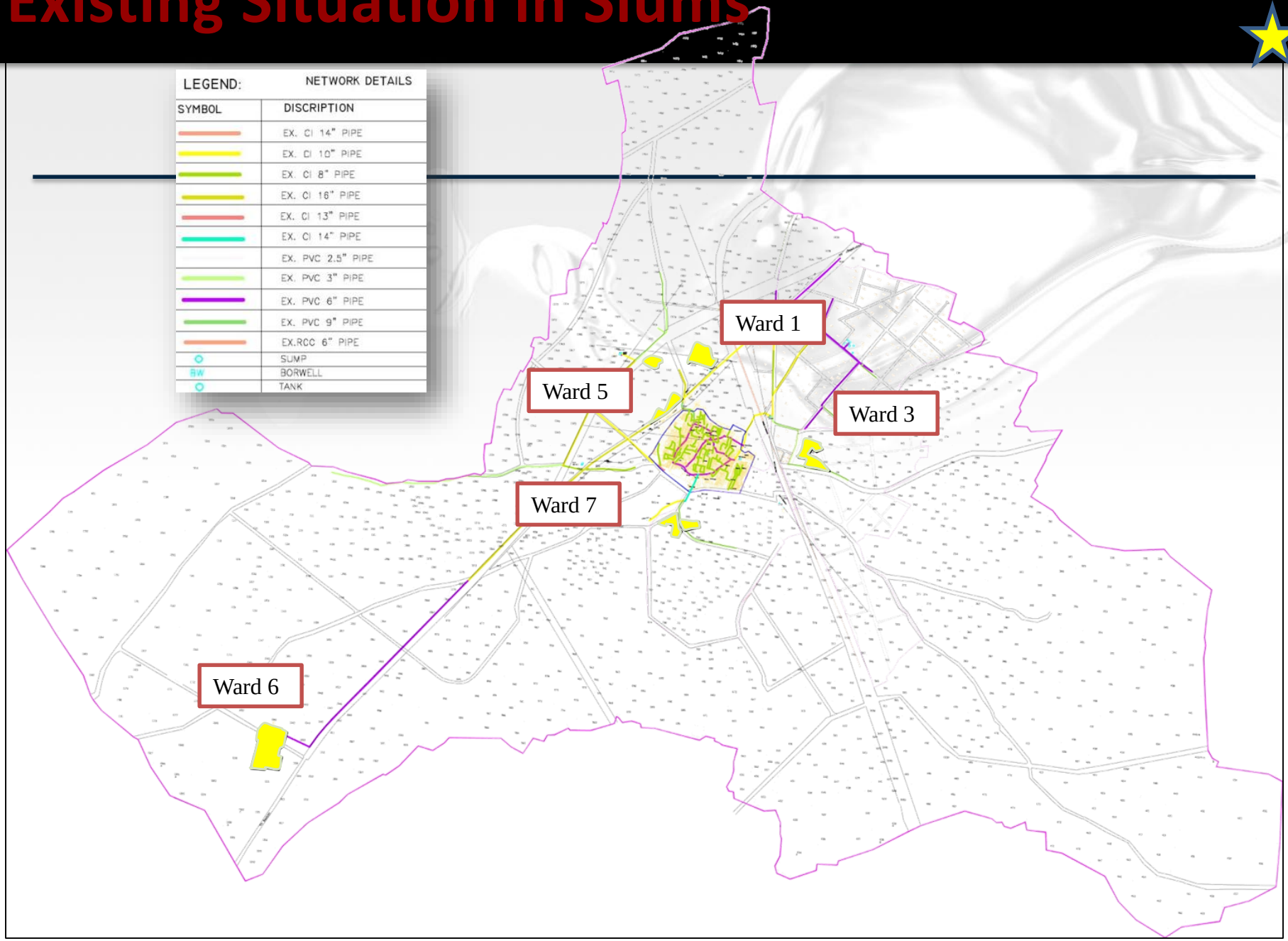
Ward 5

Ward 7

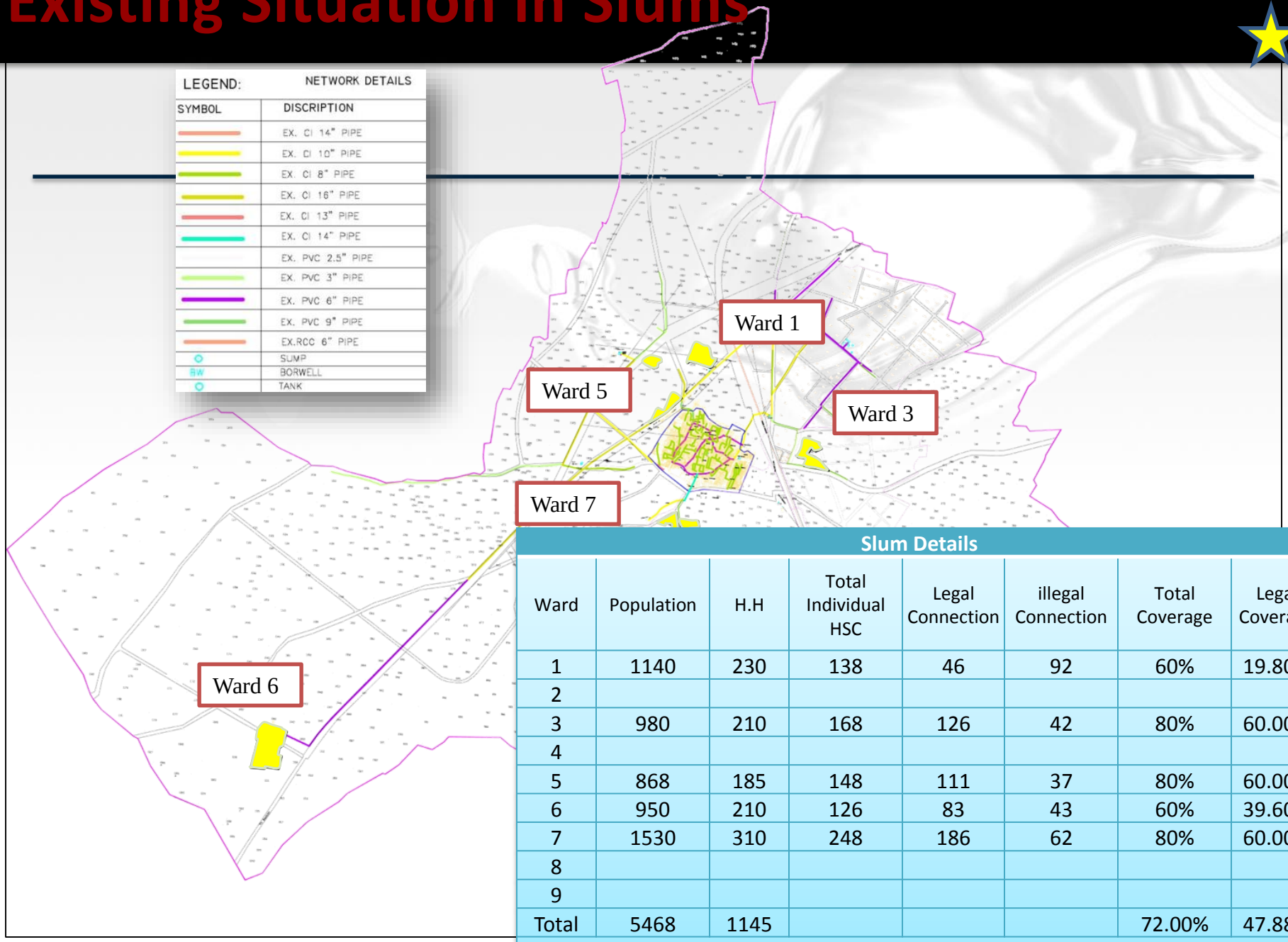
			T… Indi… H…		…al …ction	Total Coverage	Legal Coverage
			1…			60%	19.80%
			1…			80%	60.00%
			148	111	37	80%	60.00%
			126	83	43	60%	39.60%
7	1530	310	248	186	62	80%	60.00%
8							
9							
Total	5468	1145				72.00%	47.88%

Source: Primary Survey

Existing Situation in Slums



Existing Situation in Slums

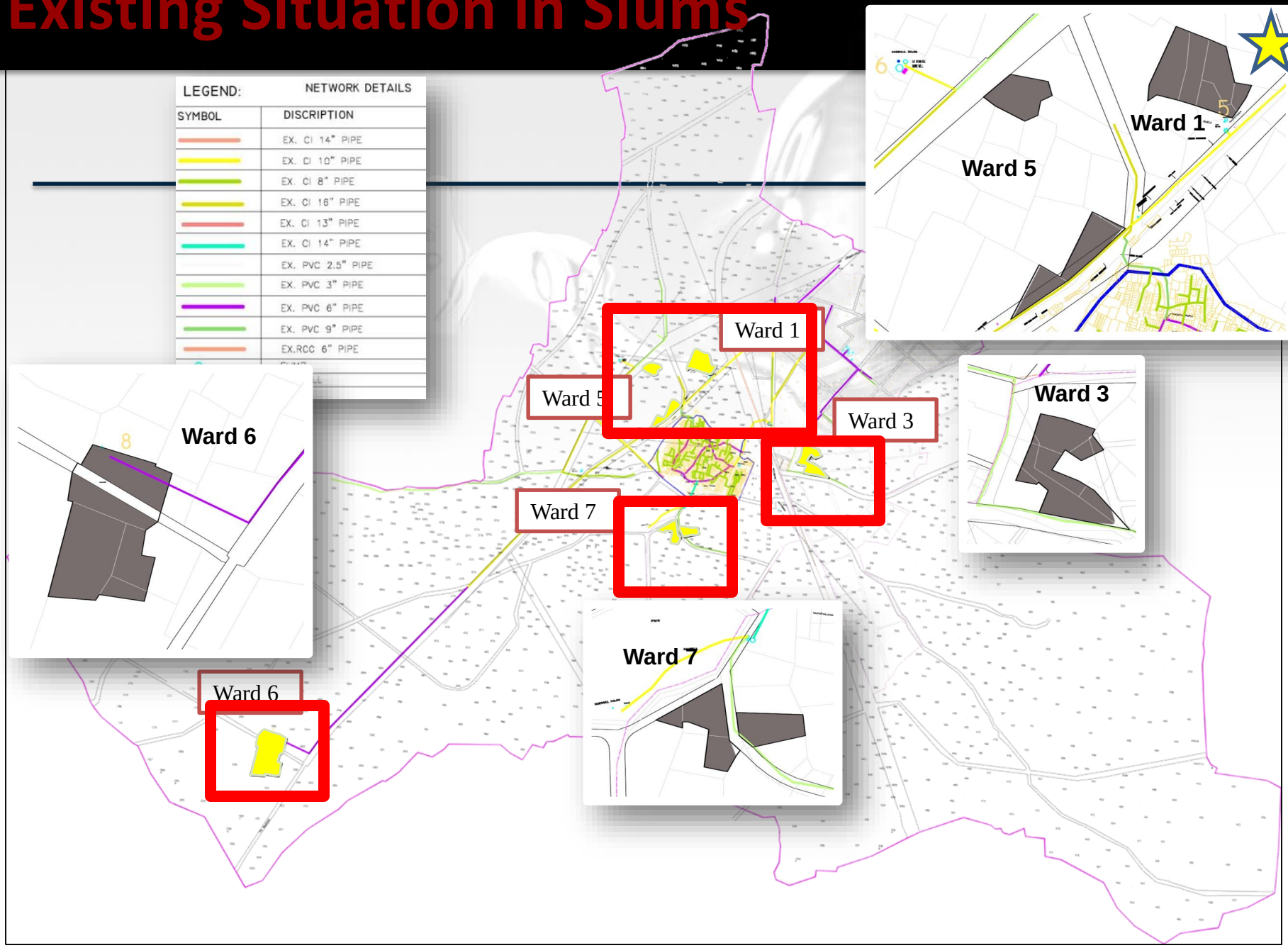


Slum Details

Ward	Population	H.H	Total Individual HSC	Legal Connection	illegal Connection	Total Coverage	Legal Coverage
1	1140	230	138	46	92	60%	19.80%
2							
3	980	210	168	126	42	80%	60.00%
4							
5	868	185	148	111	37	80%	60.00%
6	950	210	126	83	43	60%	39.60%
7	1530	310	248	186	62	80%	60.00%
8							
9							
Total	5468	1145				72.00%	47.88%

Source: Primary Survey

Existing Situation in Slums



Metering in Residential Zones

Phase-II A

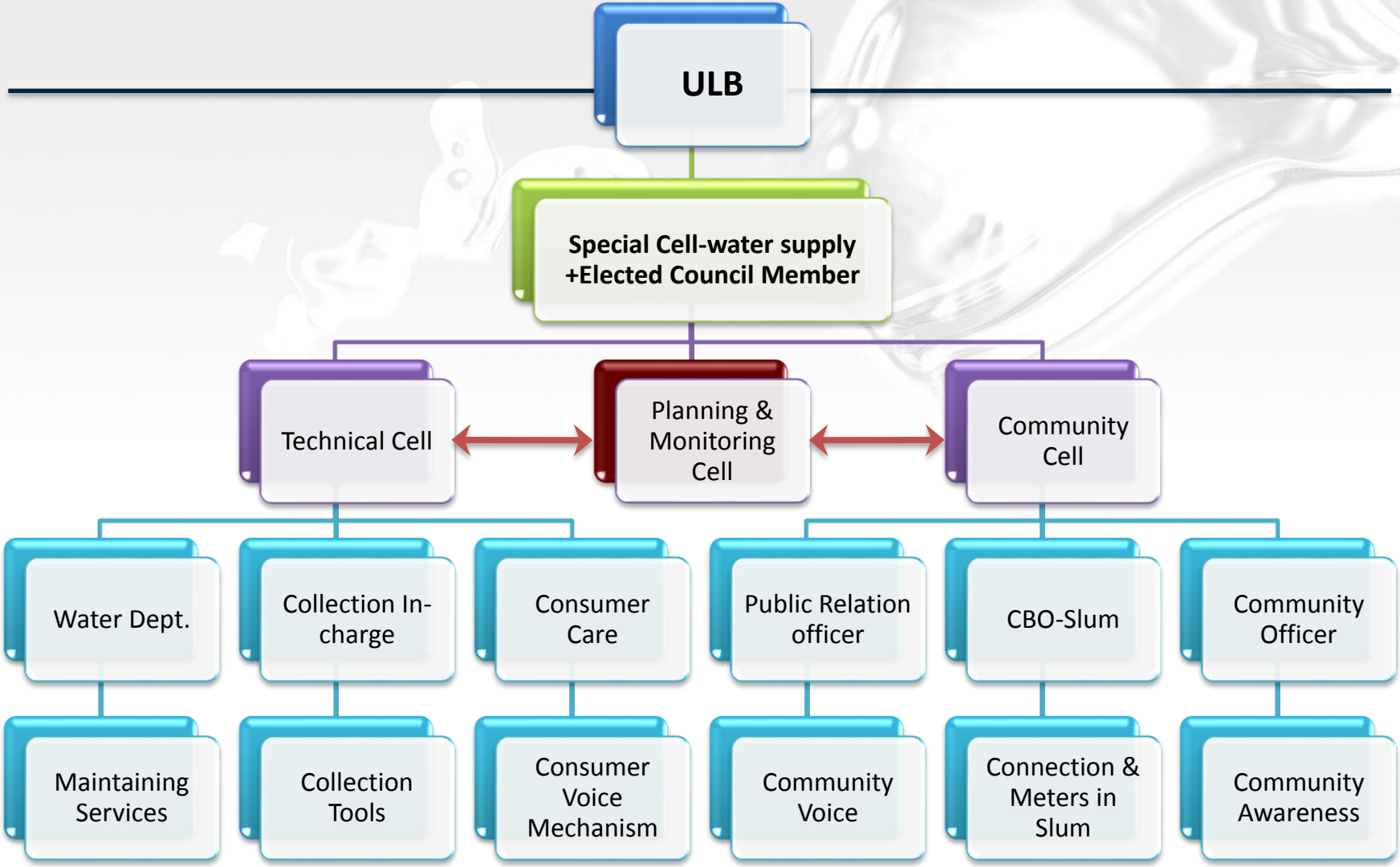
	Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Demographic Profile	Population	35060	35904	37227	38145	39063	39981	40900	41818	42736	43654	44572	45490
	HH	7115	7286	7555	7741	7928	8114	8300	8487	8673	8859	9046	9232
Domestic water Demand	Per Capita supply (LTR)	135	135	135	135	135	135	135	135	135	135	135	135
	Water Demand (MLD)	3.93	4.35	5.07	5.99	6.23	6.44	6.60	6.77	6.91	7.06	7.21	7.36
Water Connection	Total Connections	5445	6354	7505	7808	8067	8269	8475	8659	8843	9029	9219	9412
	%increase in Connection	11%	17%	18%	4%	3%	3%	3%	2%	2%	2%	2%	2%
	HH Coverage	74.73%	84.1%	96.95%	98.49%	99.42%	99.62%	99.87%	99.84%	99.82%	99.82%	99.9%	99.9%
Cost of water per KL (in Rs.)		5.49	4.92	4.96	4.86	4.85	4.82	4.82	4.82	4.81	4.81	4.82	4.83
Revenue Income		HH Bill- 1100											
Water Charge/Tax Non-Slum Population	Flat Rate	360	360	540	540	810	810						
	Volumetric rate (Rs./KL)							4.50	4.50	4.50	5.40	5.40	5.40
	Increase in tariff	50%		50%		50%					20%		
	Volumetric rate (Rs./KL) For Consumption above 245KL/HH								20 % extra			20 % extra	
	Revenue Collected	1.34	1.53	2.70	3.18	4.96	5.16	7.22	7.47	7.63	9.45	9.45	9.45
Water Charge/Tax Slum Population	Flat Rate	312	312	312	406	406	406	527	527	527	685	685	685
	Flat Rate (Increase)	30%			30%			30%			30%		
	Volumetric rate (Rs./KL) For Consumption above 245KL/HH							4.50	4.50	4.50	5.40	5.40	5.40
	Revenue collected	0.14	0.17	0.22	0.41	0.46	0.49	0.66	0.68	0.70	0.94	0.97	0.99
Total Revenue Income (Domestic) (Rs. In million)		1.49	1.70	2.92	3.59	5.42	5.65	7.88	8.16	8.33	10.39	10.72	10.94
	Share In Total Revenue Income	46.23%	47.27%	53.45%	56.64%	62.70%	60.11%	65.56%	65.20%	60.57%	64.74%	62.34%	62.36%

Up to consumption to 245 KL of water, consumer would have been charged at decided rate and above consumption would be charged at 20% extra per KL

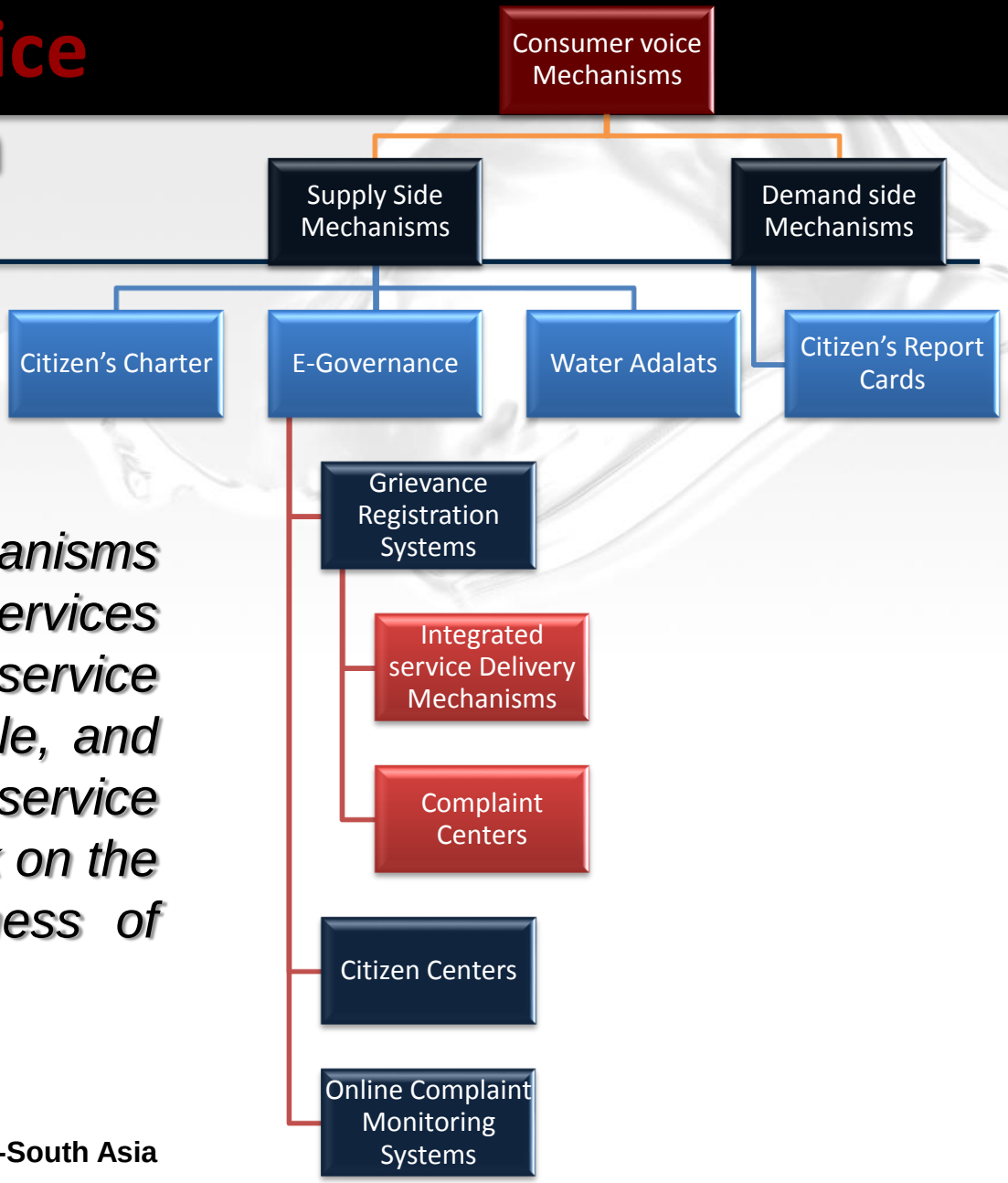
Activity Schedule

Sector Strengthening Policies

“Structure of Special Cell”



Consumer Voice Mechanism



"Consumer voice mechanisms are key to improving services and to making the service provider more accountable, and help consumers in giving service providers useful feedback on the efficiency and effectiveness of their services."

Source: Water and Sanitation Program-South Asia

Community Awareness

Make the community aware of cost /expenditure incurred on water, 24 x 7 supply, Issues related to health and water.

Make them believe that given infrastructure is their asset.

Media

- Articles and advertisement in local news paper and news channels.

Plays

- Play small drama frequently in slum areas.
- Telecast these dramas on tv.

Hoarding & Posters

- Installation of Posters and hoardings in whole city on govt. properties.

Mobile SMS

- Send sms for water expenditures/cost regularly.

Citizen's Charter

- Annually it should be issued with bill.

Water Portal

India water portal

About the Portal | W

HOME ORC

Home > Network > Ask A Ques

- Discussion Forum
- News
- Calendar
- Water Voices
- Blog
- Ask A Question
- Newsletter

16 Apr, 2009 | Sandeepan Chowdhury

Measurement of any water supply is always preferred, be it intermittent or 24x7.

supply duration has nothing to do with measurement. Among the Indian cities, Hyderabad
100% in the urban areas of this city. If it cannot be measured, it cannot be charged. In other
something new.

In case of an intermittent supply when the supply is stopped, generally the pipe remains fill
allowing the meter to rotate. Moreover most of the meters used these days are magnetic flow
is impossible for air to create any effect to register a reading even if it can flow through the p

error free manner?

Abhinav Goyal
abhs1986@yahoo.com

Responses

16 Apr, 2009 | Sandeepan Chowdhury

Measurement of any water supply is always preferred, be it intermittent or 24x7.

supply duration has nothing to do with measurement. Among the Indian cities, Hyderabad
100% in the urban areas of this city. If it cannot be measured, it cannot be charged. In other
something new.

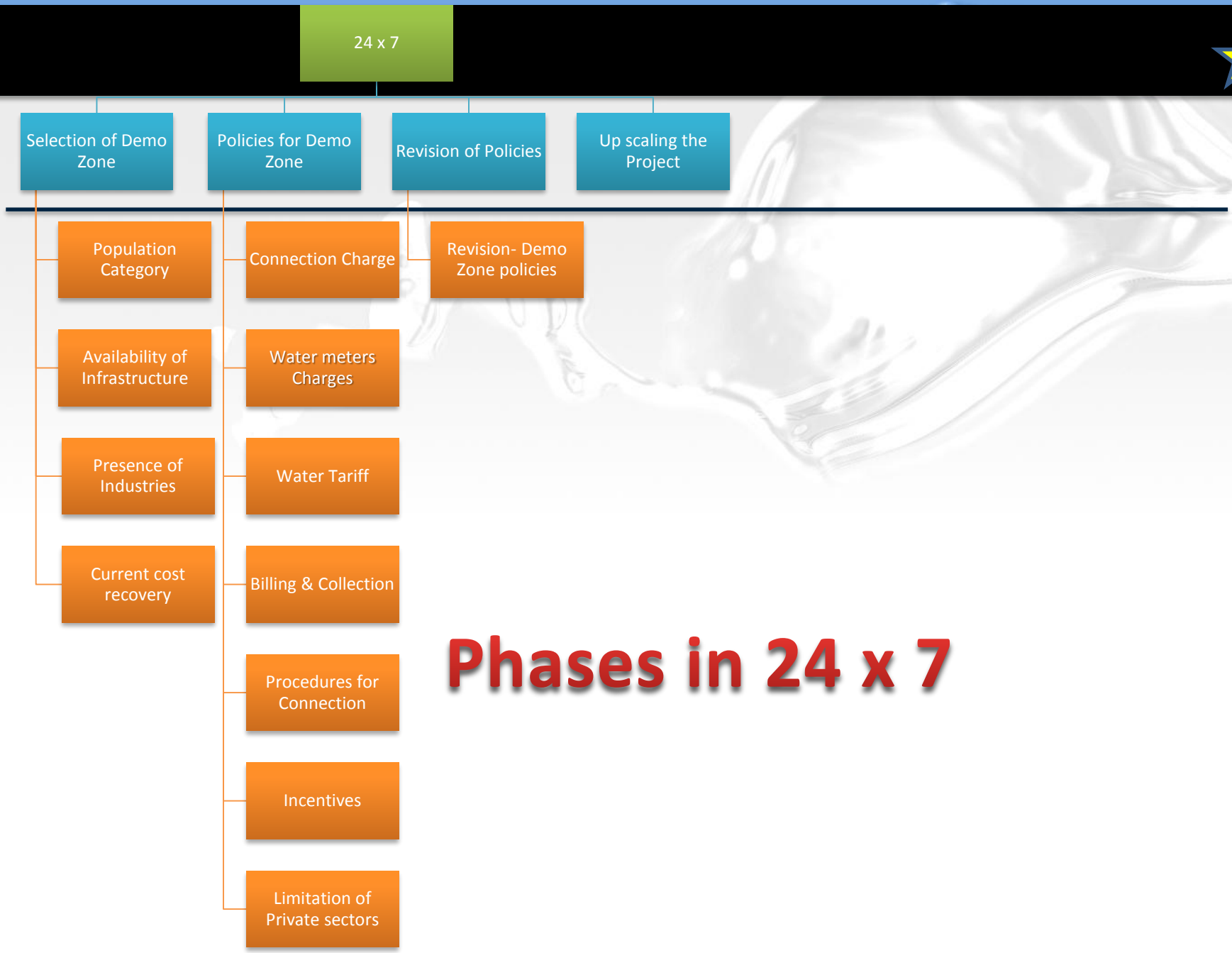
In case of an intermittent supply when the supply is stopped, generally the pipe remains fill
allowing the meter to rotate. Moreover most of the meters used these days are magnetic flow
is impossible for air to create any effect to register a reading even if it can flow through the p

Respond to this Question

More actions and information

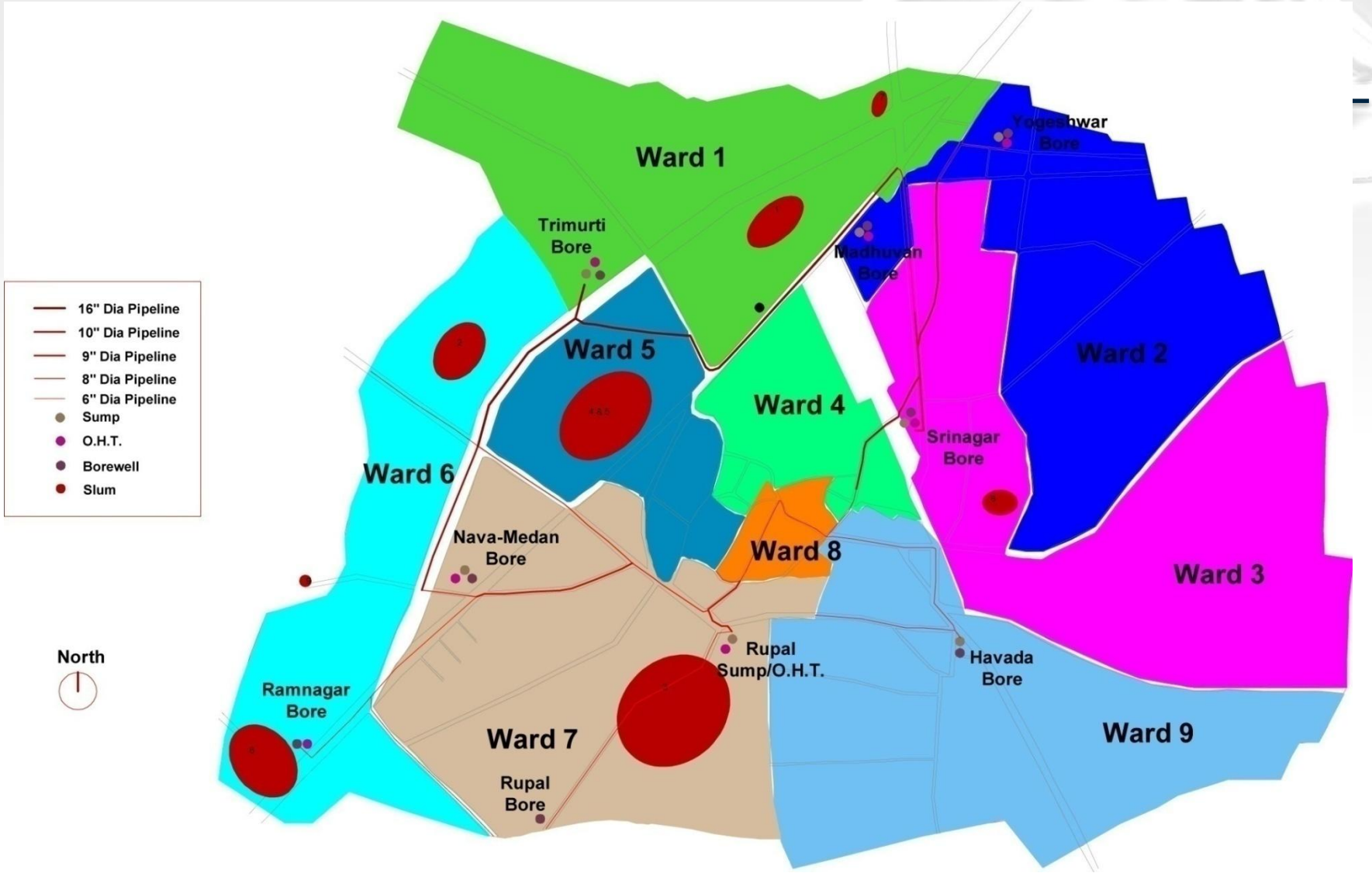
Why 24 x 7 water supply in BAVLA

- Round the clock supply against four hours a day will enhance the satisfaction level for the customers and may motivate them to pay appropriately for better services.
- The burden of coping costs will be reduced significantly.
- Detection of leakages which remained un-noticed can be identified.
- Time wasted hence loss of income in collection of water from stand post for urban poor can be avoided.
- Any contaminants entering the distribution network can be avoided and will largely take care of the quality of water supplied.
- Absence of any high-rises or apartment schemes shall facilitate such project without heavy investments.



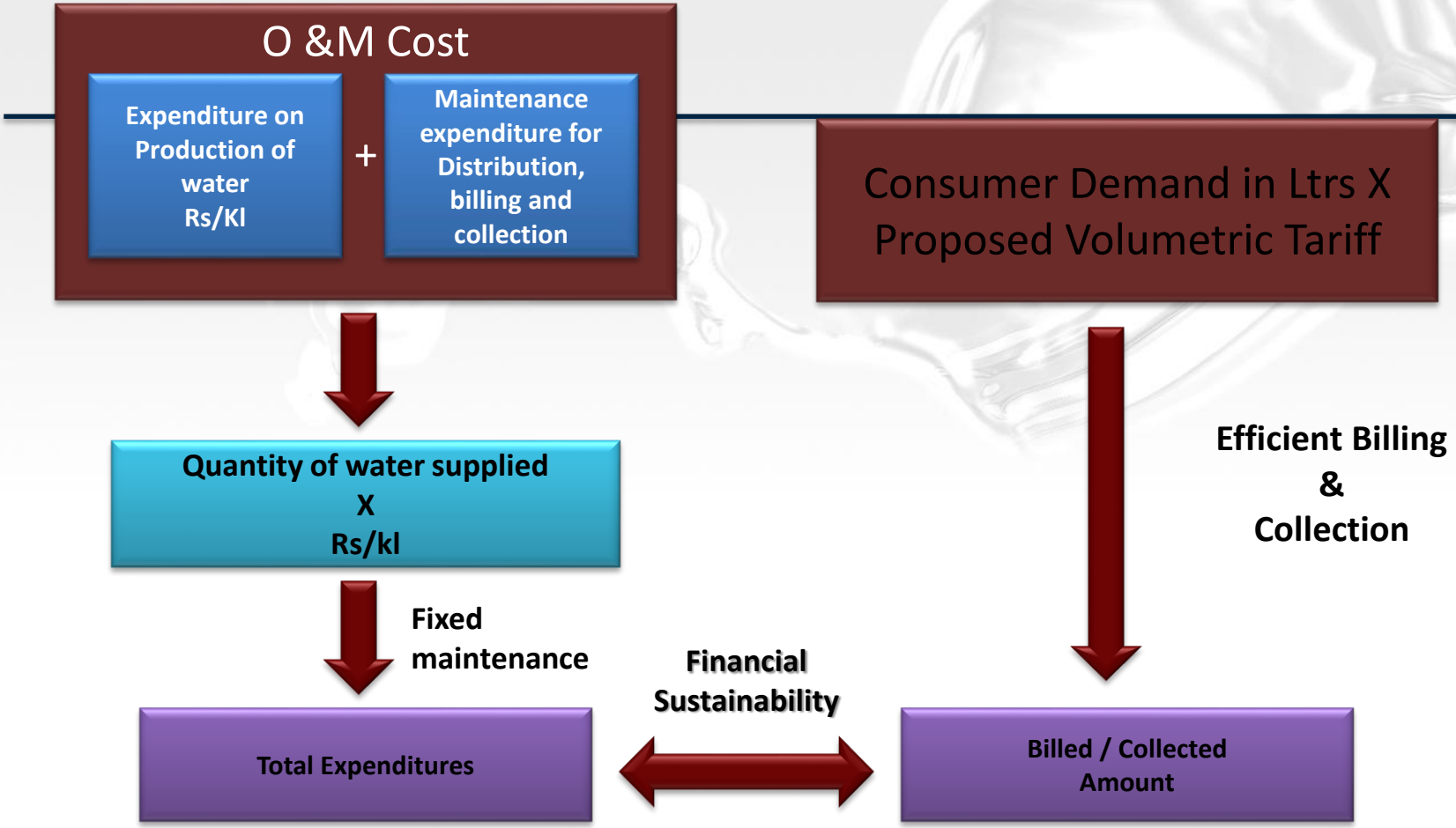
Phases in 24 x 7

Ward Map



Source: Mr. Isaq, Senior Clerk, Bavala Municipality

Tariff Design



- Consumption charges must increase gradually but within short time period to meet the current O&M expenditure to improve financial condition of ULB.

CHANASMA

Performance Monitoring System

BY
BHUMIN • NITIN • VANDANA • SMITA • JITEN • SANGARDASSE

Structure of Presentation:

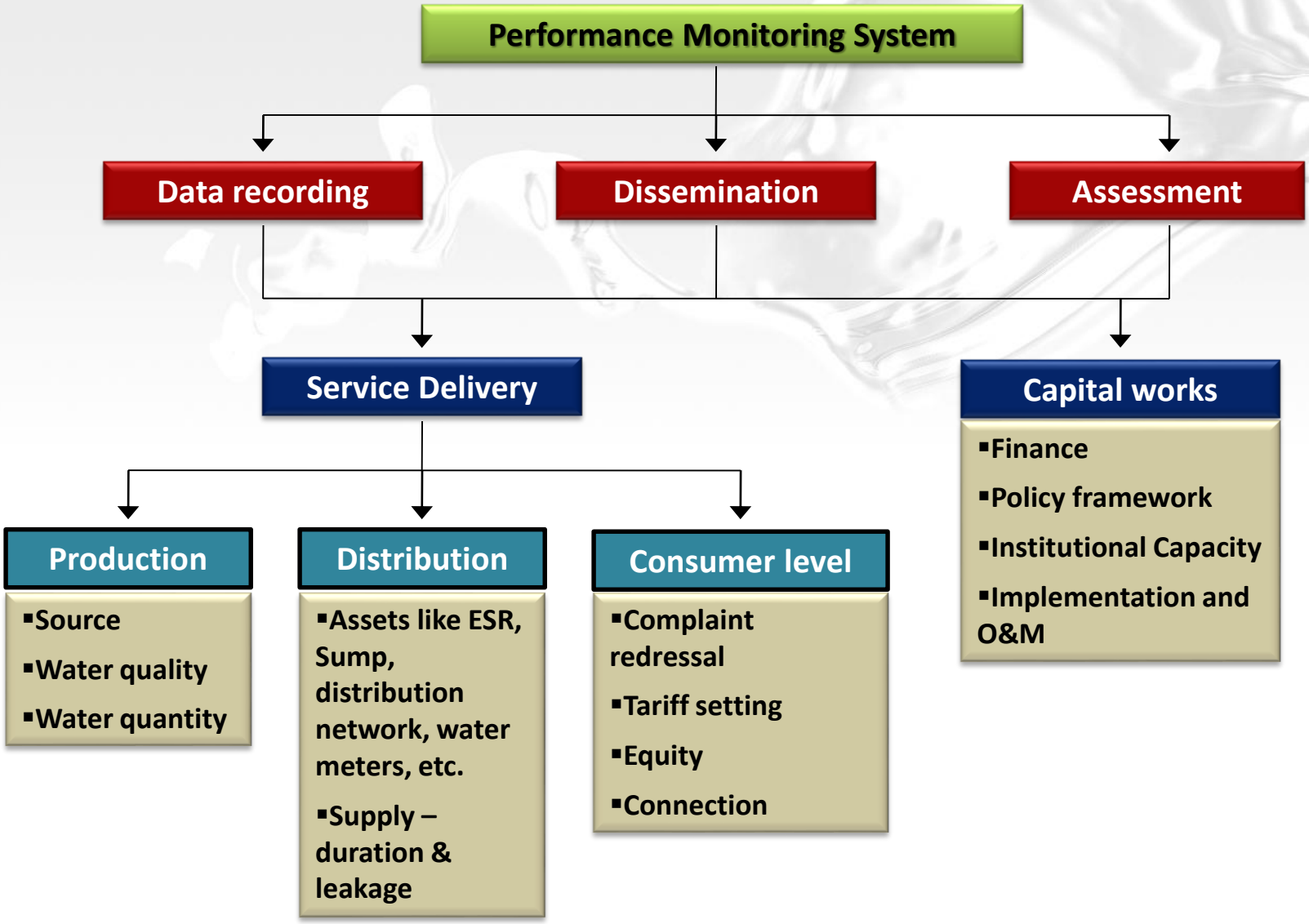
- **Aim & Objectives**
- **PMS structure**
- **Introduction**
- **State – Municipality relation**
- **Key points from the Acts**
  - 74th Constitutional Amendment
  - Gujarat municipality Act
  - GMFB Act
- **Monitoring through DoM**
- **Monitoring through GMFB**
- **Process within ULB**
- **Common Issues**
- **Strategies**

Aim : To achieve good governance in UWSS through monitoring system which is technical, commercial and operationally efficient.

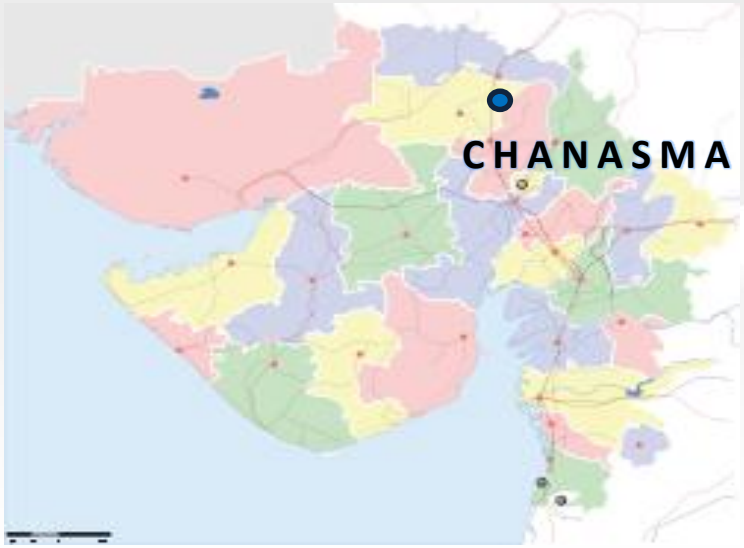
OBJECTIVES:

- To lend a responsive, modern, accountable, transparent and sustainable administration to citizens.
- To monitor the main activities of each function with appropriate performance indicators.
- To provide relevant information to decision makers for rationalizing resource allocation and those responsible for its implementation.
- To evolve an efficient and effective Management Information System.
- To rationalize resource allocation

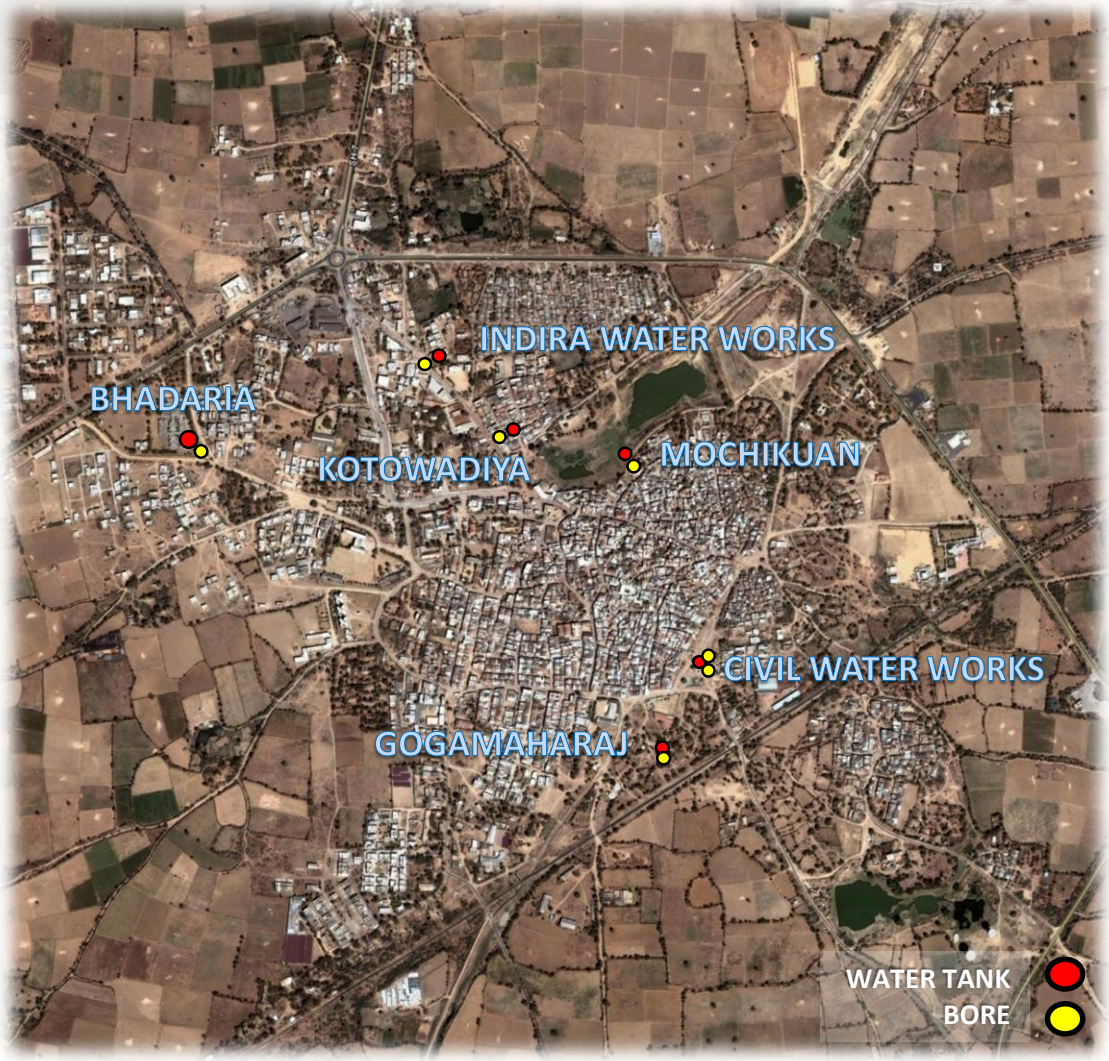
Performance Monitoring System Structure



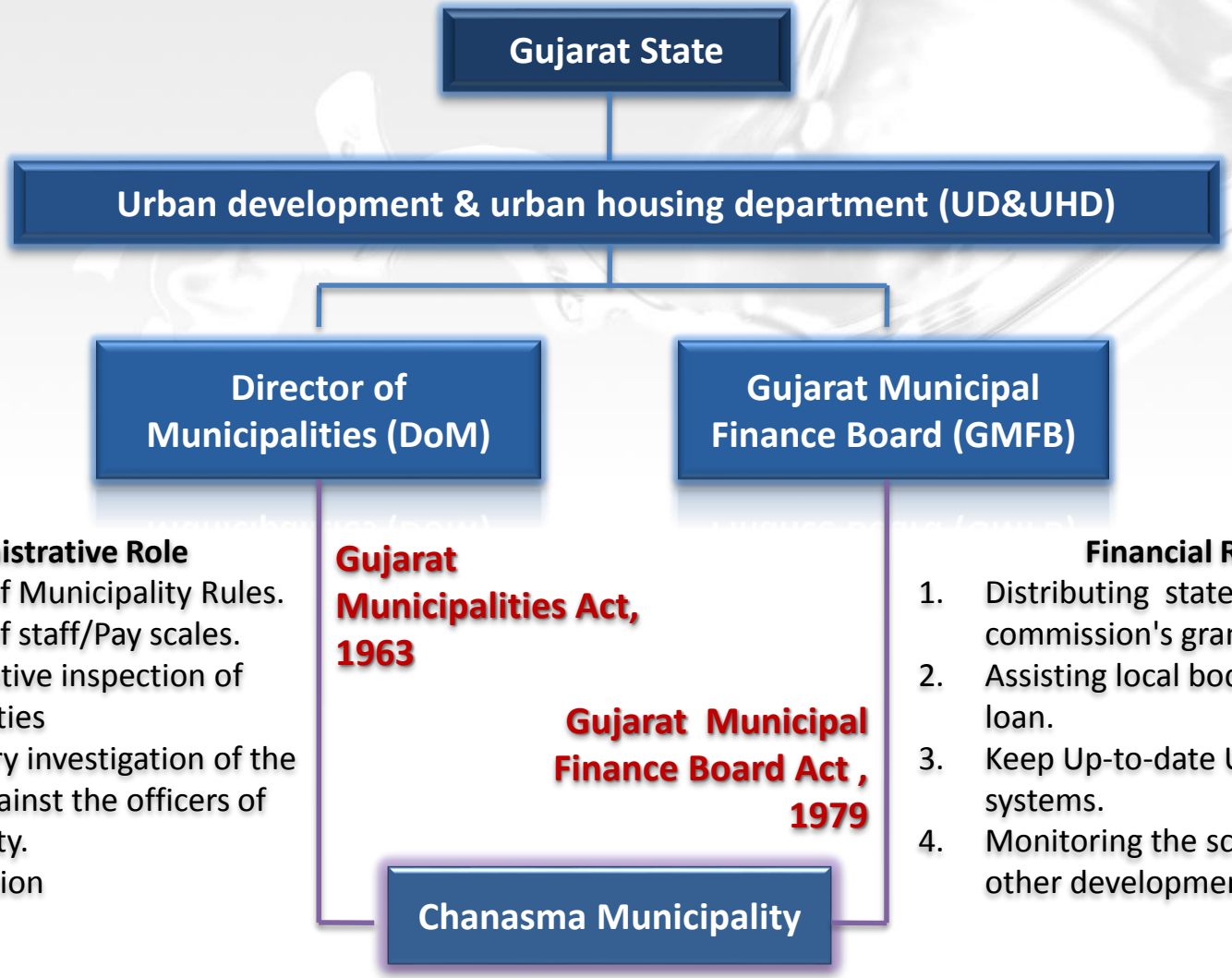
Chanasma Municipality introduction



District:	**Patan**
Population:	**15822 (2001), 18353 (2008)**
Area :	**1.5 Sq km**
Water supply **1. Ground Water (Bore well)** **2. Narmada pipeline**	**2.5 MLD** 1.3 MLD (@ 6 Rs/ kl) 1.2 MLD (@ 4 Rs/ kl)



State to ULB monitoring:



Administrative Role

1. Approval of Municipality Rules.
2. Approval of staff/Pay scales.
3. Administrative inspection of Municipalities
4. The primary investigation of the charges against the officers of Municipality.
5. Rehabilitation

Financial Role

1. Distributing state finance commission's grants.
2. Assisting local bodies to take loan.
3. Keep Up-to-date ULB's accounts systems.
4. Monitoring the schemes and other development works

Issues in Act

- **The 74th Constitutional Amendment Act:**
  - More elected representatives assumed role in states but no provision for their training
  - Political decentralisation is not backed by financial devolution and functional autonomy
  - State's absolute power to determine functional and fiscal domain of ULBs remained as it is

- **Municipality Act:**
  - High involvement of parastatal bodies due to technical incompetency of the municipalities,
  - Low resource mobilization initiatives and hence increased dependency on grants,
  - State agencies control on majority decision making – thus no actual decentralization implemented.

STUDY OF D.O.M. PATRAK

PATRAK NO.	TITLE OF THE PATRAK	DATA GAP
1	Pay and Use toilets	
1(a)	Completed pay and use toilets	**Instead of toilet blocks, no. of seats should be reported, it will be easy to compare it with no. of users**
2	Individual toilets	**For individual toilets scheme, BPL catagories should be considered separately**
3(a)	Door to door solid waste collection (residential)	**There is no specification of solid waste disposal site (land filling)**
3(b)	Door to door solid waste collection (commercial)	**There is no specification for medical waste disposal system**
4	Solid waste collecion charges	**There is no specification for the reason for less recovery of solid waste charges & steps taken to collect those charges**
5	Ristriction on use of plastics less than 20 micron & alternate measures	**There should be strict instruction for the municipalities which has collected plastic waste & not recycled it**
6	Safai kamdar's motivation through beauty contest for wards under 'Saghan Safai Zumbes'	
7	Ward beauty contest	**There should be strict instructions for the municipalities when awarded money is not spent by the ward**
8	Measures to motivate sfai kamdars	
9	Source of water & Chlorination	
10	Chlorination & testing of drinking water	**Ward wise sample size should be specified**
11	Leakage findings	
16	Vegitable market solid waste disposal	
17	Sakhimandal	
23	Toilets in Municipality schools	
24	Drinking water in Municipality school	
25	Declared & undeclared slums	**There is no details regarding basic services in the slum areas**
26	Tax recovery	
27	Tax recovery	
27(a)	Measures taken for Tax recovery	
35	Double entry accounting system	
39	Detail of pending VARSHIK VAHIVATI AHEVAL	
40	Details of status of recommendation for new tax or any changes	
43	Income and Expenditure statement for last year	

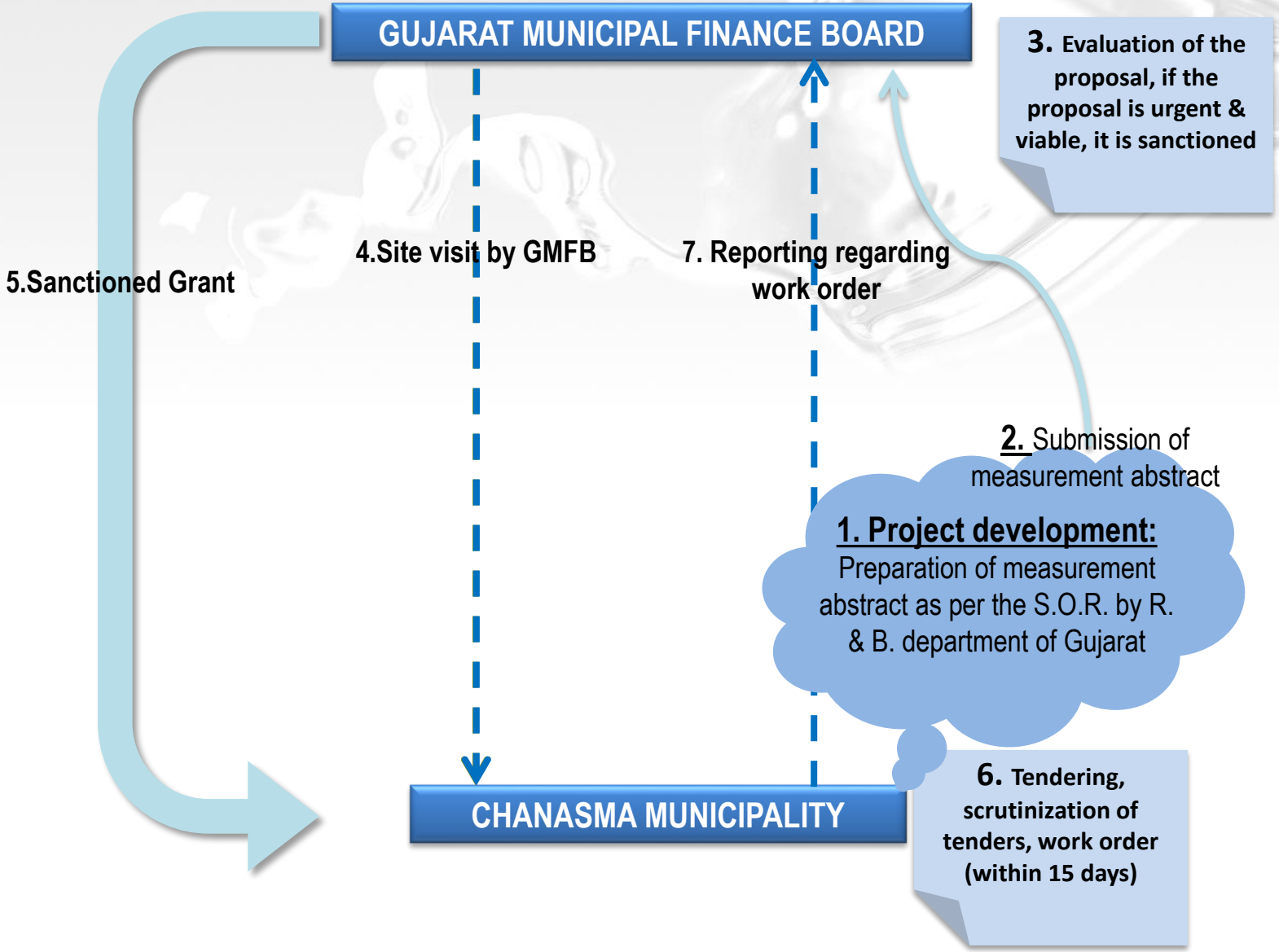
DATA COMPARISON FOR WATER SUPPLY

No.	details	Unit	Patrak for DoM		Varshik vahivati Ahwal for GMFB
A	**Access & Coverage**		**Availability**	**Frequency**	**Availability**
1	Households in the service area	No.		Annual	
2	Households with direct water supply connection	No.		Annual	
3	Total water consumed , water consumed by residential, institutional, industrial / commercial sector, bulk treated supply	%		Annual	
B	**Service Level & Quality**				
1	Water supplied to the distribution system	Ltrs. / month		Quarterly	
2	Population served	No.		Quarterly	
3	Number of days in the month	No.		Quarterly	
4	Additional information in respect of areas where water is supplied at a rate less than 70 lpcd	lpcd		Quarterly	
5	Water samples	No. /month		Monthly	
6	Samples that meet specified potable water standards	No. /month		Monthly	
7	Average hours of pressurized supply per day	Hrs		Monthly	
C	**Efficiency and cost recovery**				
1	Water produced and put into the transmission and distribution system	Mil. Ltrs /day (or) month		Annual	
2	Total water sold	Mil. Ltrs /day (or) month		Annual	
3	Total annual operating expenses	Rs Cr./quarter		Annual	
4	Total annual operating revenues	Rs Cr./quarter		Annual	
5	Current revenues collected in the given year	Rs Cr./annum		Annual	
6	Total operating revenues billed during the given year	Rs Cr./annum		Annual	
7	Total number of direct service connections	No.		Annual	
8	Total number of public standposts	No.		Annual	
9	Number of metered direct service connections	No.		Annual	
10	Number of metered public stand posts	No.		Annual	
11	Total expenditure on Purchase of Bulk Supply	(Rs/m^3)		Annual	
12	Staff for water services	No.		Quarterly	
13	No. of water connections	No.		Quarterly	
14	Annual O&M cost	Rupees		Annual	
15	Annual revenue	Rupees		Annual	
D	**Customer Services**				
1	Water supply related complaints received	No./month		Monthly	
2	Complaints redressed	No./month		Monthly	
3	Water samples	No./month		Monthly	
4	Samples that cross the chlorine limit	No./month		Monthly	
E	**EQUITY**				
1	Slum households in the service area	No.		Quarterly	
2	Slum households with direct water supply connection	No.		Quarterly	
3	Total area under juridiction	sqkm		Annual	
4	Actual area to which the service is provided	sqkm		Annual	

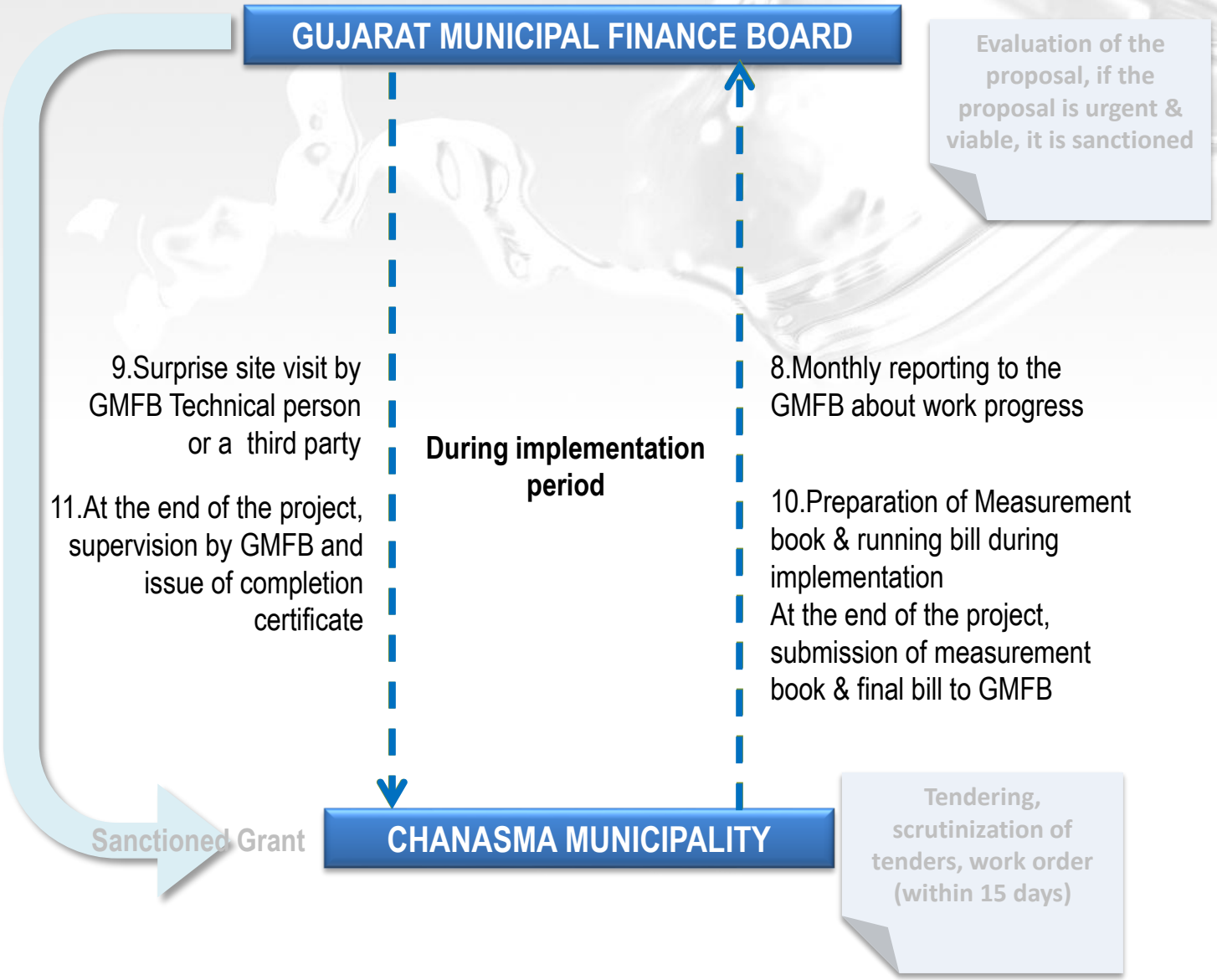
DATA COMPARISON FOR SEWERAGE

No.	details	Unit	Patrak - DoM		Varshik vahivati Ahwal - GMFB
A	**Access & Coverage**		**Availability**	**Frequency**	**Availability**
1	Properties having access to individual/ community toilet within walking distance in the service area	No.		Annual	
2	Properties without individual/ community toilet within walking distance	No.		Annual	
3	Properties in the service area	No.		Annual	
4	Properties with direct connection to the sewerage network	No.		Annual	
B	**Service Level & Quality**				
1	Total water consumed	Mil. Ltrs /day (or) month		Annual	
2	Estimated water use from other sources	Mil. Ltrs /day (or) month		Annual	
3	Treatment plant capacity	Mil. Ltrs /day (or) month		Annual	
4	Total number of wastewater samples in a month	No. /month		Monthly	
5	Samples that pass specified secondary treatment standards	No. /month		Monthly	
6	Wastewater received at the treatment plants	Mil. Ltrs /day (or) month		Annual	
7	Wastewater recycled or reused	Mil. Ltrs /day (or) month		Annual	
8	Total number of blockages per year expressed per km of sewers	blockages /km /yr.		Monthly	
C	**Efficiency and cost recovery**				
1	Total water produced	Mil. Ltrs /day (or) month		Annual	
2	Estimated water use from other sources	Mil. Ltrs /day (or) month		Annual	
3	Wastewater collected	Mil. Ltrs /day (or) month		Annual	
4	Current revenues collected in the given year	Rs Cr./annum		Annual	
5	Total operating revenues billed during the given year	Rs Cr./annum		Annual	
6	Total annual operating expenses	Rs Crores		Annual	
7	Total annual operating revenues	Rs Crores		Annual	
9	Staff for Wastewater services	No.		Quarterly	
10	No. of waste water connections	No.		Quarterly	
D	**Customer Services**				
1	Sewerage related complaints received per month	No. /month		Monthly	
2	Complaints redressed within the month	No. /month		Monthly	
E	**EQUITY**				
1	Properties having access to individual/ community toilet within walking distance in the service area	No.		Quarterly	
2	Properties without individual/ community toilet within walking distance	No.		Quarterly	
3	Properties having access to Sewerage Connection	No.		Quarterly	
4	No. of Total Properties	No.		Quarterly	

Monitoring of capital works by GMFB:

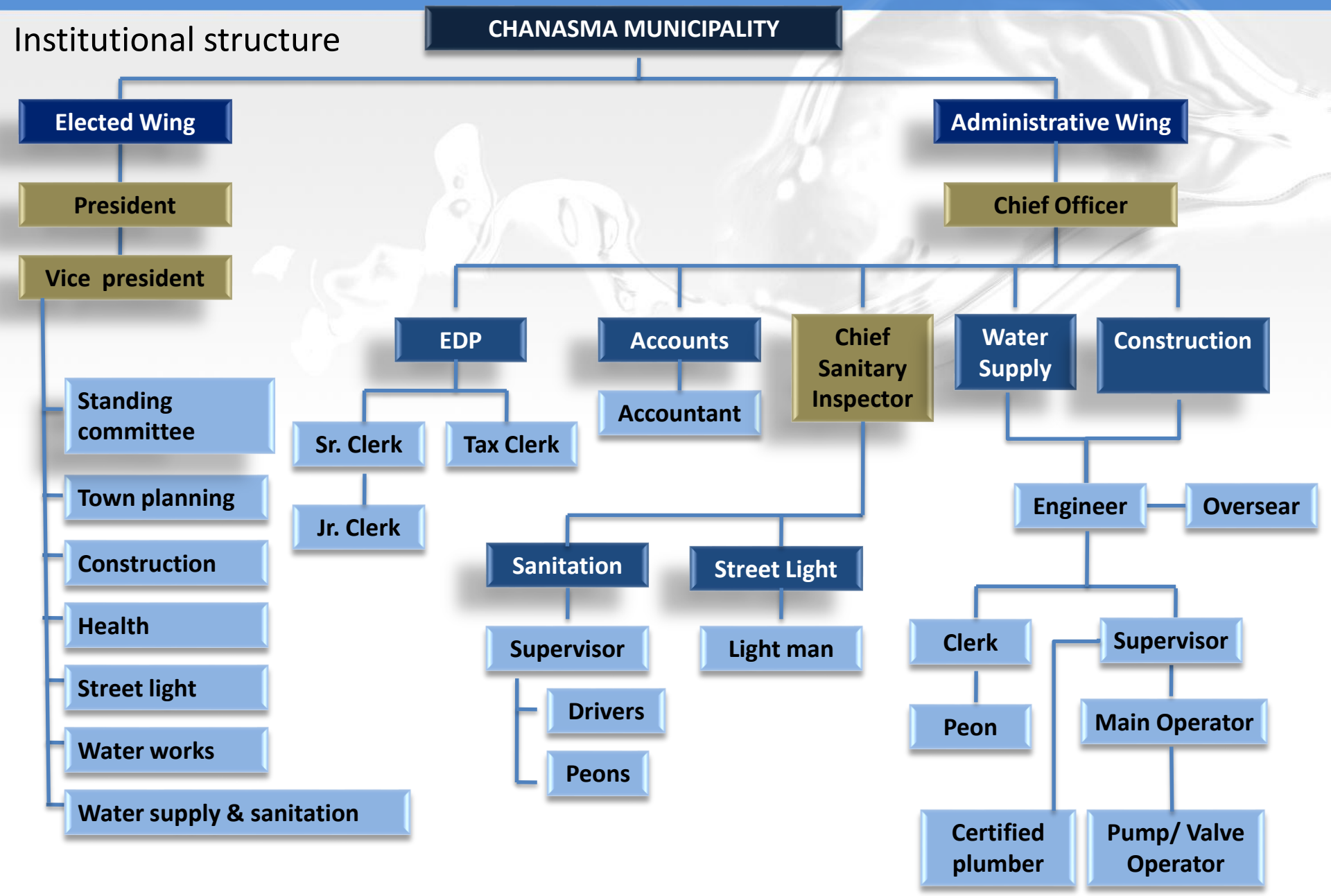


Monitoring of capital works by GMFB:

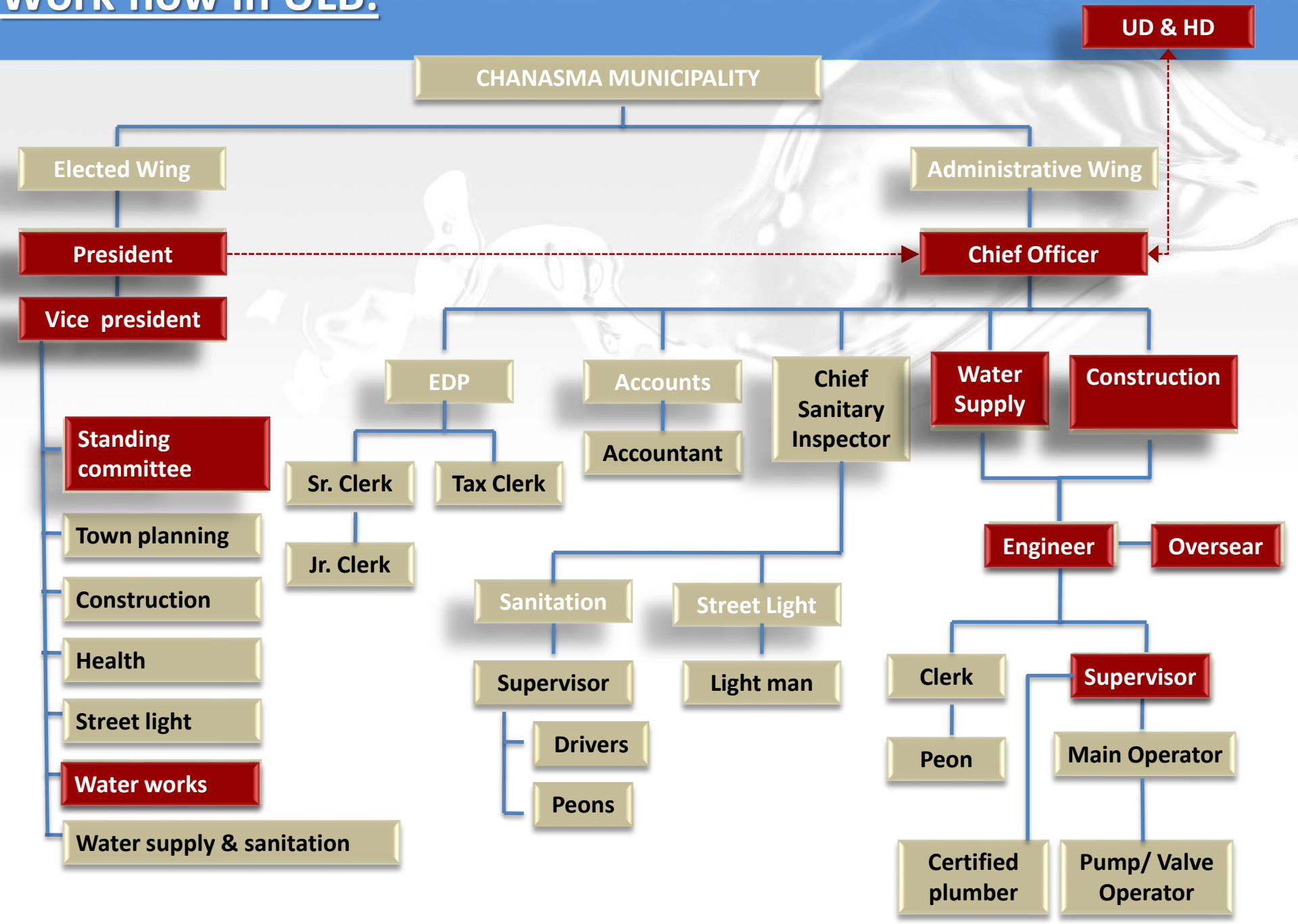


Monitoring within ULB:

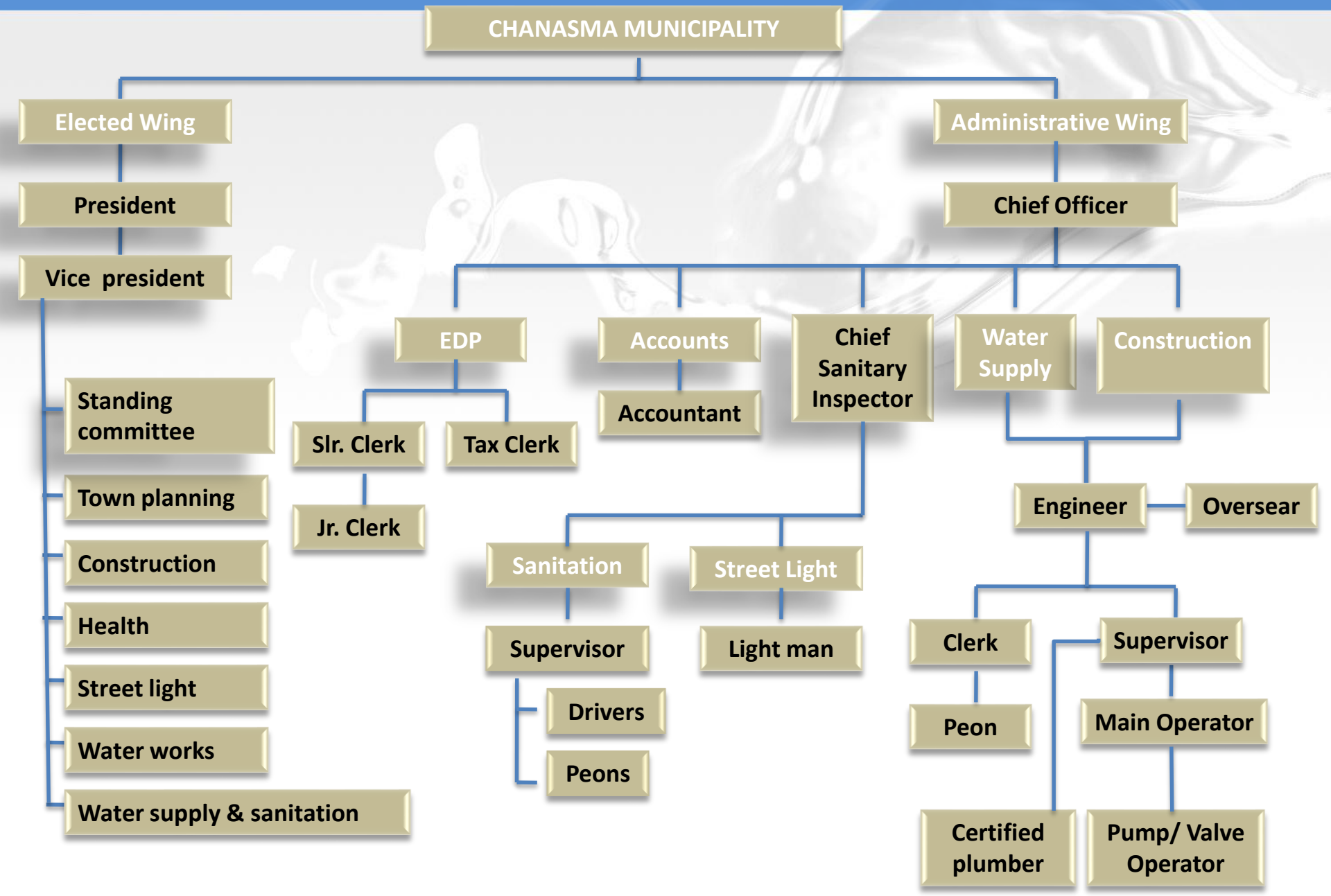
Institutional structure



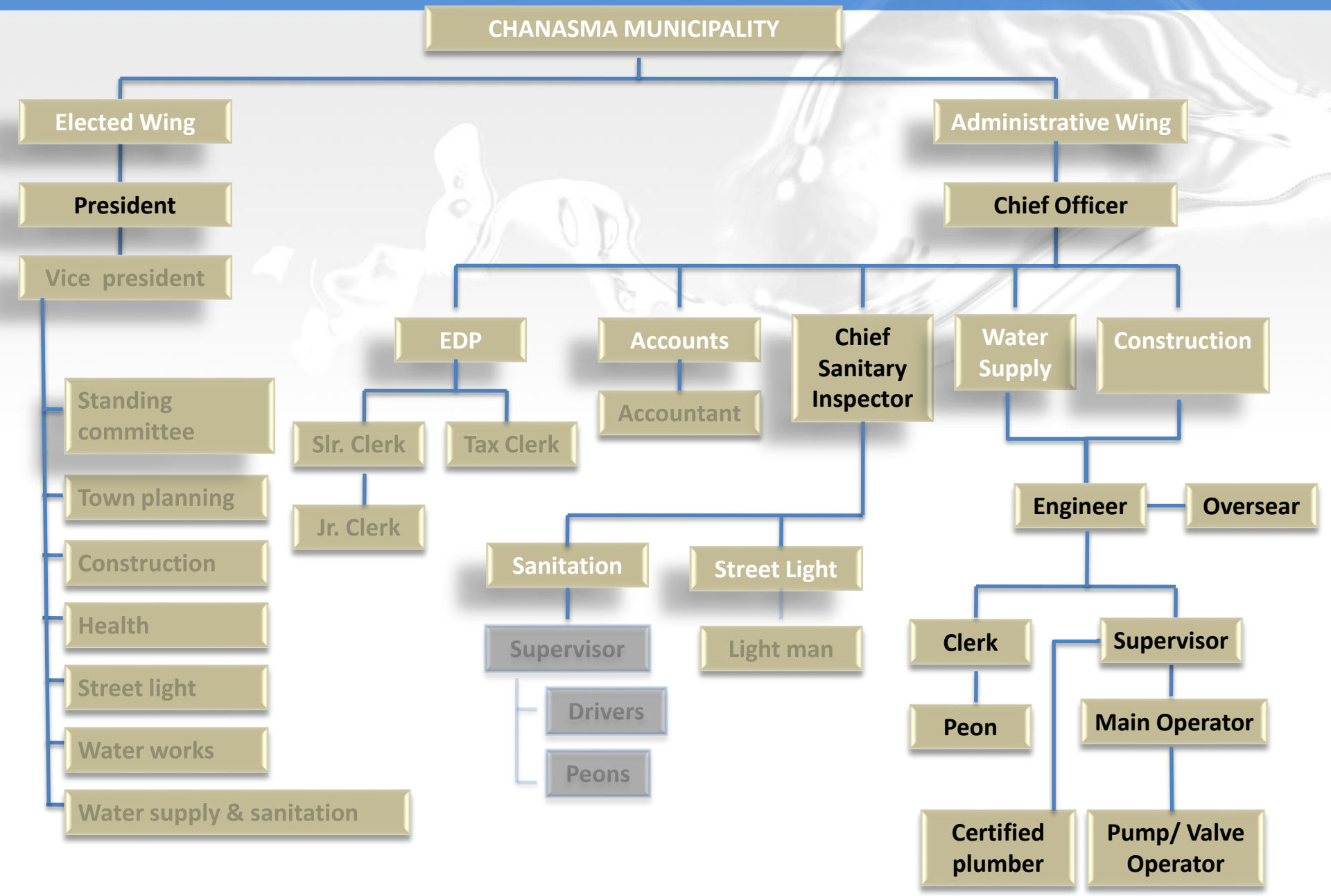
Work flow in ULB:



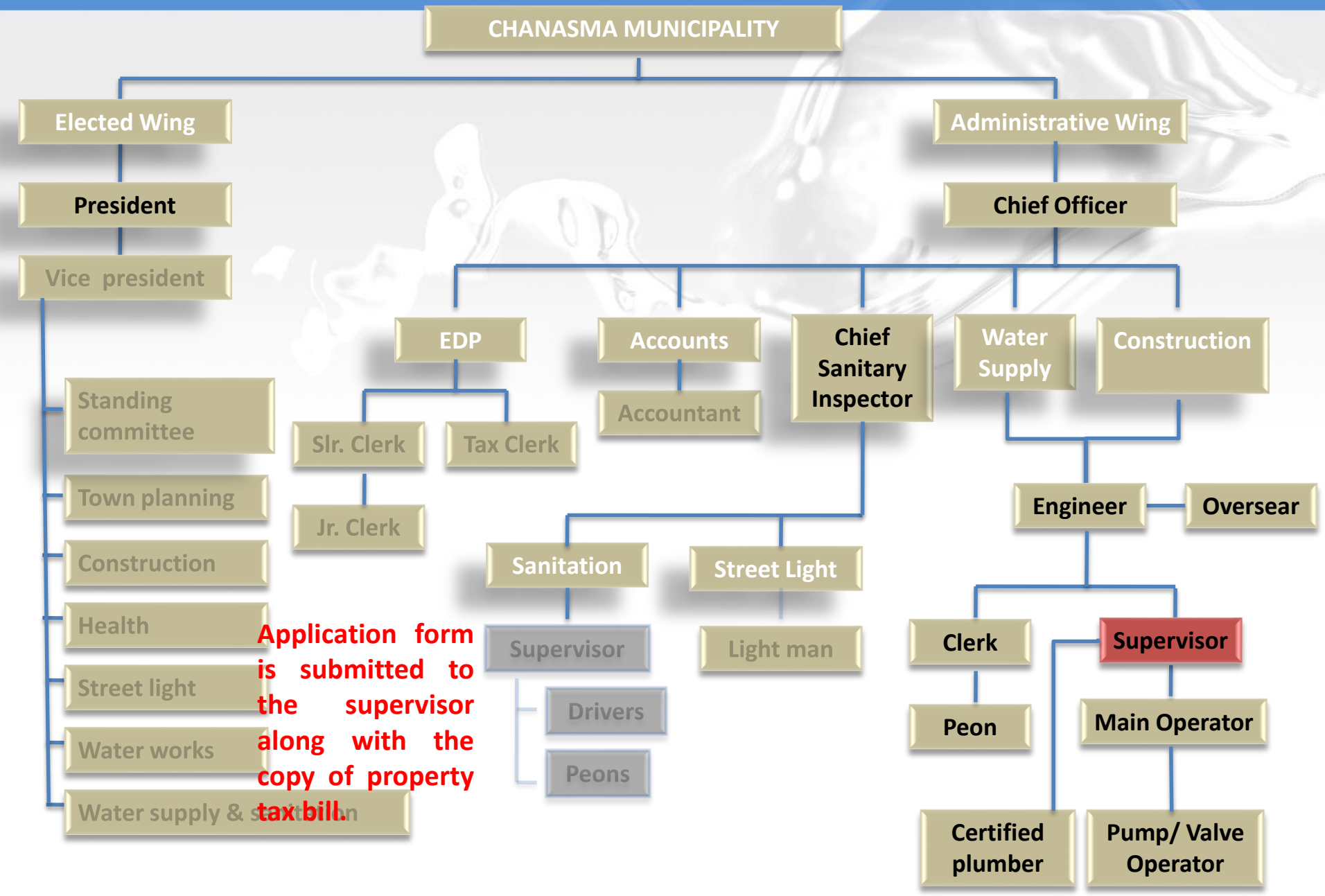
Process of new water supply connection:



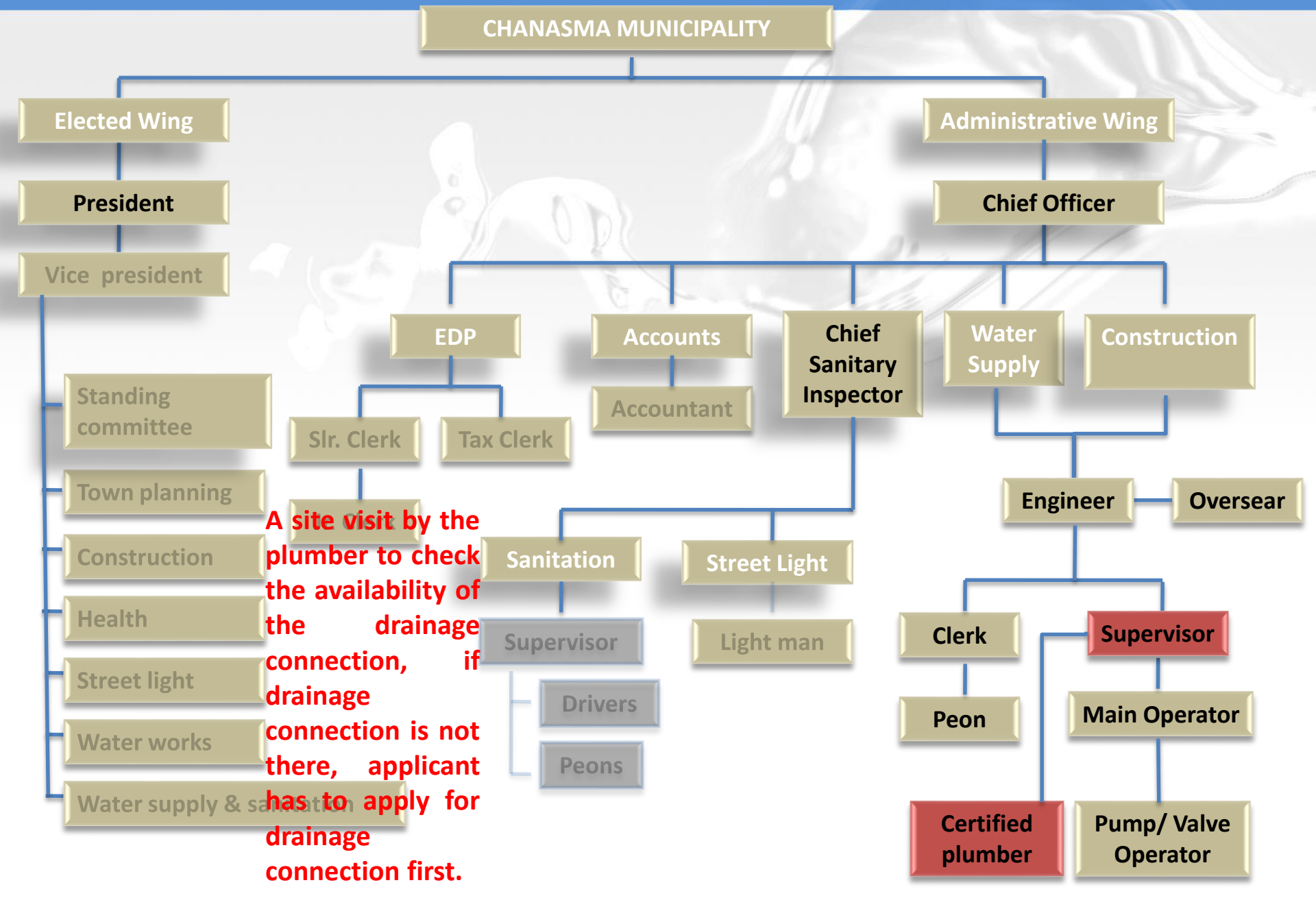
Process of new water supply connection:



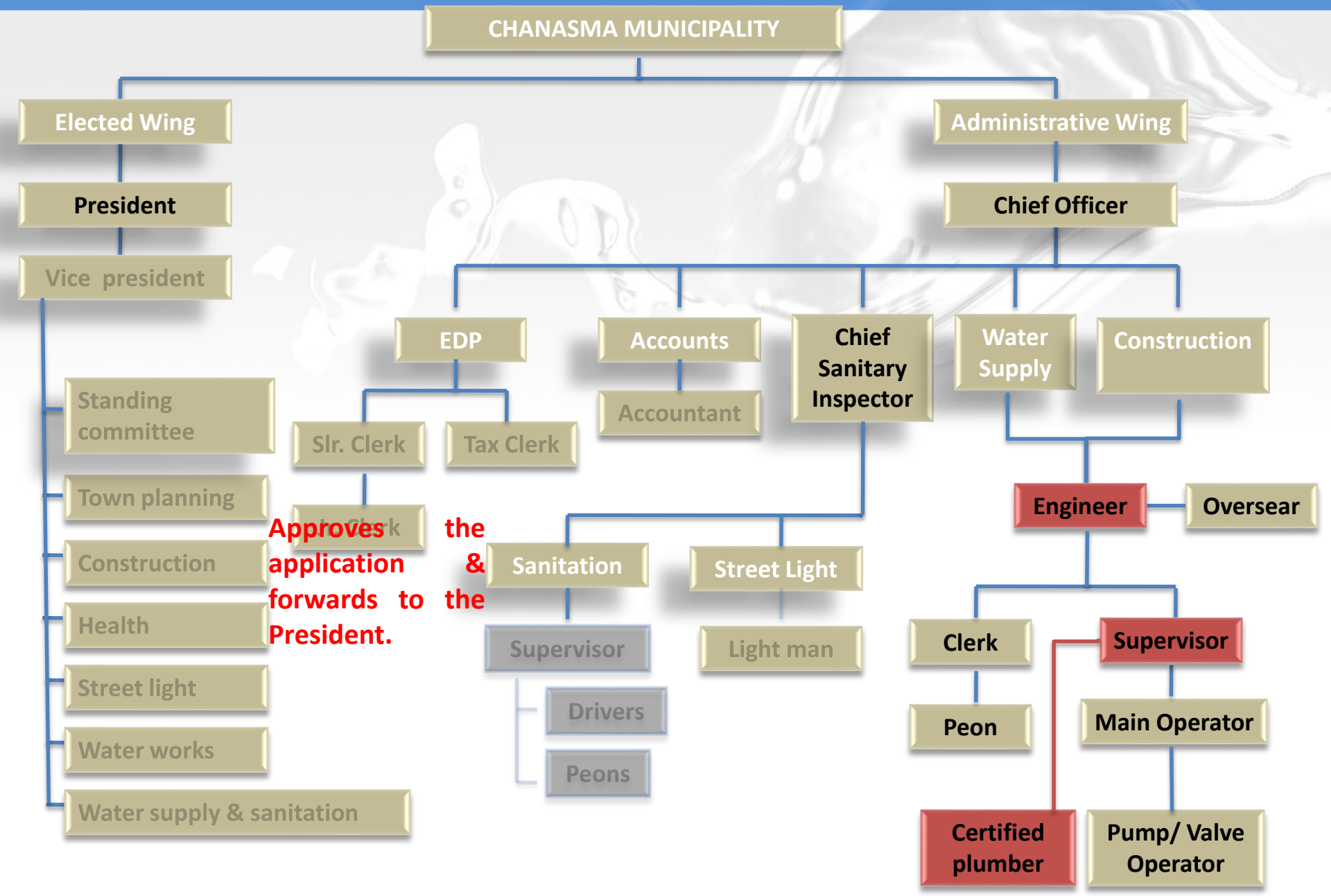
Process of new water supply connection:



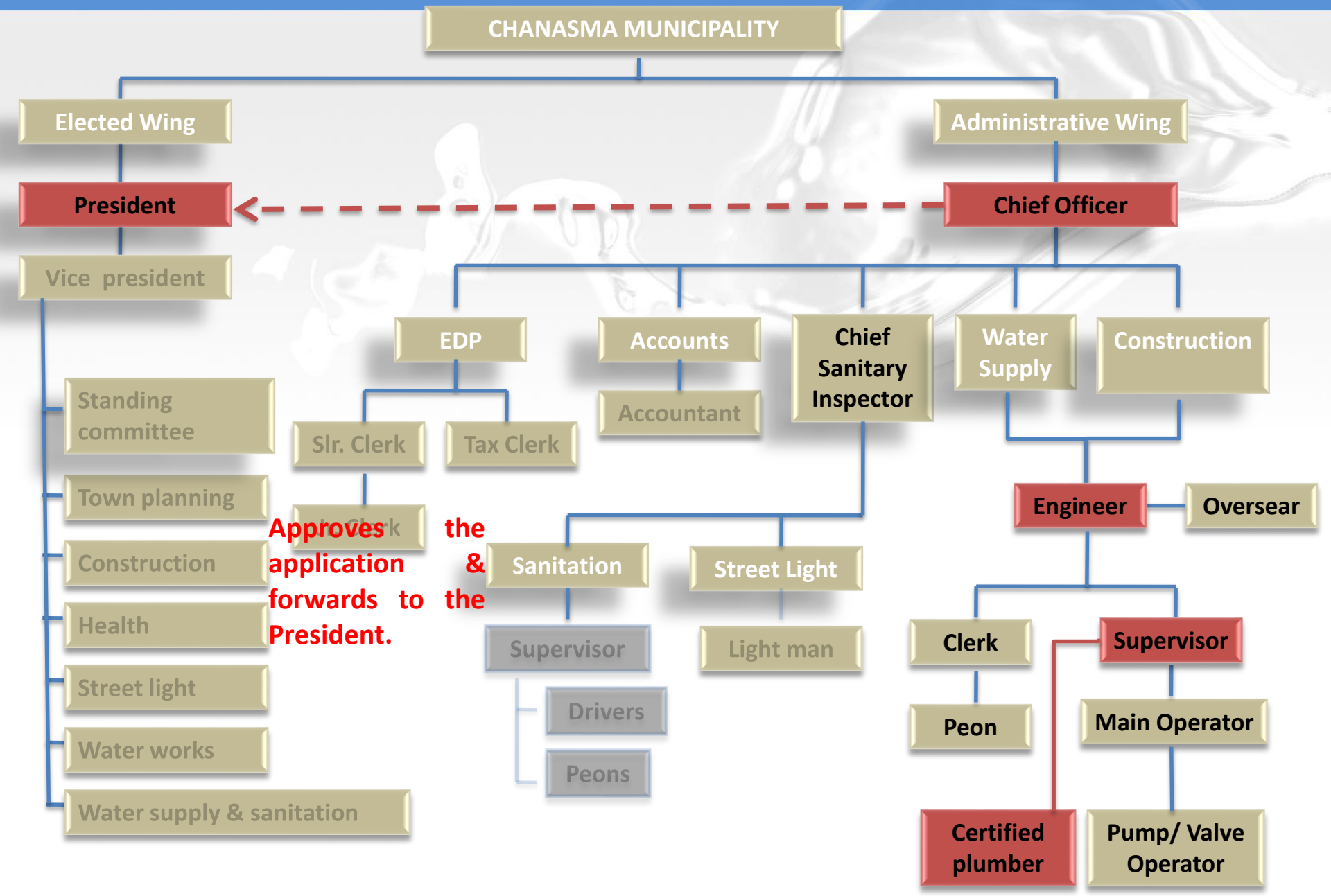
Process of new water supply connection:



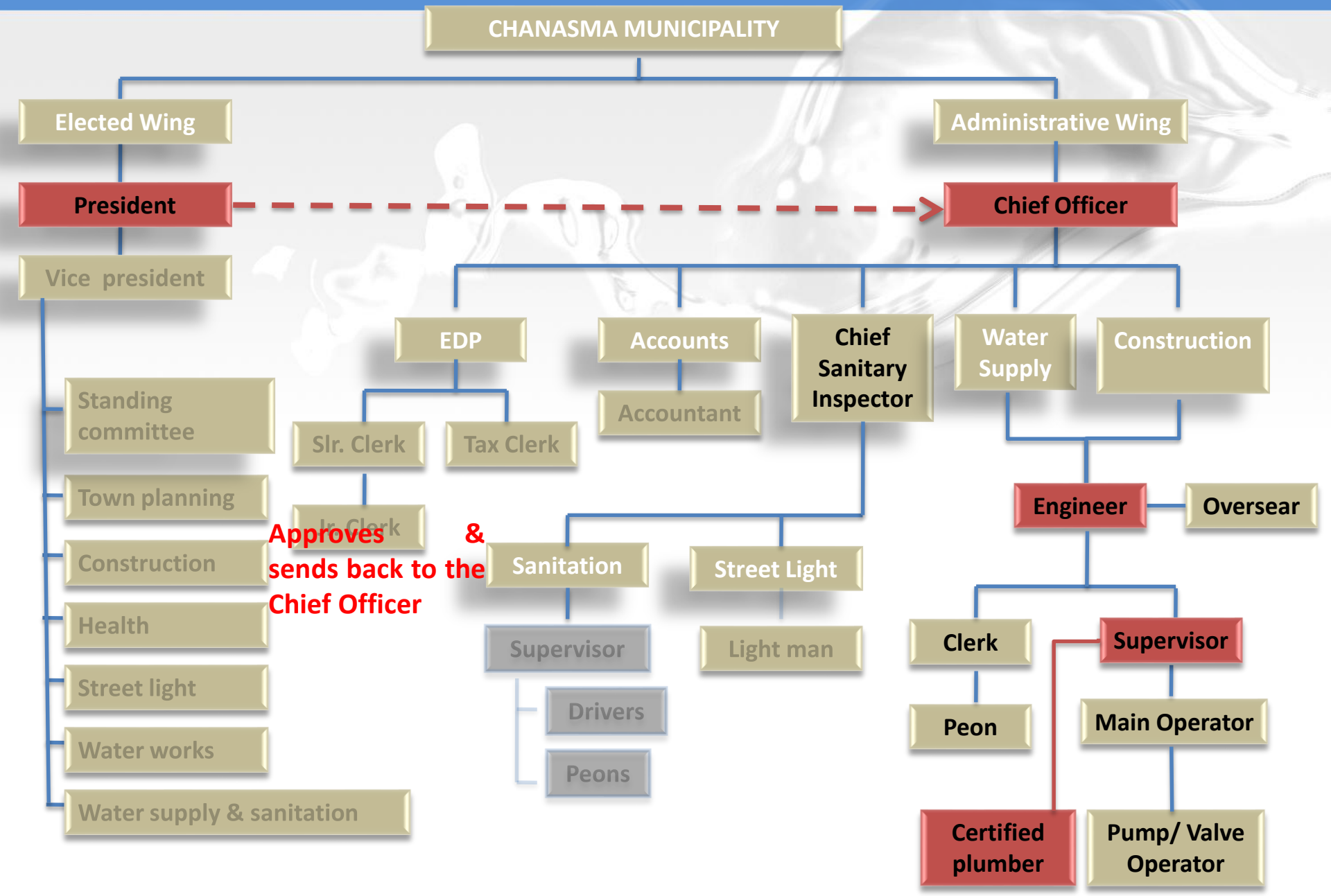
Process of new water supply connection:



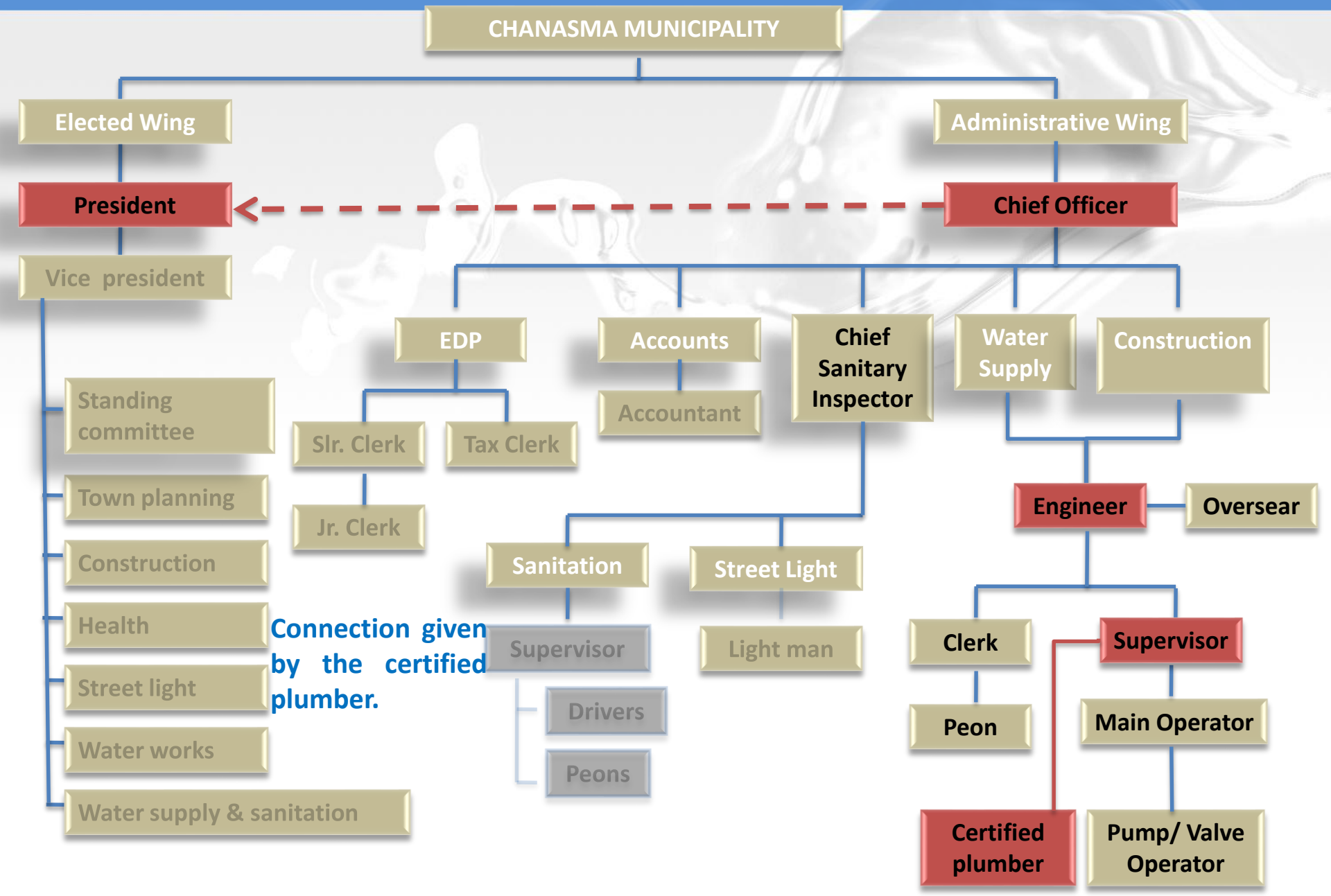
Process of new water supply connection:



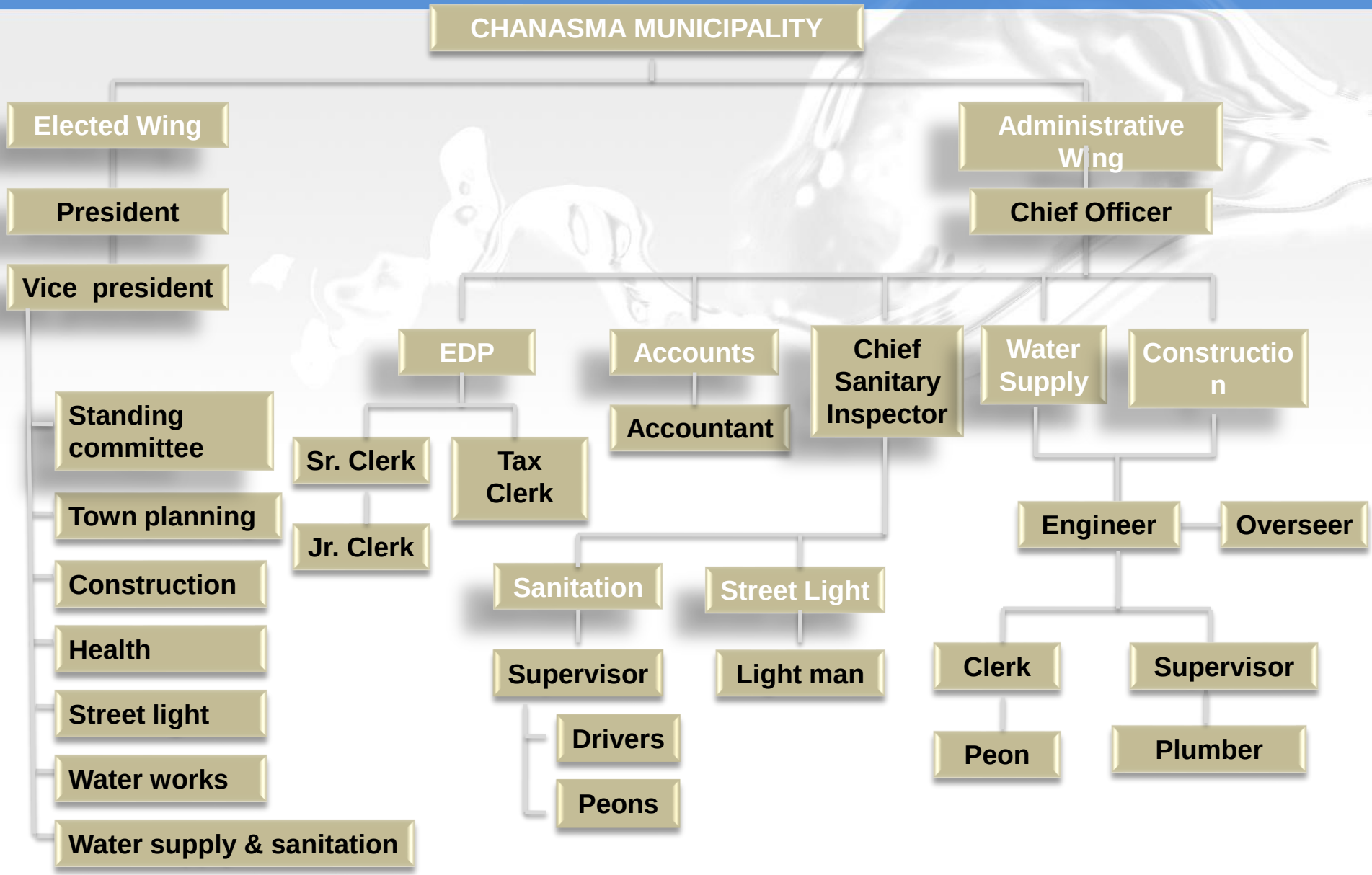
Process of new water supply connection:



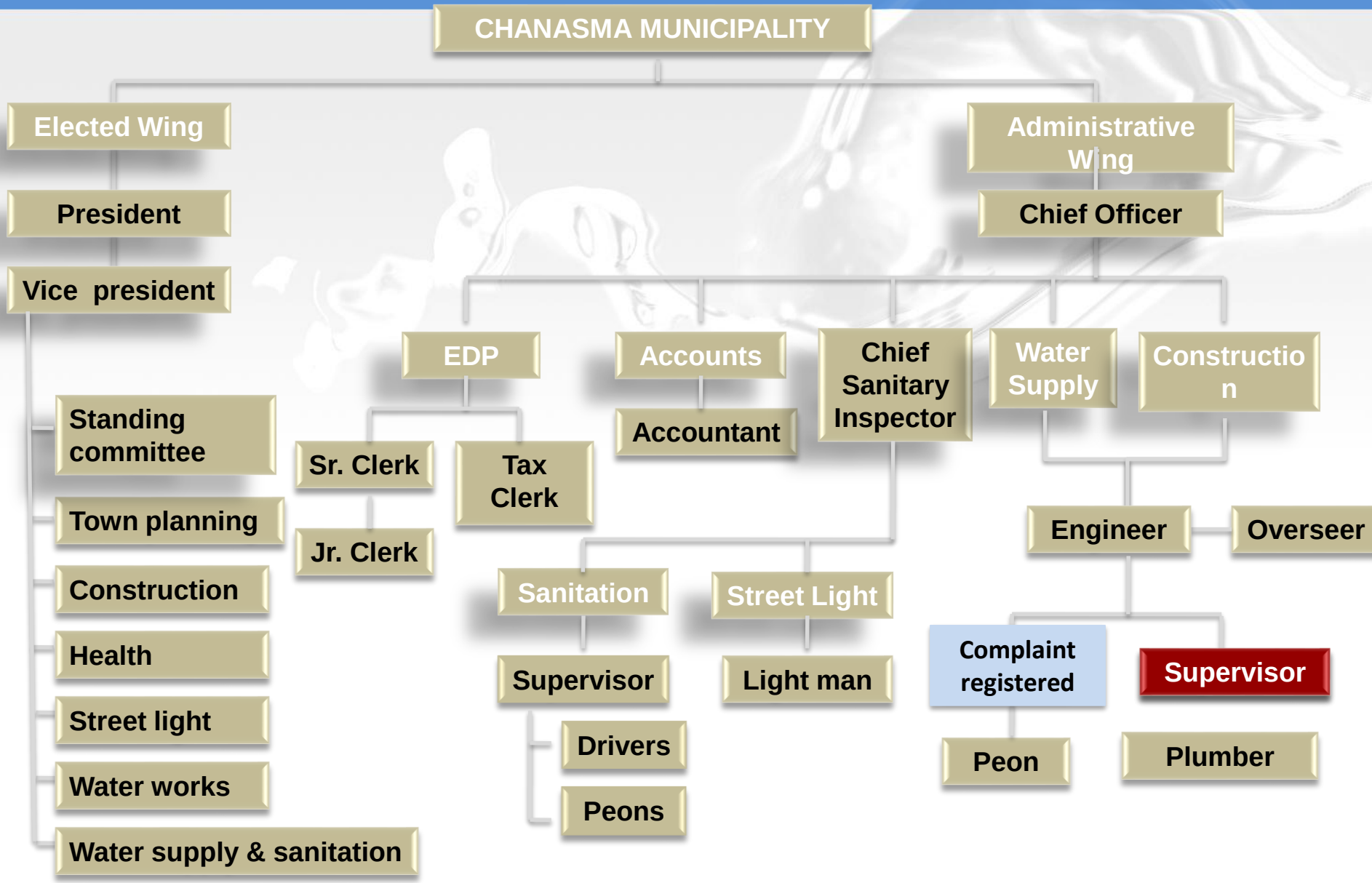
Process of new water supply connection:



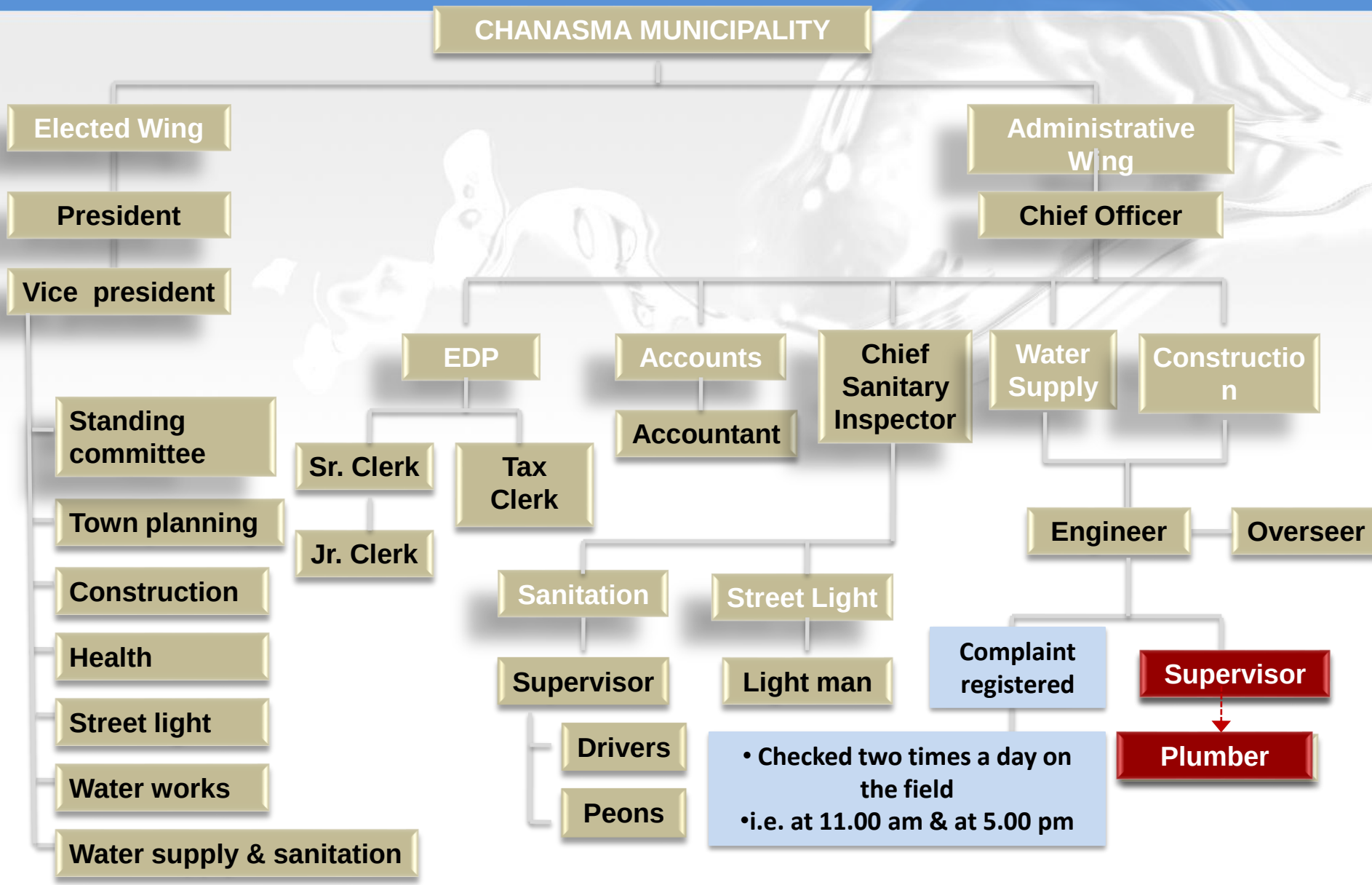
Complaint redressal system:



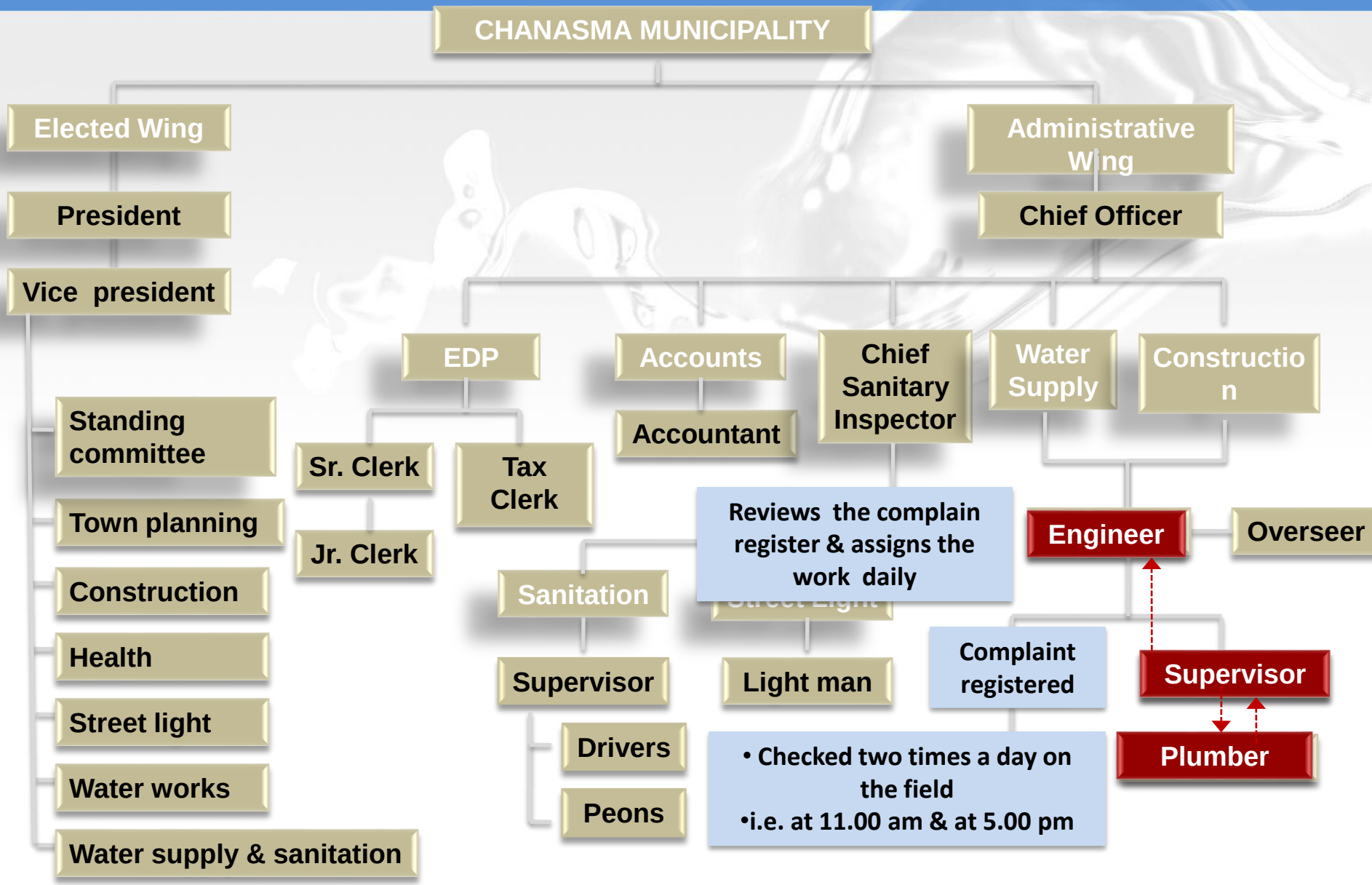
Complaint redressal system:



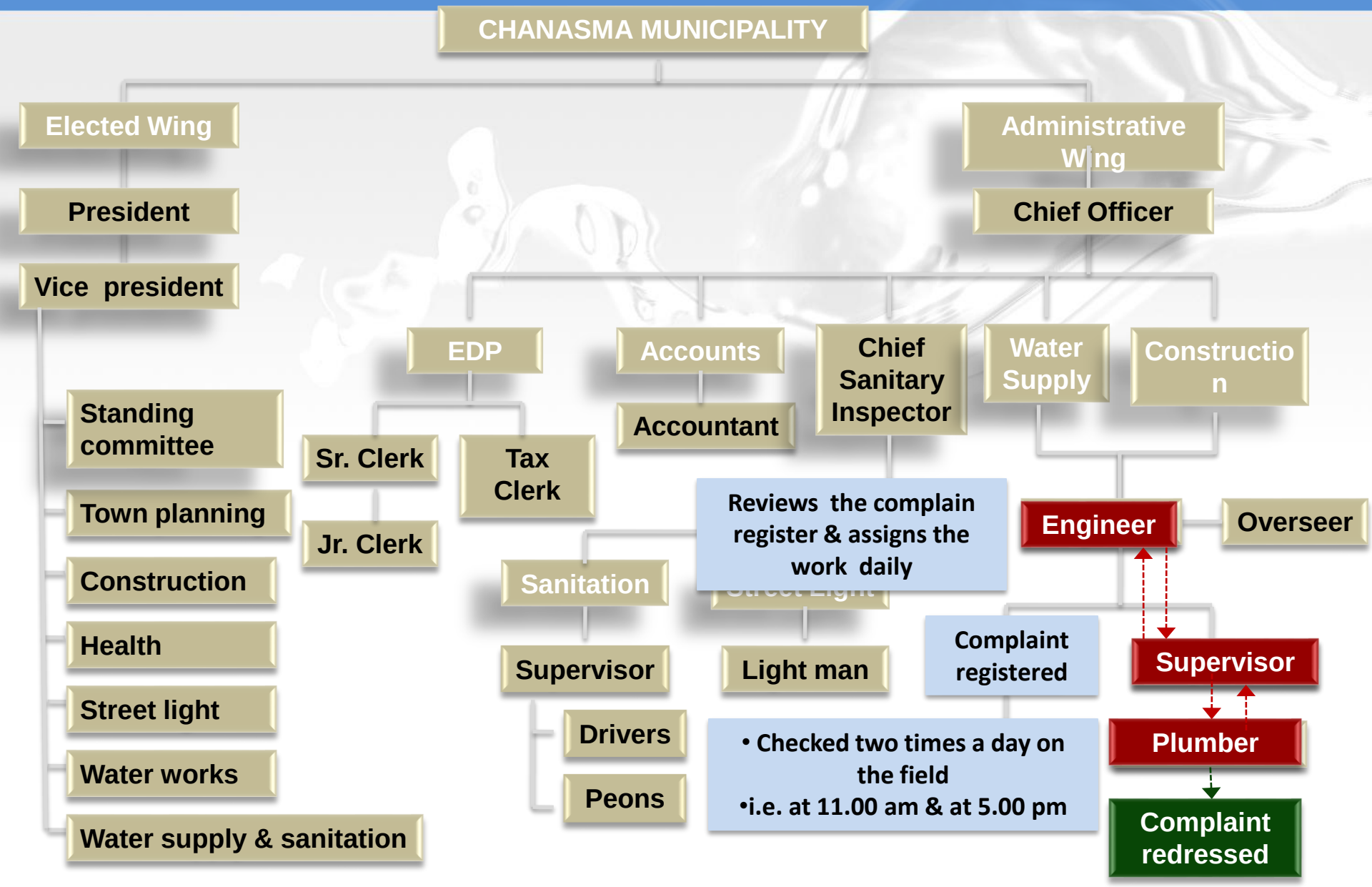
Complaint redressal system:



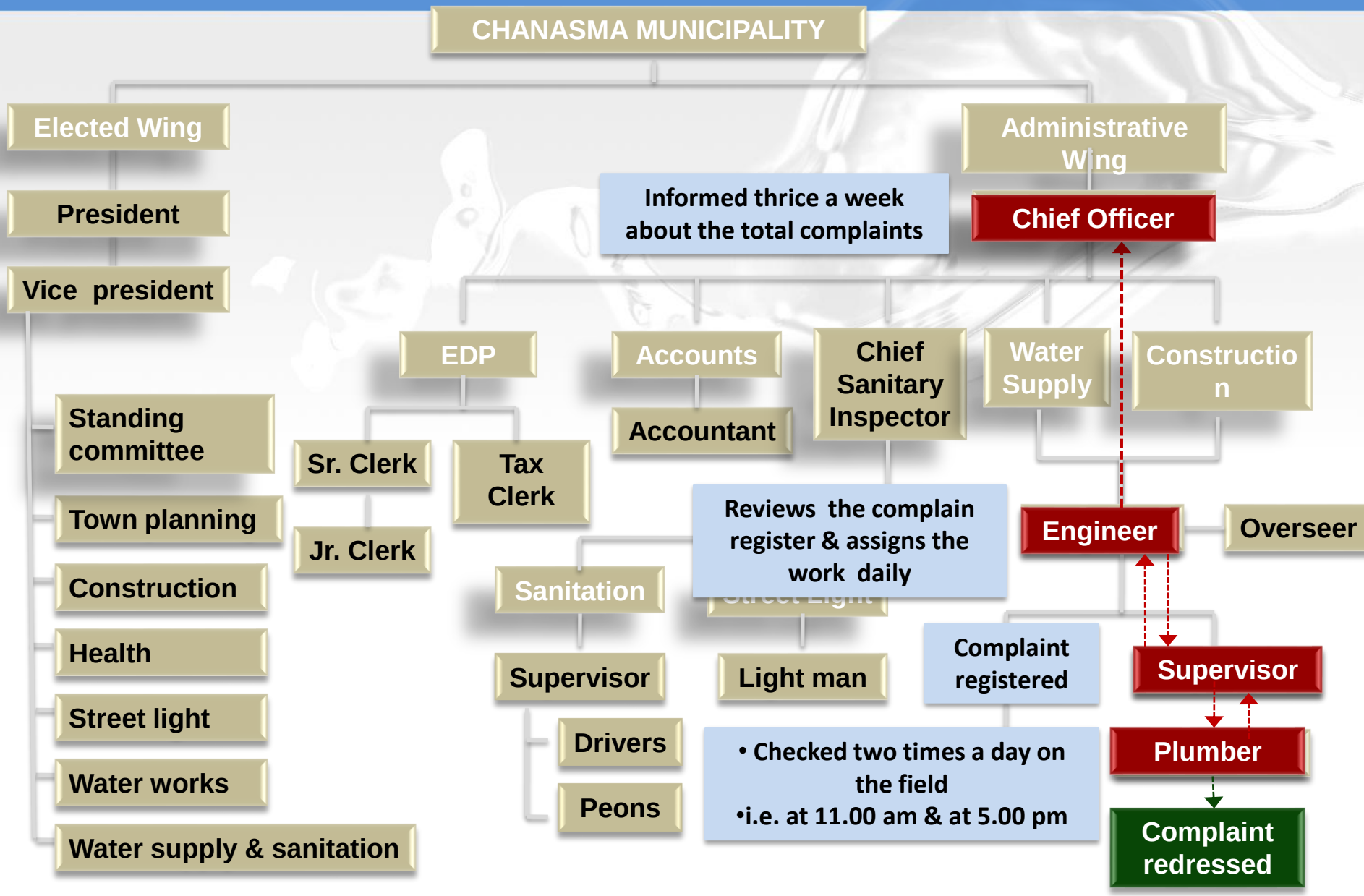
Complaint redressal system:



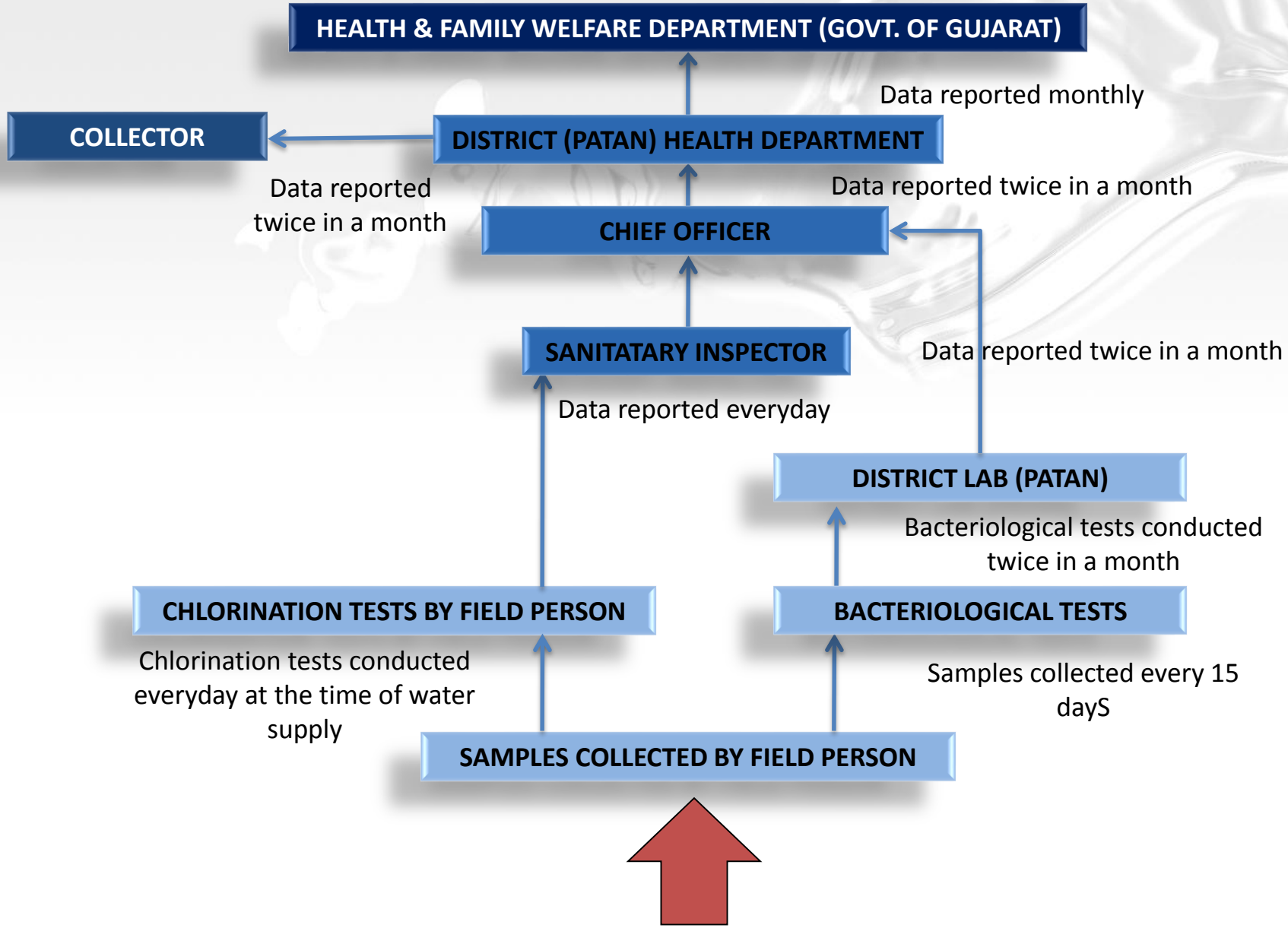
Complaint redressal system:



Complaint redressal system:



Water quality monitoring:



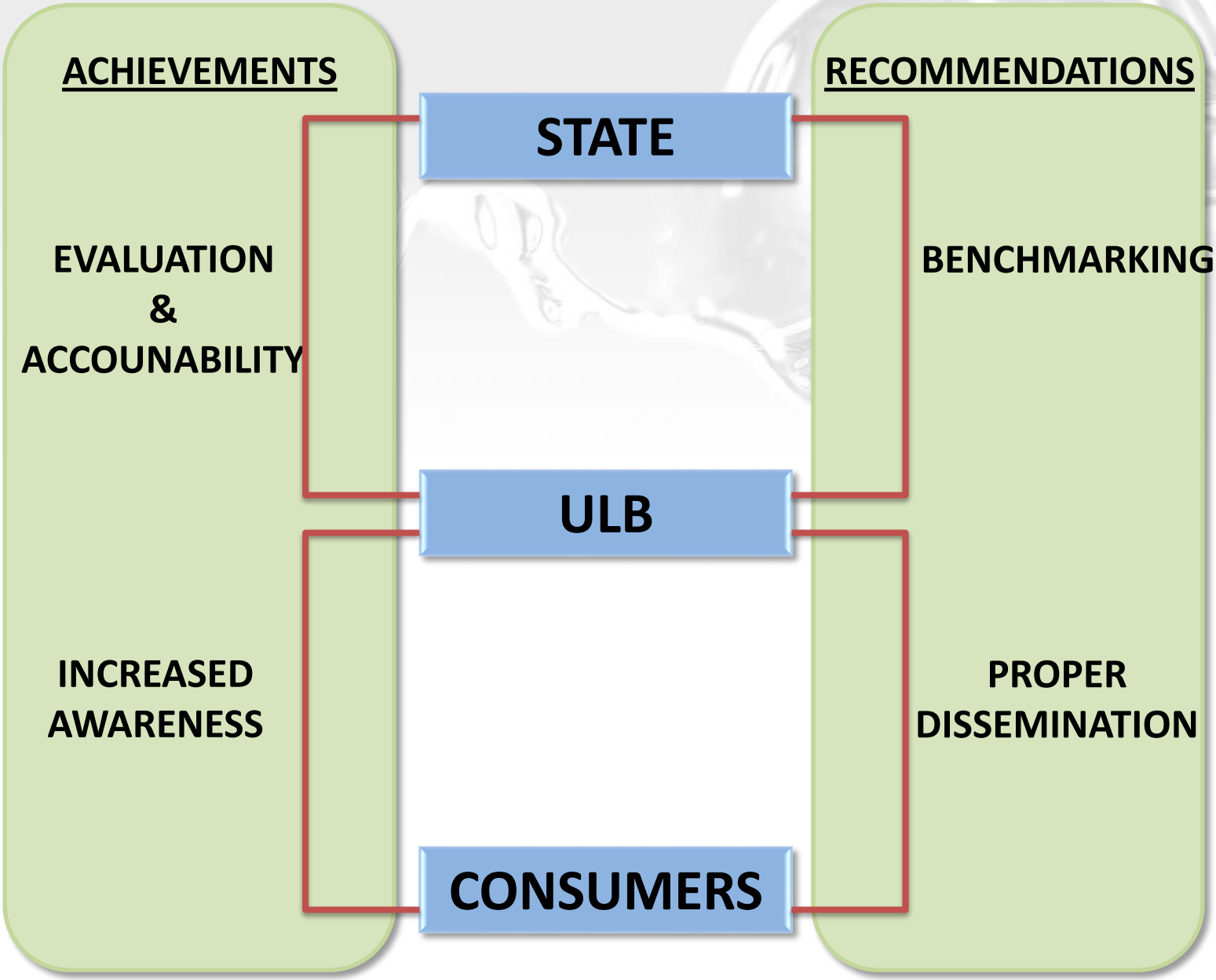
Issues:

- There is no citizen's charter published, so citizen's lack in awareness about municipality's responsibilities and the municipality escapes from its accountability.

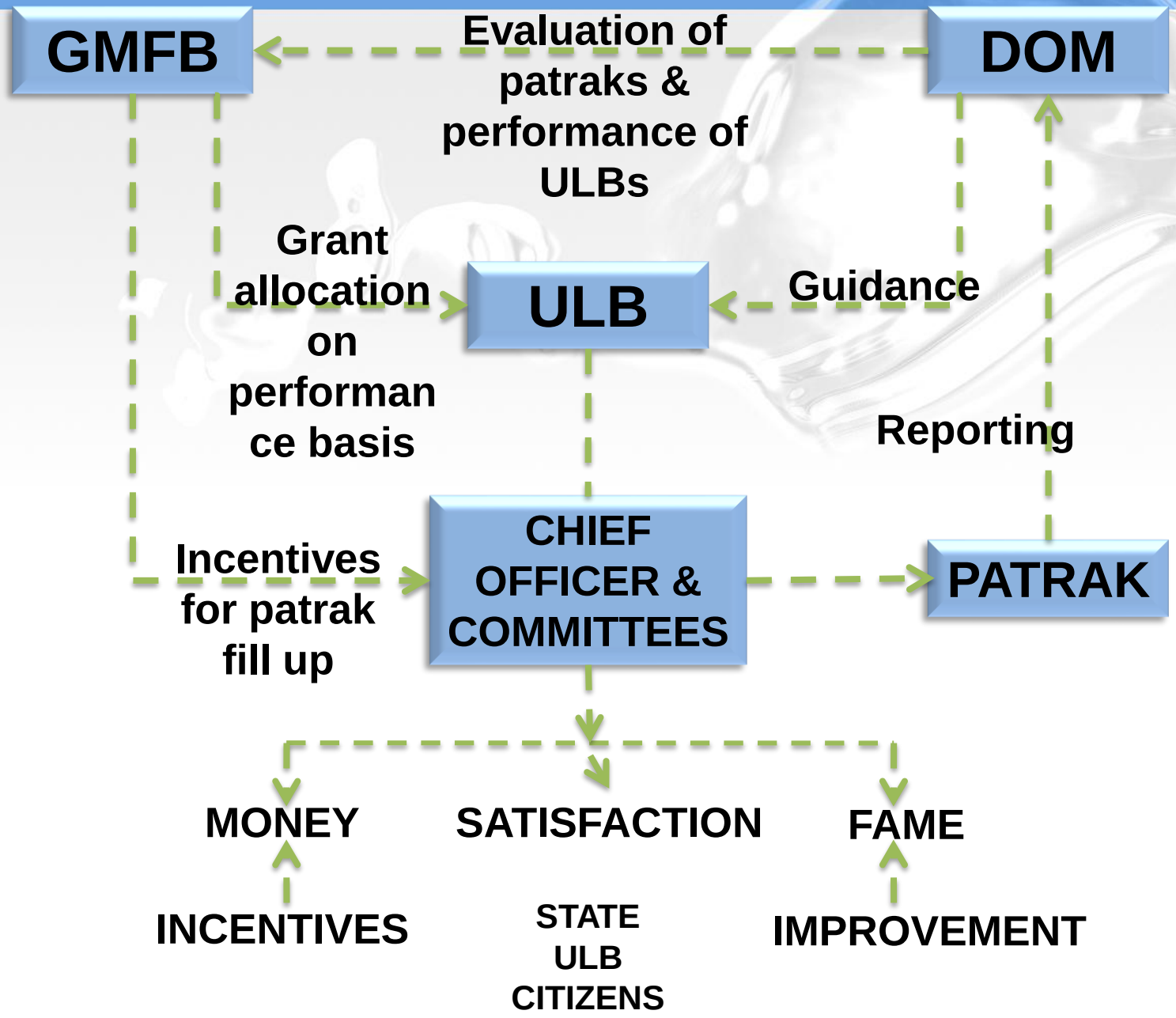
- Though state level monitoring is there through DOM patrak, these patraks are missing some important data collection which can improve monitoring of ULB's functioning.

- There are no benchmarks where all patrak data can be compared to evaluate performance of the ULBs.

IMPROVED SERVICE DELIVERY THROUGH IMPROVED MONITORING



IMPROVED MONITORING THROUGH INCENTIVES



MODIFICATIONS IN PATRAKS			
PATRAK NO.	**TITLE OF THE PATRAK**	**Level of Modifications**	**Data to be added**
1	Pay and Use toilets		
1(a)	Completed pay and use toilets		Total no. of seats in use
2	Individual toilets		Group of beneficiary (B.P.L.)
3(a)	Door to door solid waste collection (residential)		Means of disposal (disposal site)
3(b)	Door to door solid waste collection (commercial)		Details of medical waste generated, collected & means of disposal
4	Solid waste collecion charges		Steps taken towards better recovery
5	Ristriction on use of plastics less than 20 micron & alternate measures		Means of disposal & recycling
6	Safai kamdar's motivation through beauty contest for wards under 'Saghan Safai Zumbes'		
7	Ward beauty contest		
8	Measures to motivate safai kamdars		
9	Source of water & Chlorination		Total water produced & consumed
			water consumed by residential, institutional, industrial / commercial sector
			Bulk water supplied
			Water supplied number of days in a month
			Additional information in respect of areas where water is supplied at a rate less than 70 lpcd
			Average hours of pressurized supply per day
			Total number of public standposts
			Number of metered direct service connections
10	Chlorination & testing of drinking water		Number of metered public stand posts
11	Leakage findings		Water supply related complaints received
			Complaints redressed
			Sewerage related complaints received per month
			Complaints redressed within the month
16	Vegitable market solid waste disposal		
17	Sakhimandal		
23	Toilets in Municipality schools		
24	Drinking water in Municipality school		

MODIFICATIONS IN PATRAKS			
PATRAK NO.	**TITLE OF THE PATRAK**	**Level of Modifications**	**Data to be added**
25	**Declared & undeclared slums**		Slum households with direct water supply connection
			Total area to which service is provided (availability of maps)
			Number of properties having access to Sewerage Connection
			Properties having access to individual/ community toilet within walking distance in the service area
26	**Tax recovery**		
27	**Tax recovery**		
27(a)	**Measures taken for Tax recovery**		
35	**Double entry accounting system**		
39	**Detail of pending VARSHIK VAHIVATI AHEVAL**		
40	**Details of status of recommendation for new tax or any changes**		
43	**Income and Expenditure statement for last year**		Total expenditure on Purchase of Bulk Supply
			Total annual operating expenses for water supply & drainage
			Total annual operating revenues for water supply & drainage
44	**Drainage connections & service delivery**		Properties with direct connection to the sewerage network
			Estimated water use from other sources
			Total water produced
			Wastewater collected
			Wastewater received at the treatment plants
			Wastewater recycled or reused
			Treatment plant capacity
			Total number of wastewater samples in a month
			Samples that pass specified secondary treatment standards
			Total number of blockages per year expressed per km of sewers
			Sewerage related complaints received per month
			Complaints redressed within the month

Patrak-9 (original)	
SOURCES OF WATER & CHLORINATION	
Month	
Year	
Name of the municipality	
Total number of water supply connections	
Rate of water supply (lpcd)	
Ways of Chlorination (gas/liquid/powder)	
Sources of water	
Lake	
River	
Canal	
Tubewell	
Narmada pipe line	
Number of distribution zones	
Number of municipality ESR/Sumps	
Number of ESR/Sump cleaned last month	
Number of ESR/Sump cleaned in currrent month	
Date of the Bacteriological test conducted	

Patrak-9 (modified)		
SOURCES OF WATER & CHLORINATION		
Month		
Year		
Name of the municipality		
Total number of water supply connections		Annually
Metered		
Unmetered		
Total number of residential connections		Annually
Metered		
Unmetered		
Total number of commercial connections		Annually
Metered		
Unmetered		
Total number of institutional connections		Annually
Metered		
Unmetered		
Total number of industrial connections		Annually
Metered		
Unmetered		
Total number of public standposts		Annually
Metered		
Unmetered		
Rate of water supply (lpcd)		Quarterly
Additional information where supply rate is less than 70 lpcd		Quarterly
Sources of water		Annually
Lake		
River		
Canal		
Tubewell		
Narmada pipe line		
Total water produced (MLD)		Quarterly
Water supplied number of days in a month		Quarterly
Average hours of water supply		Quarterly
Ways of Chlorination (gas/liquid/powder)		Quarterly
Number of distribution zones		Annually
Number of municipality ESR/Sumps		Annually
Number of ESR/Sump cleaned last month		Quarterly
Number of ESR/Sump cleaned in currrent month		Quarterly
Date of the Bacteriological test conducted		Quarterly

Dissemination system:

The goal of proper dissemination system is to institute transparency & accountability in the functioning of ULBs through publication of information pertaining to various facets of municipal governance.

Web platform – first thing that come to the mind in this era of IT.

- But it doesn't cater to all the citizens, rather a particular class of citizens.
- It's a Universal means of dissemination generally with universal language.

Dissemination system should be catering to all the citizens and should be done by local means & with local languages.

Periodic dissemination:
Monthly – Details of complaint status

Quarterly – Ongoing project's work progress, minutes of meetings

Annually – Budget, Balance sheet, achievements/progress in the last year

Permanent - About the municipality/ municipal corporation, rules & regulations, roles & responsibilities of personnel, procedure followed in decision making, procedure followed in getting new connections, complaint redressal etc.

Means of dissemination:

Local newspaper – Regular updates

Chart display at public places – To convey some important messages

Publications (magazines) – Periodic progress

Annual reports – Annual progress

Interviews broadcasted on TV in local languages – Discussion of major issues

Web platform – To disseminate permanent information but needs to be updated as and when required

Thanks You