Used Water Management Approach under SBM 2.0

WASTEWATER TREATMENT

Why Treat-- **Public Health**

How to Treat-- **Engineering**

What to Treat- (and not treat)

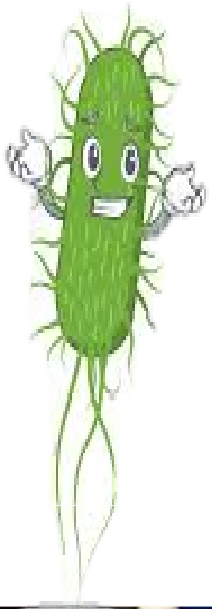
-Management Approach

- **Need**
- **Funds**
- **Priorities**

Central Public Health and Environmental Engineering Organisation (CPHEEO)

www.swachhbharaturban.gov.in

June 2025



MPN

MOST PROBABLE NUMBER

Criteria Pollutants in Urban Domestic Wastewater

Impurities- Various (mg/l)

CONHSP, Trace, Total Solids

Impact- Colour, Odour, Taste, Toxicity

BOD as indicator of Organic Impurities

- Domestic Sewage- 300 mg/l
- Septage- 2000 mg/l
- Sludge- 18000 mg/l*
- Black Water- 500 mg/l
- Grey Water- 260 mg/l

Person releases 30-36 gms BOD per day
Diluted and transferred through 70-135 litres of water
Say 33 gms/100 litres= 330 mg/litre

Pathogens (MPN)

Variable Types & Concentrations
Escherichia Coliform (E-Coli) as indicator

Impact- Disease, Death

Jaundice, Typhoid, Cholera, Dysentery

Density of Coliforms in DomesticSewage

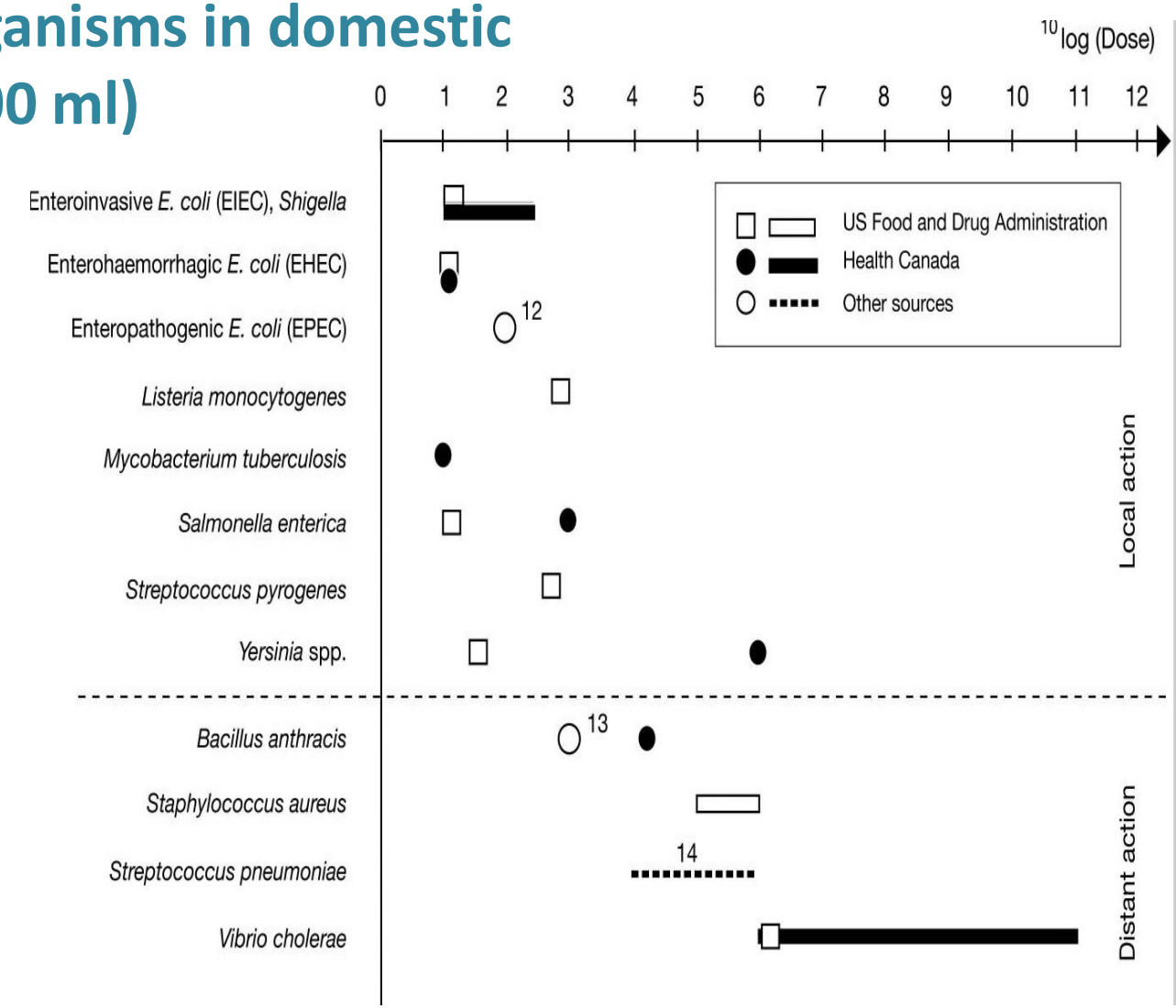
- 10^7 per 100 ml
- 100 ml= 10^5 mm^3

Thus 100 E-Coli per cubic millimetre

Concentrations of microorganisms in domestic wastewater (number per 100 ml)

Micro organisms	High	Low
E. coli	$5 \cdot 10^8$	10^6
Total Coliforms	10^{13}	10^{11}
Salmonella (B)	300	50
Giardia (P)	10^3	10^2
Rotavirus	100	20
Enterovirus	10^4	10^3
Roundworms (H)	20	5

(Henze et al., 2001 (UN-IHE))



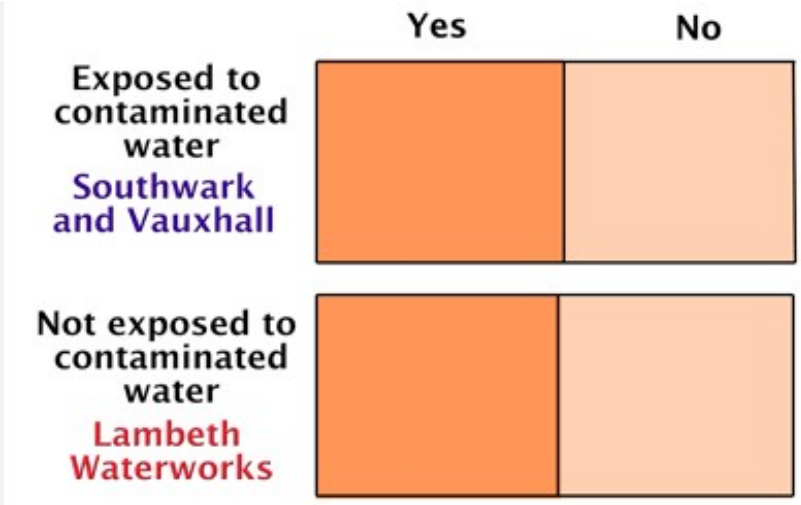
Pathogens in Wastewater- Concentration and Survival

Types of Pathogen		Possible Conc per litre in Municipal Wastewater[@]	Survival Time of Excreted Pathogens in Days (Typical Value)		
			In faeces and sludge	In sewage, septage, Fresh/ ground water	In the soil
Viruses	Enterovirus[#]	5000	**<100 (<20)**	**<120 (<50)**	**<100 (<20)**
Bacteria	Pathogenic E Coli[$]	?	**<90 (<50)**	**<60 (<30)**	**<70 (<20)**
	Salmonella spp	7000	**<60 (<30)**	**<60 (<30)**	**<70 (<20)**
	Shiegella spp	7000	**<30 (<10)**	**<30 (<10)**	-
	Vibrio cholorae	1000	**<30 (<5)**	**<30 (<10)**	**<20 (<10)**
Protozoa	Entamoeba histolytica	4500	**<30 (<15)**	**<30 (<15)**	**<20 (<10)**
Helminths	Ascartis Lumbricoides	600	**Many Months**	**Many Months**	**Many Months**
	Hookworms[**]	32			
	Schistosoma mansoni	1			
	Taenia saginata	10		Source- FAO (Faechem et al, 1983)	
	Trichuris trichiura	120			

? Uncertain
@ Based on 100 lpcd of municipal sewage
 # Includes polio- echo- and coxsackie viruses

% Includes enterotoxigenic, enteroinvasive and enteropathogenic E Coli
**** Anglostoma duedenale & Necator americanus**
( ) Shows the usual survival time


MARLBOROUGH STREET
POLAND STREET
D'ARBLAY ST
BERWICK STREET
WARDOUR STREET
DEAN STREET
Soho
Carnaby
KINGLY STREET
BEAK STREET
GOLDEN
BRIDLE LANE
GREAT PULTENEY STREET
HOPKINS ST
PETER ST
Coll
Sch
REGENT

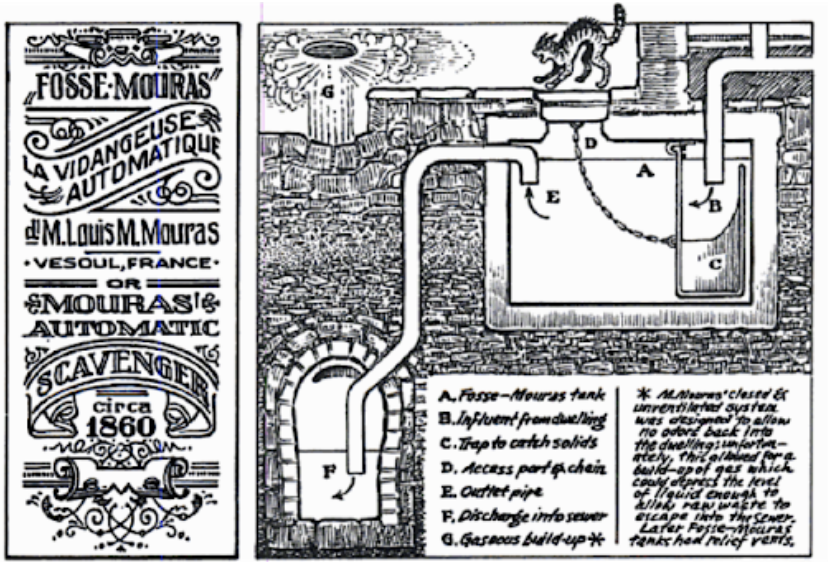


London----- Population, Density

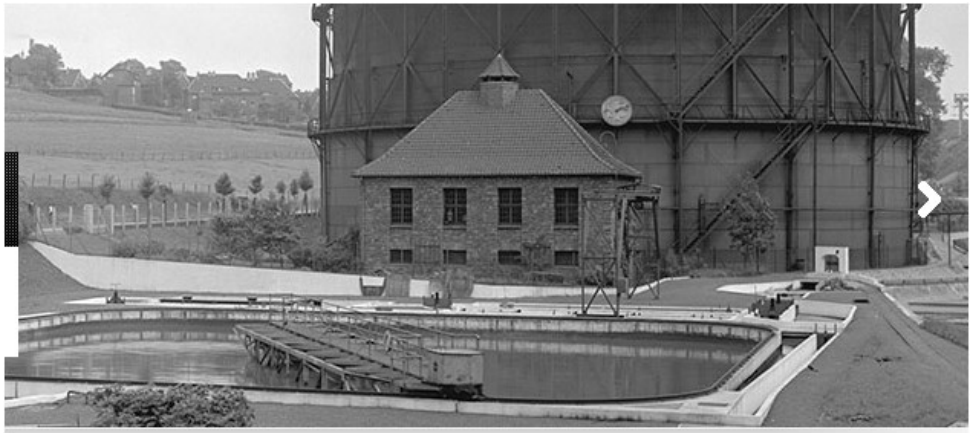
1841	2,207,653	3,551
1851	2,651,939	4,266
1861	3,188,485	5,129
1871	3,840,595	6,178

- John Snow
- Miasama
- Broad Street Pump

1820

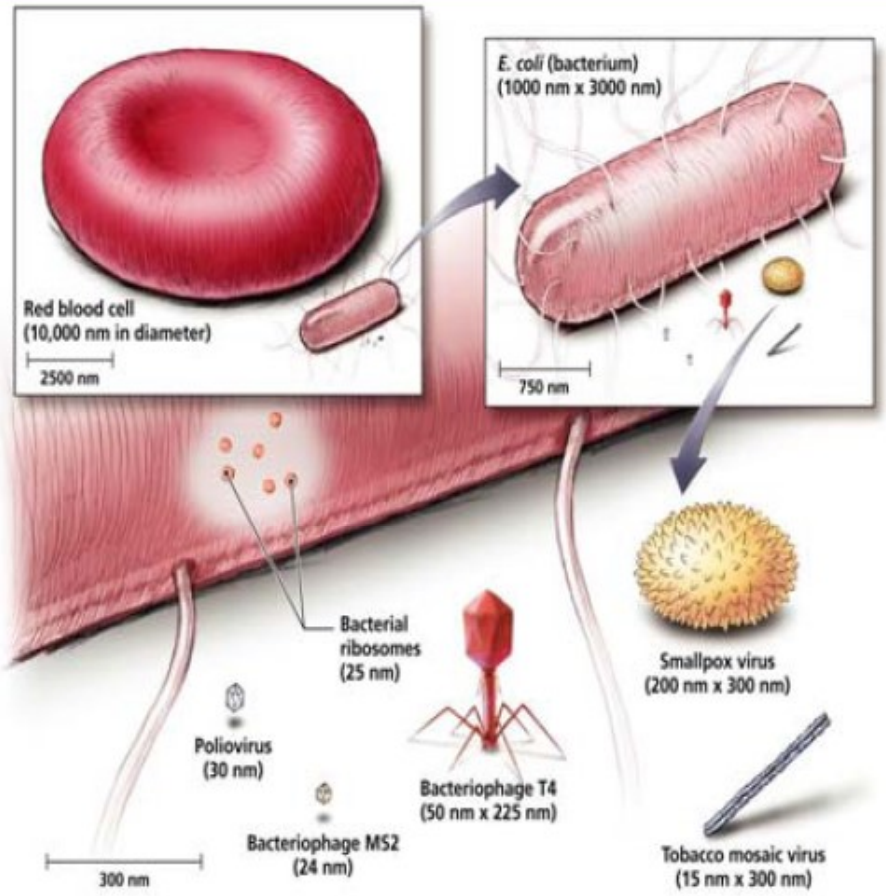


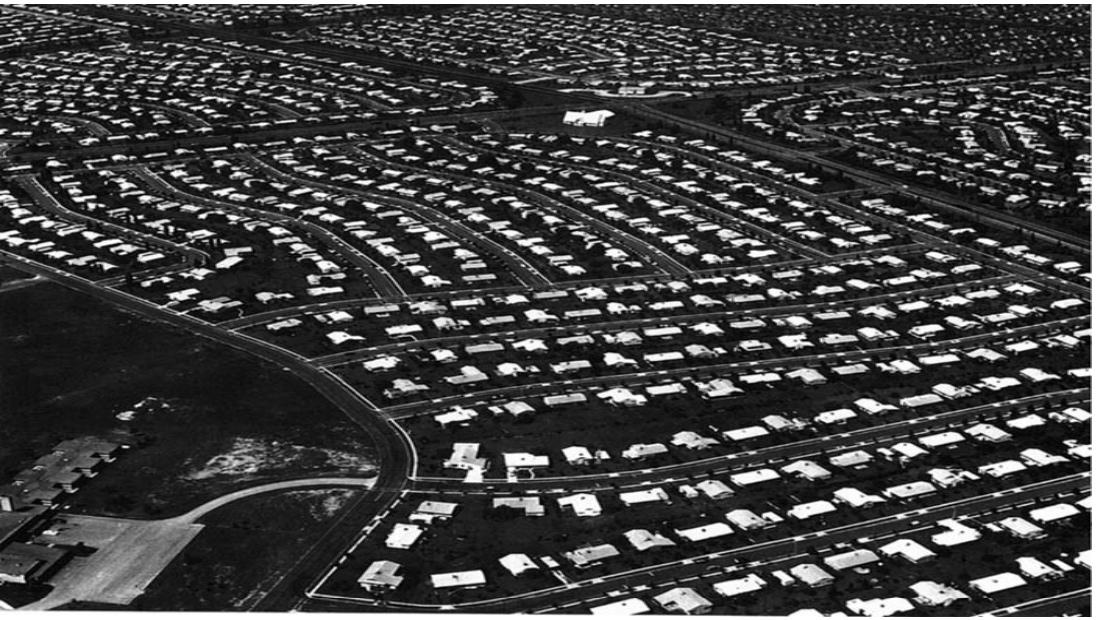
1914



https://www.britannica.com/technology/wastewater-treatment


TIME
WILL CLINTON TESTIFY?
THE CAPITOL HILL GUNMAN
THE KILLER GERM
It's turning up everywhere: in your water, your food, the pool. How to protect yourself from
E.COLI


Red blood cell
(10,000 nm in diameter)
2500 nm
E. coli (bacterium)
(1000 nm x 3000 nm)
750 nm
Bacterial ribosomes
(25 nm)
Poliovirus
(30 nm)
Bacteriophage MS2
(24 nm)
Bacteriophage T4
(50 nm x 225 nm)
300 nm
Smallpox virus
(200 nm x 300 nm)
Tobacco mosaic virus
(15 nm x 300 nm)



Urban Centres identified as Engines for Growth.

Effect of poor/ inadequate sanitation- 6-8 % GDP

Hon'ble Supreme Court Order on UWM

Separate orders dated 28.8.2019, 12.9.2019, 6.12.2019 and 22.02.2021 on the subject of Liquid Waste Management

23. Issue of liquid waste management was separately dealt with in OA 593/2017 on directions of Hon'ble Supreme Court and in suo motu proceedings for restoration of 351 identified polluted river stretches in OA 673/2018. Vide order dated 28.08.2019, the Tribunal directed that 100% sewage treatment must be ensured by all local bodies. Vide further order dated 06.12.2019 in O.A. No. 673/2018[7], the Tribunal directed that for failure to commence in-situ remediation, compensation will be payable at the rate of Rs. 5 lakh per month per drain after 31.03.2020 and for failure to commence setting up of STPs after 31.03.2020 compensation is to be paid at the rate of Rs. 5 lakh per month per STP. For failure to complete the project, compensation has to be paid at the rate of Rs. 10 lakh per STP per month after 31.03.2021. Relevant part of the order is quoted below:

100 % sewage treatment must be ensured

Heavy Penalties for Non-compliance

Only Treated Wastewater has Potential for Reuse & Recycle

How Much?

1 Lakh Population Town

100 lpcd

1 Crore litre per day

Potential Revenue-

@Rs 0.05 per litre

Rs 18 Cr per Year

- Agriculture
- Power
- Horticulture
- Industries
- Construction sector


How To Treat/Safely
Manage Wastewater
(Engineering)

Treatment of Municipal Wastewater

Why

- Disease Control
- Appearance and Odour
- Make fit for Reuse
- Meet Regulations

What

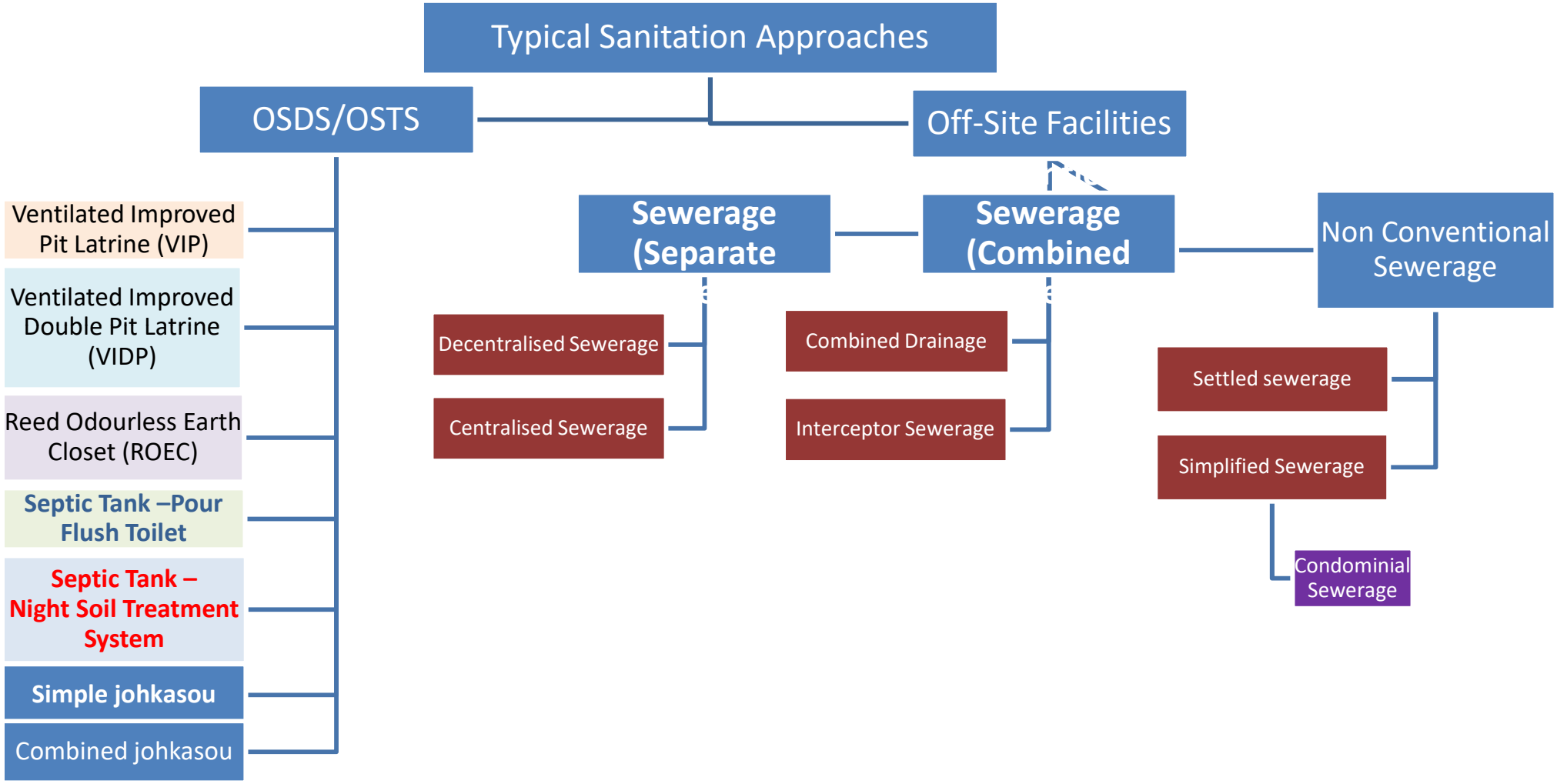
Removal of Impurities by Physical, Chemical and Bio-Chemical Means

Mutual interference

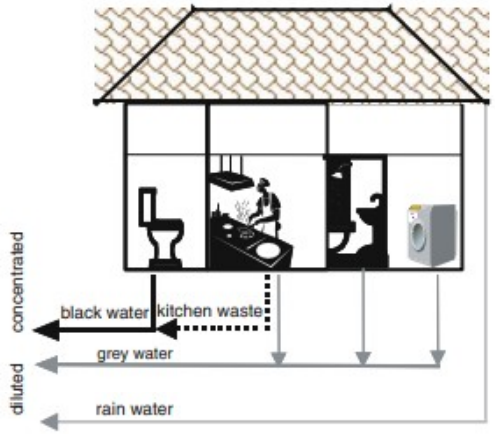
Sequence of removal

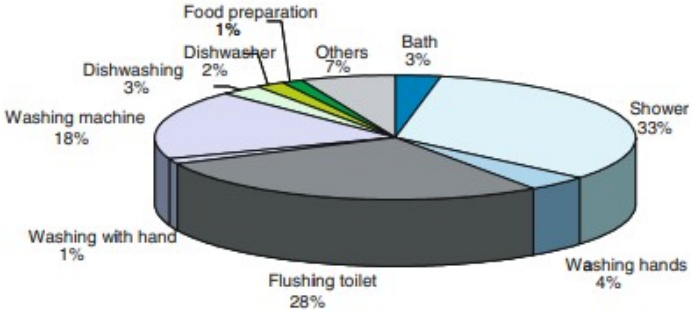
Solids → BOD/ Chem → Pathogens

Sanitation- Approaches



Collection

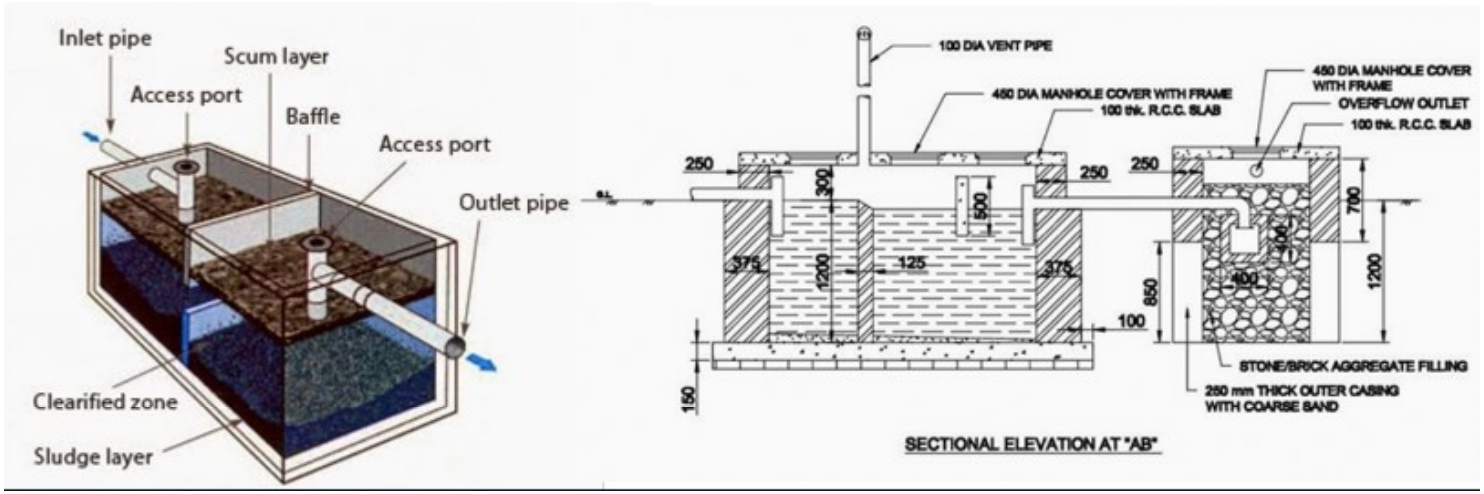




Components -(Dry Months)

- ❑Domestic or institutional Sewage
- ❑Commercial Effluent- Hotels, eataries, dairy, butchery etc
- ❑Industrial Effluent- Ideally Nil (ZLD regime) with CETPs but unorganised industry- leather tanning, auto repair etc.

Onsite- Septic Tank Systems and Alternatives



Engineered Passive System

Step-1

Septic Tank-

A tank, typically underground, in which sewage is collected and **heavier pollutants** are allowed to settle and anaerobically **decompose** slowly through bacterial activity

Step-2

Soak Pit-

A covered, porous- walled chamber that allows water to slowly soak into the ground through a Filtration Zone.

Filtration and Biological treatment of **lighter and dissolved pollutants** occurs in **Bio-mat**

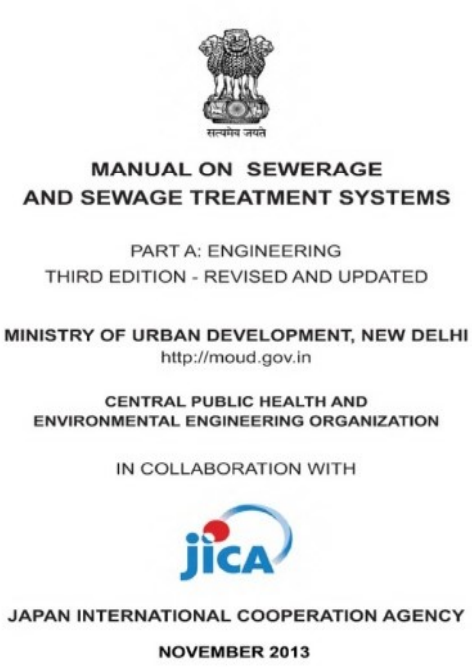
Onsite Sanitation however comes with understanding that -

a) The Soil shall absorb the effluent after pretreatment in the Septic tank
b) The density of discharging premises and hence the volume of discharge is reasonable
c) The discharged water is not available for direct reuse (of course aquifer is recharged)

9.1 OVERVIEW OF ON-SITE SANITATION

The areas that are not served by piped sewer systems can adopt on-site systems. The treatment can be either on-site or off-site like in the case of **septage management**.

These are **interim measures** till a decentralised or a full sewerage system is implemented.



IS 2470 – Part 1

2.4 ***Septic Tank*** *- A water-tight single storeyed tank in which sewage is retained sufficiently long to permit sedimentation.*

2.5 ***Sewage*** *- The liquid waste of a household or community including human excreta.*

2.6 Sludge - Sludge is the settled solid matter in ***semi-solid*** *condition.*

2.11 ***Sullage*** *-- The discharge from* ***wash basins, sinks and similar appliances,*** *which does not contain human excreta.*

3.1.3 Under no circumstances should effluent from a septic tank be allowed into an open channel drain or body of water without adequate treatment.

Johkasou

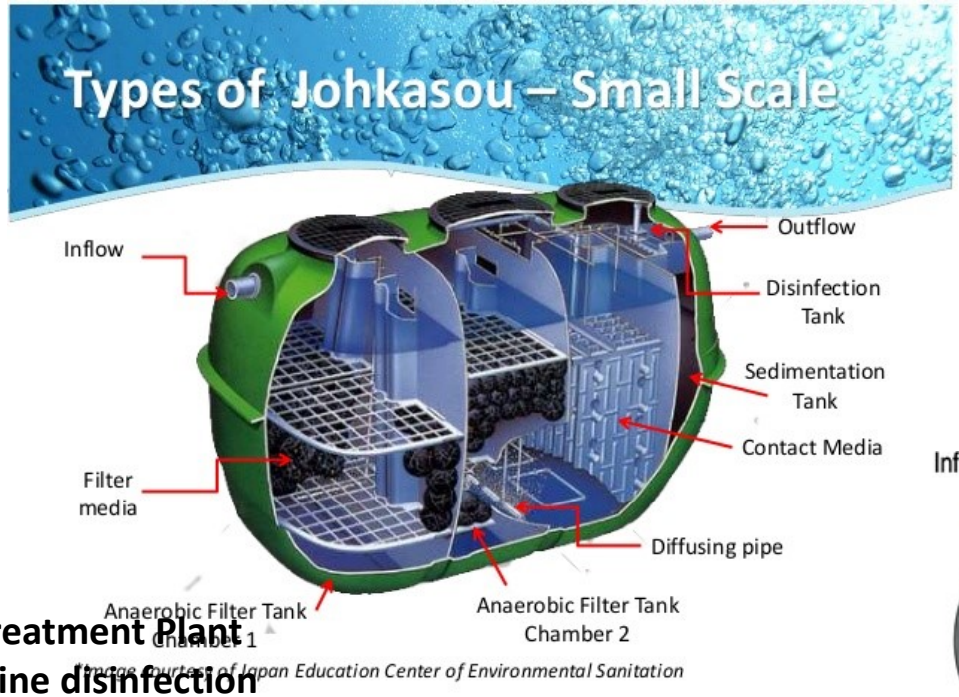
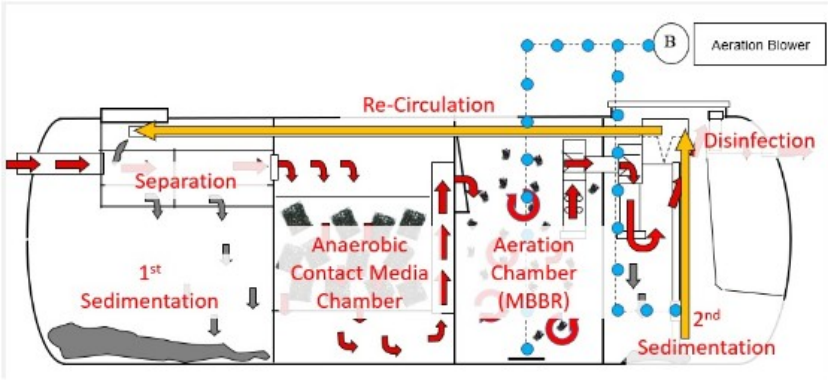
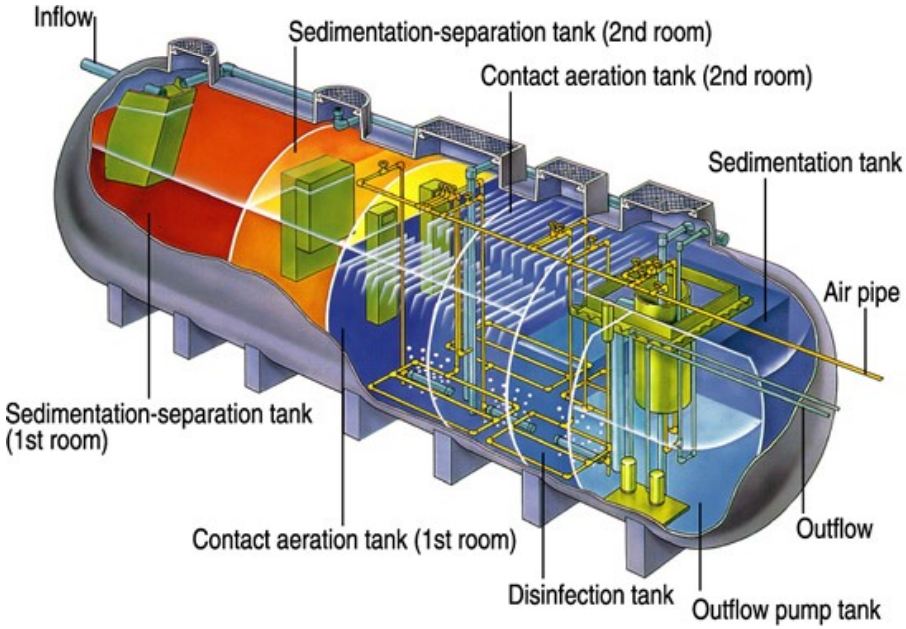


Image courtesy of Japan Education Center of Environmental Sanitation





✓**Complete Treatment Plant incl chlorine disinfection**

For Both Grey and Black Water

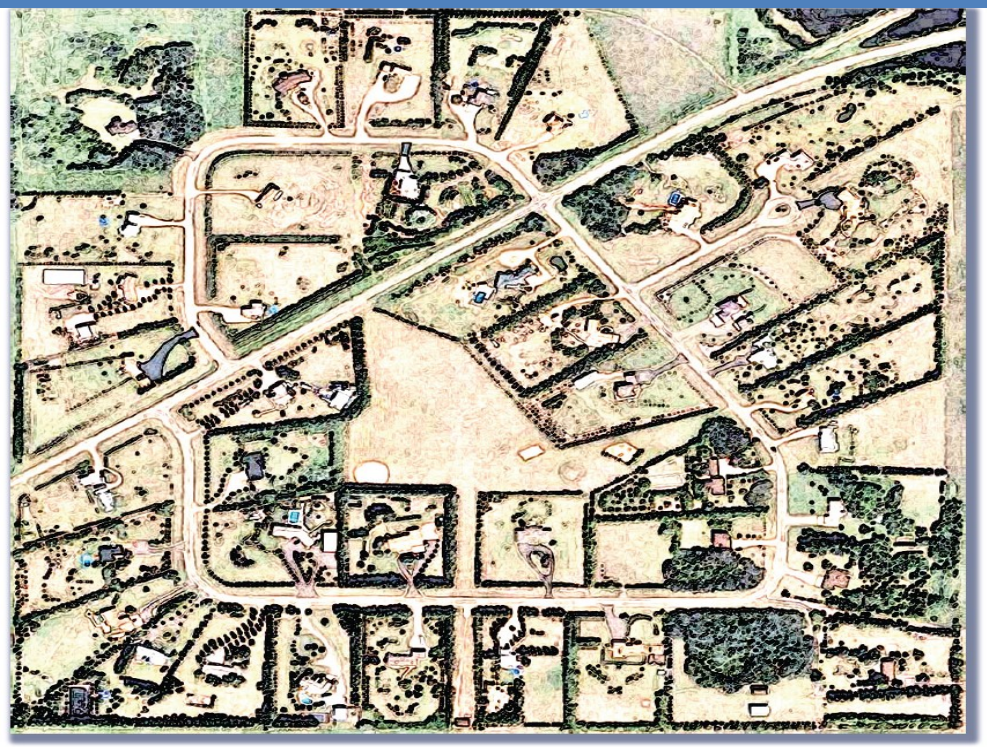
Costly

Requires Power to operate

Price in Japan @200 lpcd

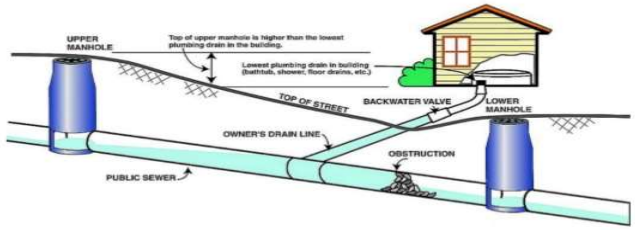
- ❑Catalog Price- 6,000～12,000 USD
- ❑Constr Cost (Incl Johkasou) 7,500～12,500 USD
- ❑O&M cost a year 500～900 dollars

Sanitation Through Sewerage

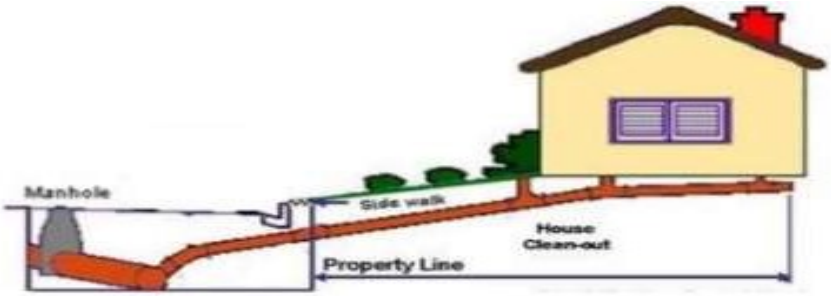


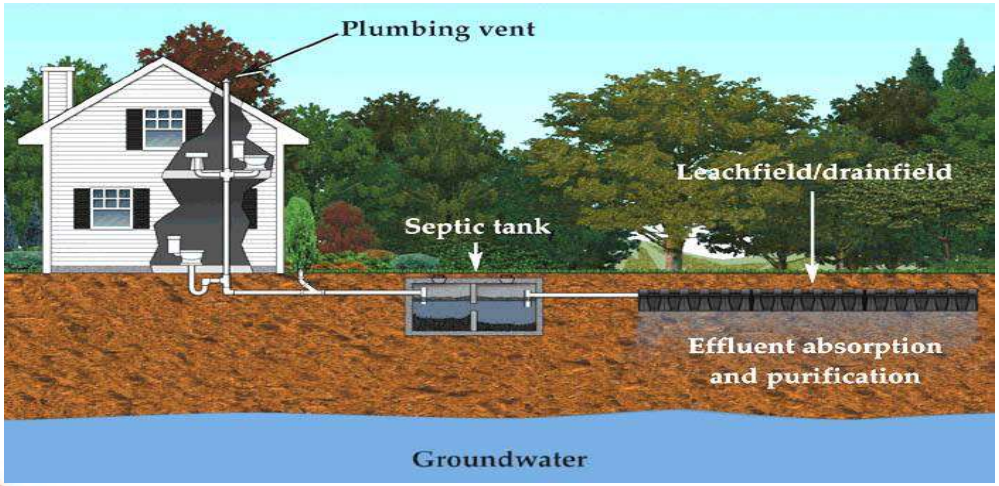
Sewers and Pumping Stations (Conveyance Network)

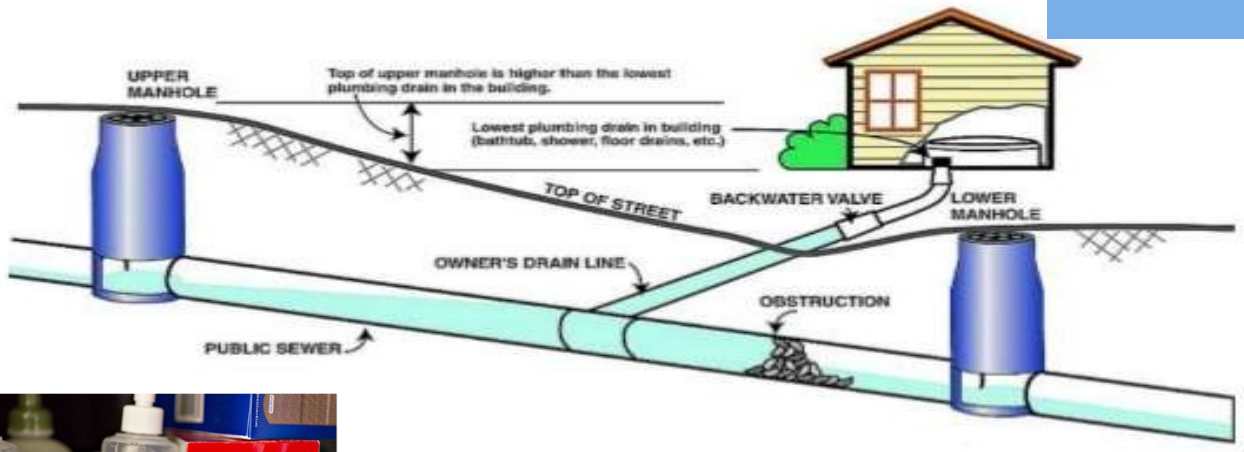
- ✓ Collects all used water (Grey+ Back)
- ✓ Conveys safely to a treatment facility
- ✓ Treats to desired Level
- ✓ Economy of Scale

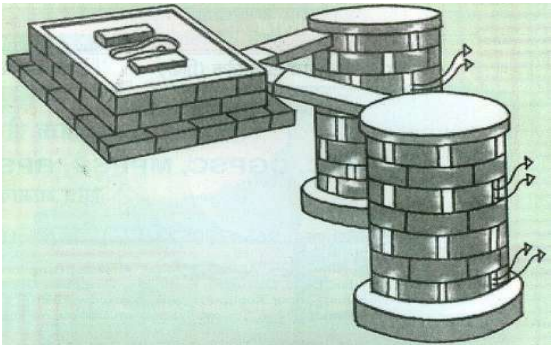


SAFE WASTEWATER MANAGEMENT OPTIONS

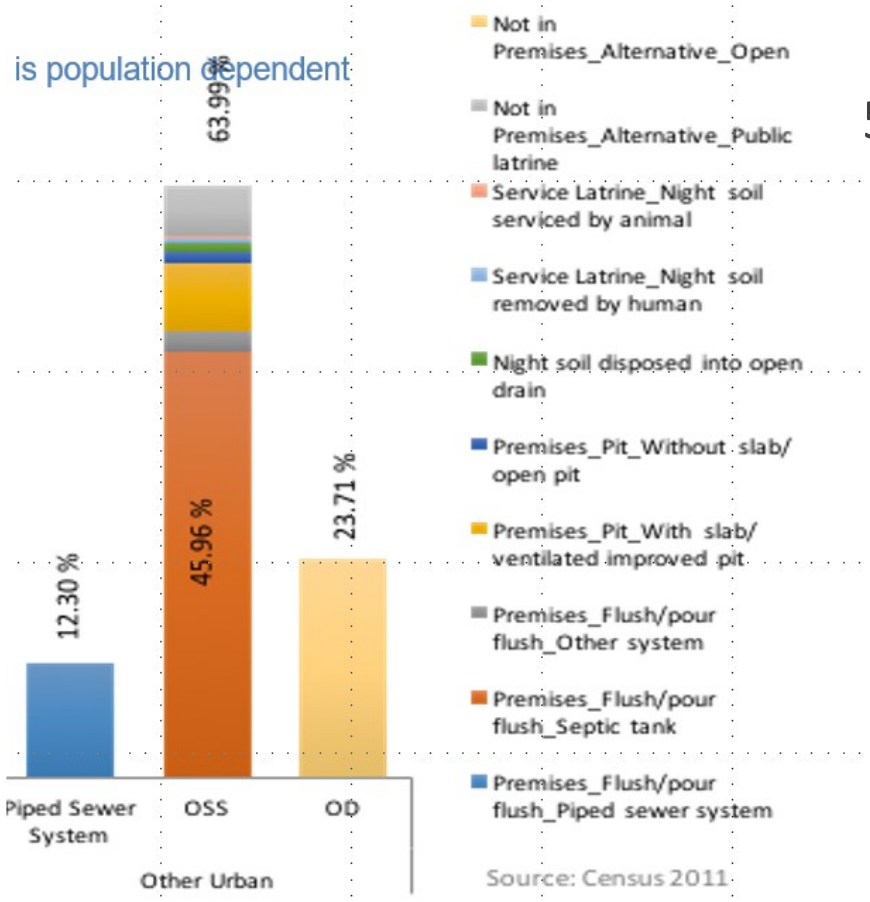


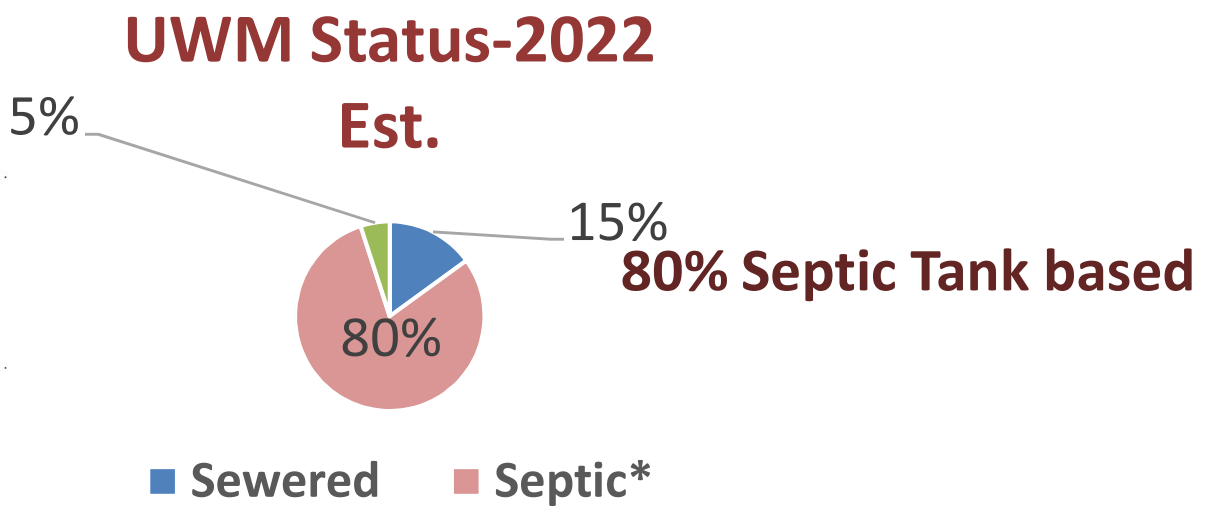






Status of Used Water Management in Towns with Population <100,000





	UAs+Towns	Area (Sq Km)	Population (2011)	
All Towns and UAs	474+5697	1,02,252.00	37,71,06,125	
Class 1-	298+170	45,662.85	26,47,45,519	63/28
Class II-	100+374	9,693.17	3,21,79,677	16%
Class III	75+1298	19,774.45	4,18,33,295	12%
Class-IV	1+1682	15,690.27	2,40,12,860	9%
Class-V	1749	9,688.14	1,26,56,749	

Wastewater Collection- Coverage in Developed/ Progressive Nations

Dataset: Wastewater treatment (% population connected)

Variable	Total public sewerage (% of resident population connected to urban wastewater collecting system = PUBTOTTR +
Unit	Percentage

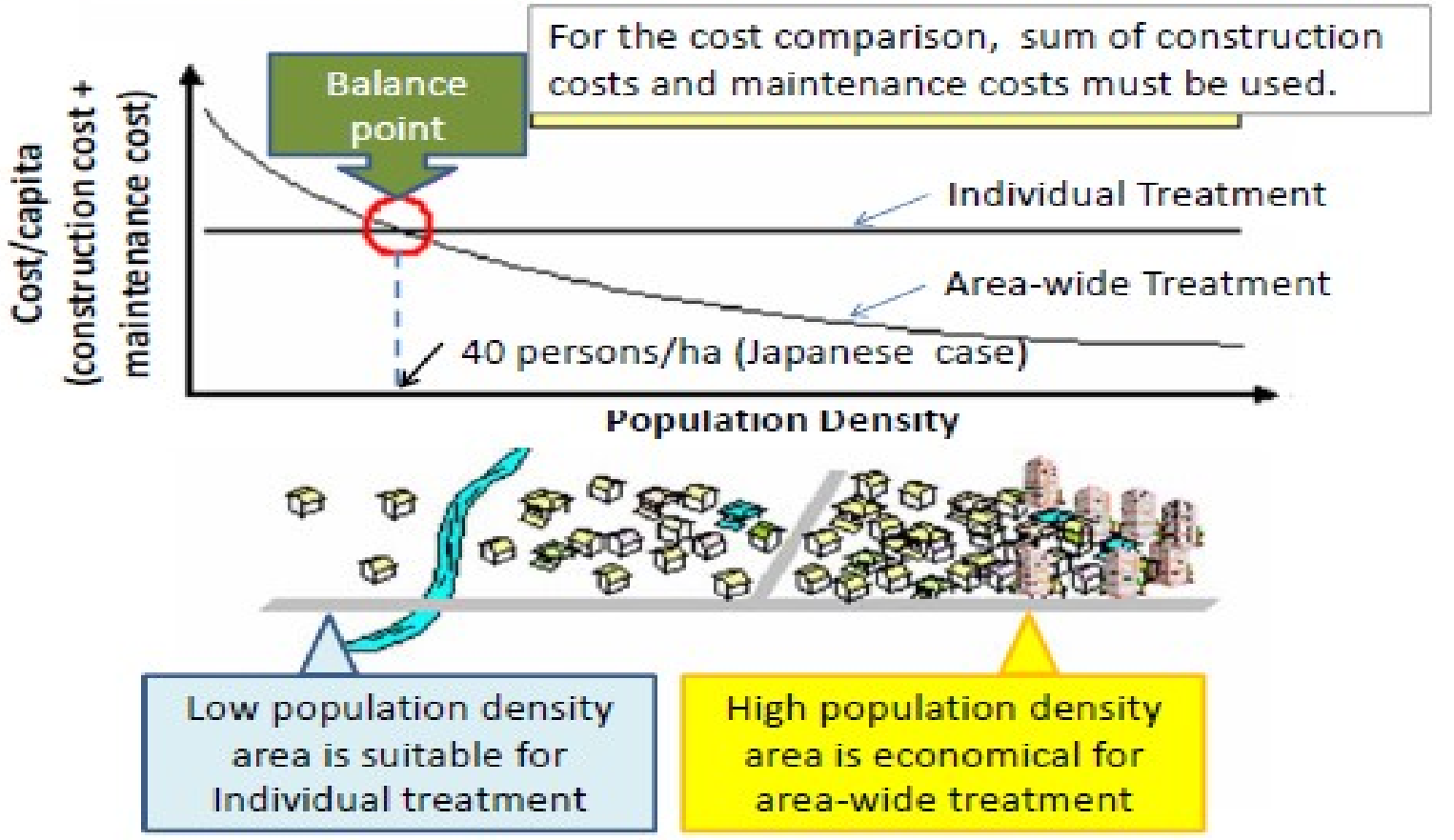
Year	1970	1980	1990	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Country															
Australia	..	..	..	..	..	93	94	94	94	93	92	(E) 92	93	93	93
Austria	..	..	100	100	..	94	..	95	..	95	..	95	..	100	100
Belgium	..	..	..	65	74	96	97	93	94	95	95	97	97	98	98
Canada	..	..	..	..	..	..	..	..	86	86	86	86	86	..	..
Chile	..	..	..	93	(E) 95	96	96	100	100	100	100	100	100	..	..
Czech Republic	..	..	..	(E) 66	75	79	81	(E) 78	(E) 80	80	81	81	82	82	83
Denmark	..	..	..	100	..	100	100	100	100	100	100	100	100	100	100
Estonia	..	..	..	(E) 70	79	87	87	87	(E) 87	(E) 87	88	88	88	..	..
Finland	..	..	..	100	..	100	100	100	100	100	..	..	..	100	100
France	..	..	..	..	..	82	82	82	82	80	82	82	82	81	..
Germany	..	..	..	..	97	96	(E) 96	(E) 96	96	(E) 97	(E) 97	97	..	..	..
Greece	..	..	..	85	91	87	88	92	93	93	93	93	95	95	..
Hungary	(E) 21	(E) 36	(E) 39	(E) 64	61	72	72	(E) 73	(E) 73	(E) 74	(E) 77	(E) 78	(E) 79	(E) 80	80
Iceland	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	..	..	..	..	83	..	(E) 97	(E) 93	(E) 93	(E) 93	(E) 94	94	(E) 94	..	..
Israel	..	(E) 81	(E) 89	(E) 94	(E) 97	(E) 98	(E) 98	99	99	99	99	99	99	99	99
Japan	..	30	44	62	69	75	76	76	77	78	78	78	79	79	80
Korea	..	8	(E) 33	(E) 71	(E) 84	(E) 90	91	92	92	93	93	93	94	94	94
Latvia	..	..	..	100	100	100	100	100	100	100	100	100	100	100	100
Lithuania	..	..	..	..	..	72	73	74	74	75	77	77	78	79	79
Luxembourg	..	..	..	..	..	99	100	100	100	99	99	99	..	..	..
Mexico	..	..	50	(E) 59	(E) 68	(E) 71	..	..	..	..	..	..	..	..	..
Netherlands	..	..	98	100	100	100	100	100	100	100	100	100	100	100	100
Norway	..	..	80	94	96	98	98	99	98	98	99	100	99	100	100
Poland	..	..	72	54	(E) 86	(E) 90	91	94	95	94	94	95	95	96	96
Portugal	..	..	..	..	79	..	..	..	..	..	..	..	86	..	..
Slovak Republic	..	..	..	..	..	..	..	..	..	..	..	89	89	90	..
Slovenia	..	..	..	71	85	87	90	89	90	91	92	92	96	97	97
Spain	..	..	..	..	..	98	..	90	..	87	..	89	..	89	..
Sweden	..	..	86	..	86	86	86	87	87	87	87	87	87	..	..
Switzerland	..	..	..	(E) 98	(E) 99	(E) 100	..	..	(E) 100	..	..	..	..	..	..
Turkey	..	..	..	(E) 26	42	52	..	58	..	64	70	71	74	74	..
United Kingdom	..	..	..	(E) 98	(E) 100	100	..	..	..	..	..	..	..	..	..
United Kingdom (England & Wales)	..	..	..	..	99	..	..	..	..	..	..	..	..	..	..
United States	..	..	..	(E) 75	..	..	..	76	..	..	..	..	..	..	..

Data extracted on 16 Jul 2021 05:09 UTC (GMT) from OECD.Stat

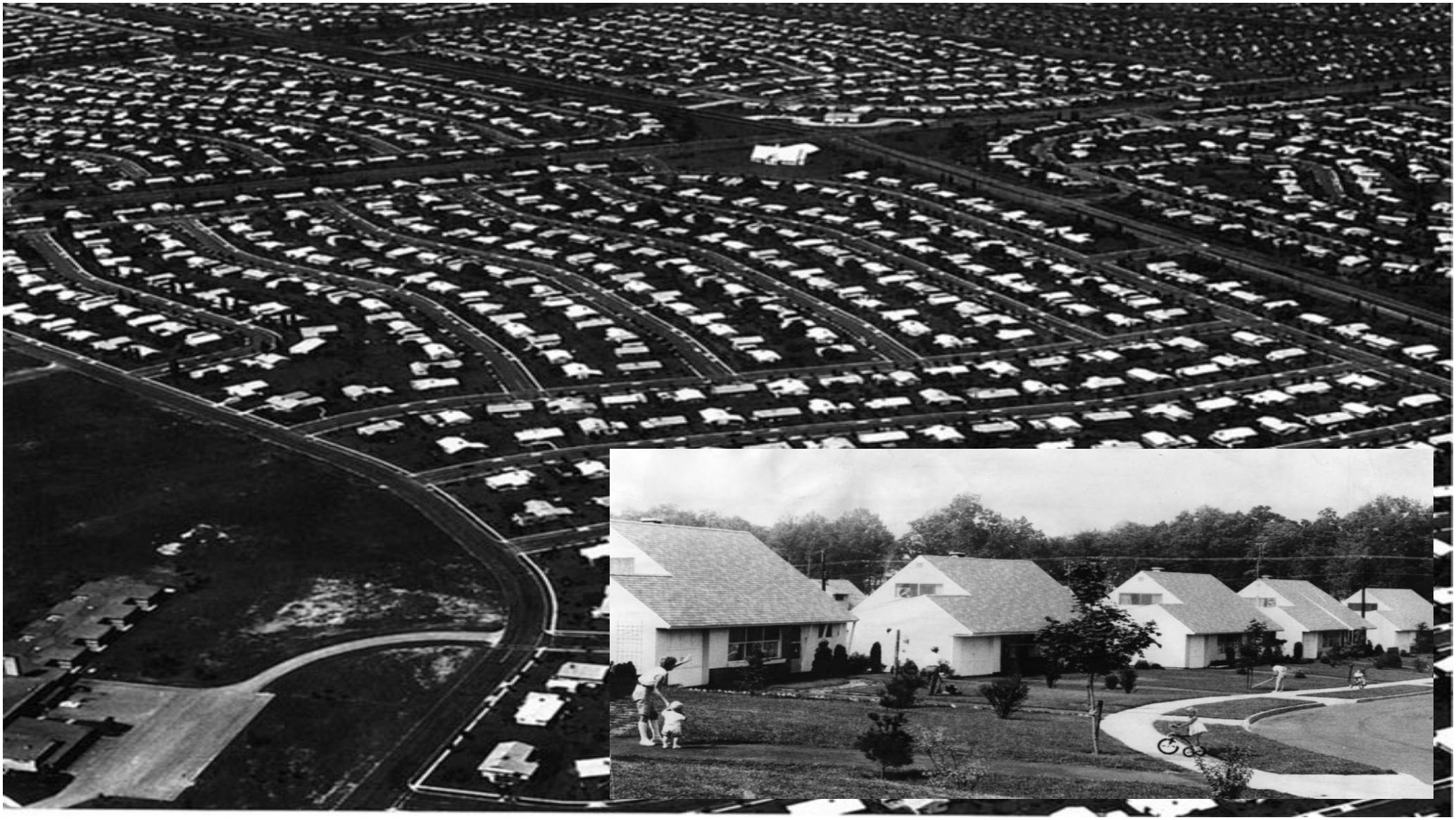
Legend:

E: Estimated value

-Cost Comparison between Area-wide and Individual Treatment-



Source : MLIT



Septic Systems Failure in USA

- One of the main causes of ground water contamination in the United States is the effluent (outflow) from septic tanks, cesspools, and privies.
- Although each individual system releases a relatively small amount of waste into the ground, the large number and widespread use of these systems makes them a serious contamination source.
- Septic systems that are improperly sited, designed, constructed, or maintained can contaminate ground water with bacteria, viruses, nitrates, detergents, oils, and chemicals.
- **Most, if not all, state and local regulations require specific separation distances** between septic systems and drinking water wells.

Regulation permits only 2.0-5.0 Acre lots for OSDS in California

Japan – **Economic inflexion point-**

40 person per Hectare

USA- **Environmental Inflexion point-**

- Almost one-third of all homes in the United States dispose of domestic wastes through individual on-site sewage disposal systems (OSDS). **(Mostly Rural)**
- **Septic tank-Soil absorption systems** represent about eighty-five percent of all individual disposal units (Scalf et al., 1977).
- EPA defines 40 septic systems per sq mile (16 STS/Sq KM) as **high density**

= 80 pers/ Sq KM

- US permits single family OSDS in a **property of size** 0.4 Acre (1600 Sq m) or higher
- More than one half of the **soils** in the United States are declared unsuited for conventional OSDSs. (Source US EPA-2002)

Off Site Systems- Sewerage

General Concerns/ Myths

"Wastes" Precious Water

" Expensive" to Execute

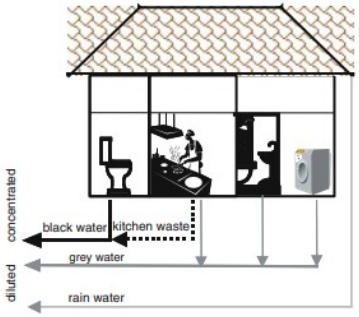
"Inconvenient" to Public in Retrofitting=

----- Political Will

Claim-

Water is "Wasted" to make Excreta flow in Sewers

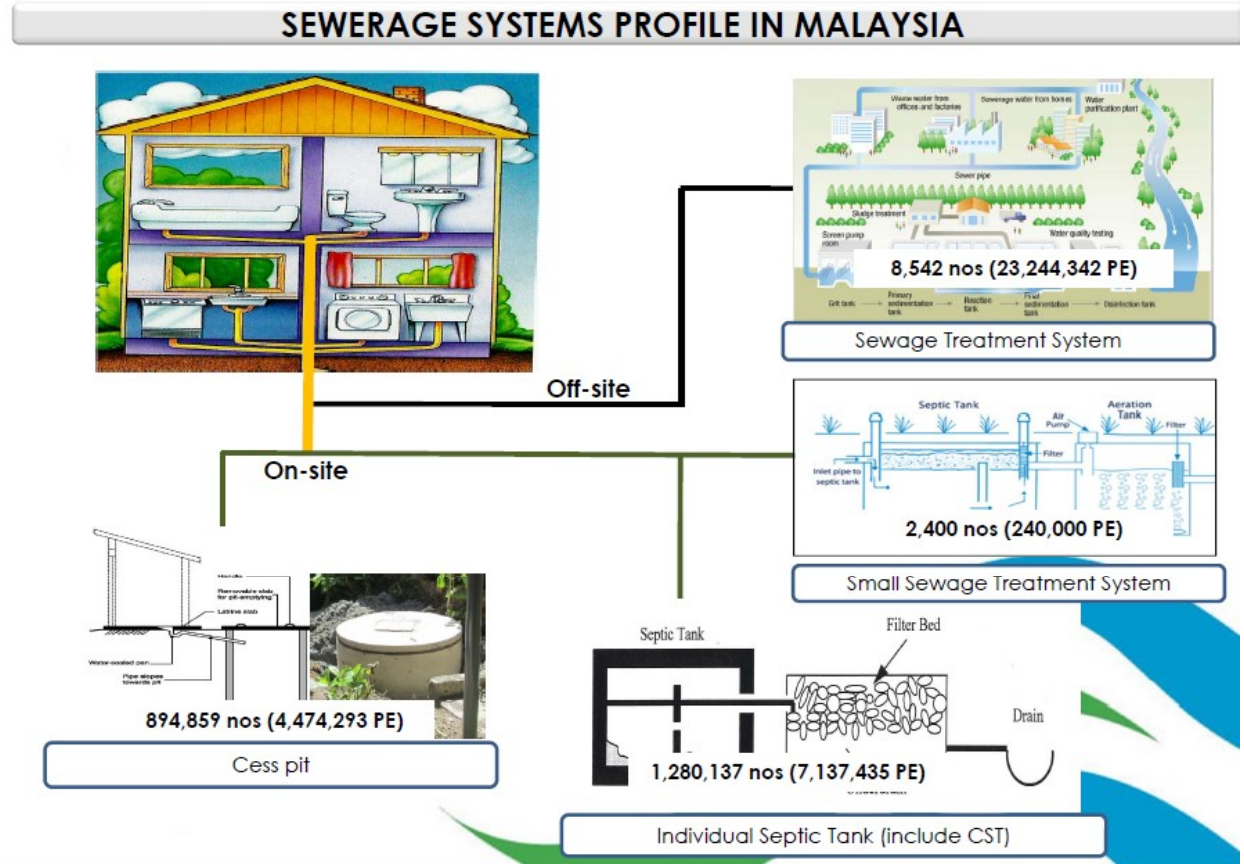
- ❑ **Water used for Excreta Disposal (Black Water) is just 25% while other uses incl Grey water is 75%**
- ❑ **Sewerage has potential to bring all water back after treatment for Reuse**



Expensive to Execute and Maintain

Debatable- compared to what?

- **Bridge over Brahmapura vs Boats**
- **Public Transport (Bus) vs tonga service to distt market town**



Malaysia-

Area- 329647 Sq Km
Population- 3.2 Crore
Urban- 2.44 Crore
Mn Plus Cities- 2
Lakh Plus- 35
10000 Plus- 115

Type	Population Served	%
STPs and Sewers	2.324 Cr	66.36
Small STPs	0.024 Cr	00.68
Septic Tanks	0.714 Cr	20.39
Cess Pits	0.447 Cr	12.76

Note- This includes Rural Population

Centralised-82 Units/ 6.39 Mn
Decen-8,847 Units/17.84 Mn

Malaysian Sewerage Industry Guidelines, Volume 5 -Septic Tanks
MS 1228:1991 Code of Practice for Design and Installation of Sewerage Systems

2.4.2 **Single Development Over 30 Units (150 PE) in Total with Average Housing Density Greater Than Five Units per Hectare**

- ❑ For single development over 30 units in total with an average housing **density greater than 25 persons per hectare**, **a sewer reticulation and a treatment plant must be provided**.
- ❑ Sewer reticulation must be appropriately designed to achieve acceptable hydraulic conditions within topographic and routing parameters.

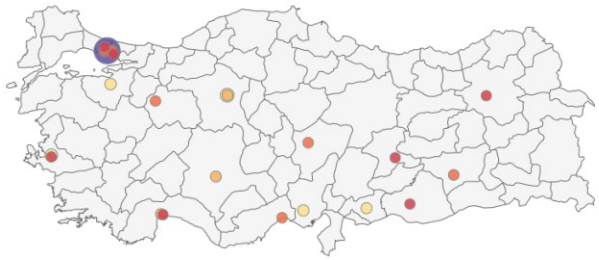
2.4.3 Single Development Over 30 Units in Total with Average Housing Density Less Than Five Units per Hectare

- ❑ For single development over 30 units in total and with an average housing density of less than 25 persons per hectare, **a sewer reticulation and a treatment plant is preferred**.
- ❑ Where the terrain of the development is such that installation of an approved treatment system mandating the construction of **excessive numbers** of intermediate pump stations; individual treatment facilities may be considered, subject to the following conditions:

The individual system must be a system approved by the Commission.

Where the ground conditions permit, soakaway trenches must be used for disposal of the final effluent from the treatment systems.

Sewerage System Profile- Turkey



Turkey-

Area – 783562 Sq Km
Population- 8.36 Crore
Urban- 6.42 Crore
Mn Plus Cities- 6
Lakh Plus- 76
10000 Plus- 427

Total number of municipalities (Urban and Rural)	- 1389
Total Municipal Population	- 7.9 Cr
Municipalities served by Sewer System	- 1362
Population Served by Sewers	**- 7.19 Cr (91%)**
No of Wastewater Treatment Plants-	-1068
Municipalities Served by WWTPs	- 711
Treatment Capacity/WW Discharged/Treated	- 17500/13588/11940 l
Total Municipal Population served by WWTPs-	**- 6.12 Cr (78%)**
Amount of wastewater discharged per capita	- 189 liters/capita-day

Pros and Cons of ON-site and OFF-site treatment systems

OFF-Site

Advantages	Disadvantages
• Controlled Treatment System – easy to maintain • Complete solution for Black Water and Grey Water • Less Operation & Maintenance • Reduces the cost of Septic Tanks over the House holds	• Discomfort to the people while implementing • Comparatively, Longer Implementation time • Required skilled manpower for sewer laying • **Laying of sewer is cost intensive project**

OFF-Site

ON-Site

Advantages	Disadvantages
• Comparatively, less cost intensive to Municipality • Wastewater can be managed at HH/community level • Less Operation & Maintenance cost	• Only deals with Black water**, incomplete solution** • Difficult to monitor and manage • Systems need to desludged periodically • Chances of spreading septage in open areas • System Management is complex in nature related to soil strata, GWL, permeability.

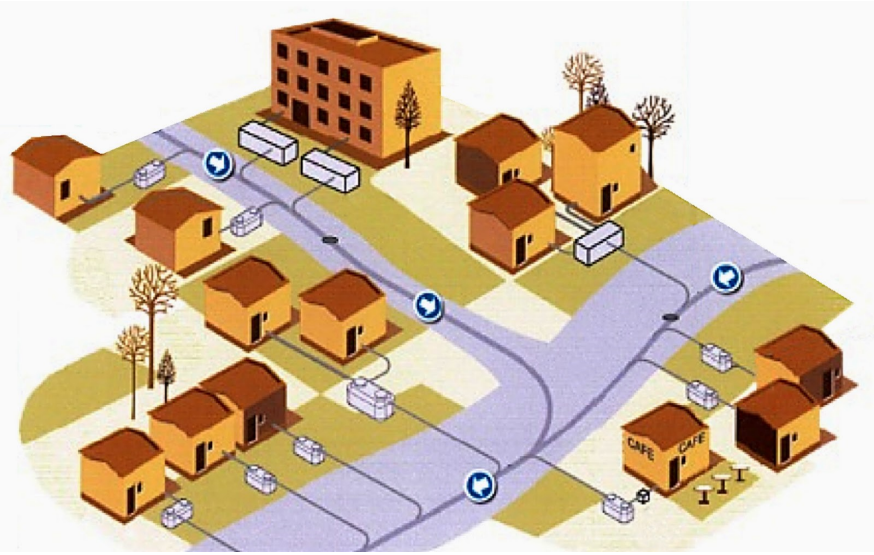
ON-Site

Elements of Cost in Wastewater Management

Urban Citizen Health and Aspirations

- Collection
- Conveyance
- Treatment
- Reuse

Observed situation in Smaller Indian ULBs



- Mixed Coverage pattern in growing towns
- Sewerage cover is extremely limited
- Septic tank discharge released into surface drains
- Grey water directly released into surface drains
- Multi-source pollution and garbage in drains
- **Drains Outfalling** untreated in water bodies

- Proliferation of STPs- SBM/ AMRUT requirement

Ministry of Housing and Urban Affairs
Government of India

SBM-U 2.0 Guidelines:
Chapter-7- Used Water Management

स्वच्छ भारत
एक कदम स्वच्छता की ओर

Targets under SBM 2.0 (UWM)

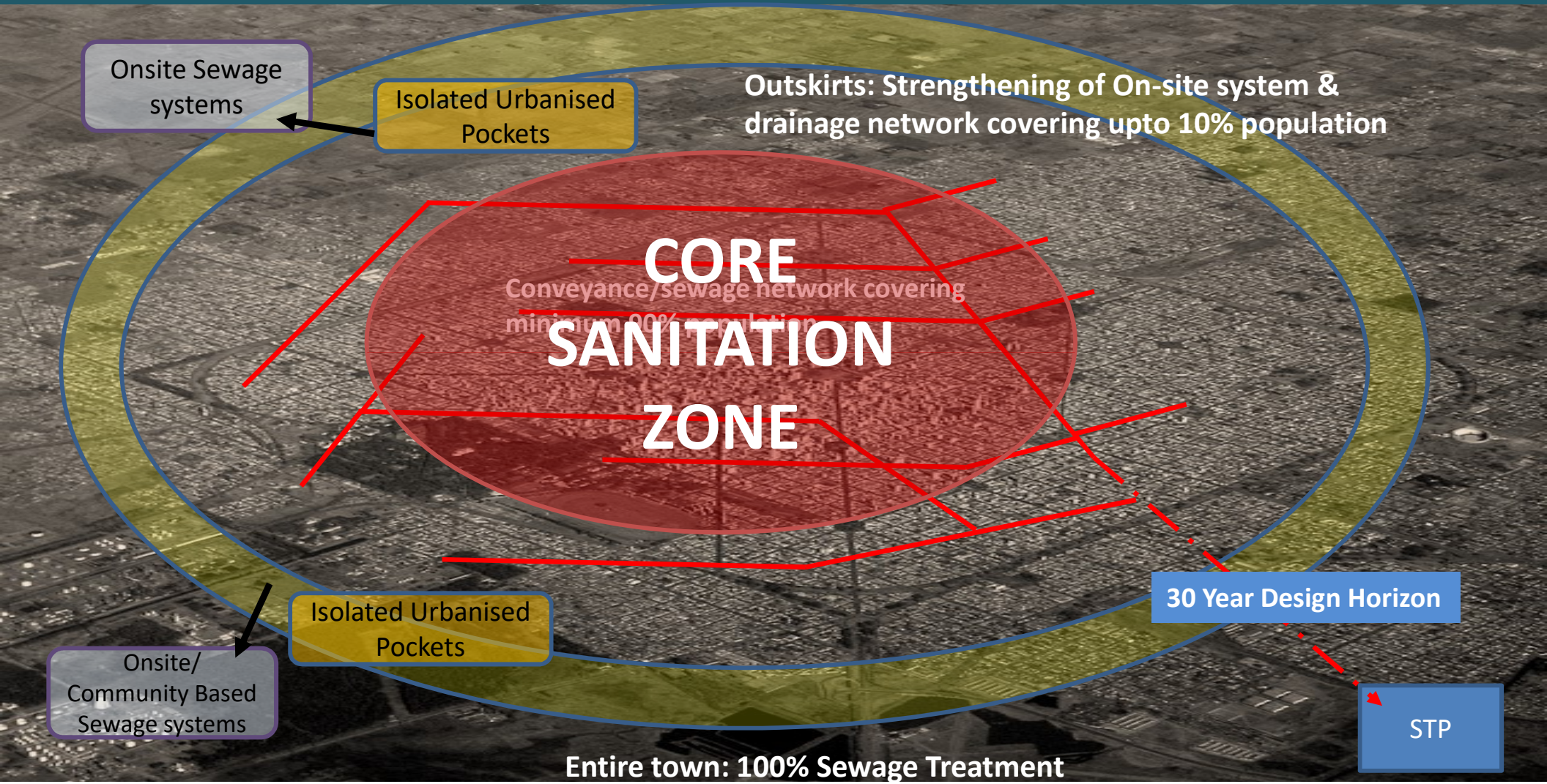
- No usedwater disposal in water bodies without treatment
- 50% town water+
- All town ODF++

SBM (U) 2.0 :
Core Sanitation Zone (CSZ) Concept
Population Density
Incremental Coverage

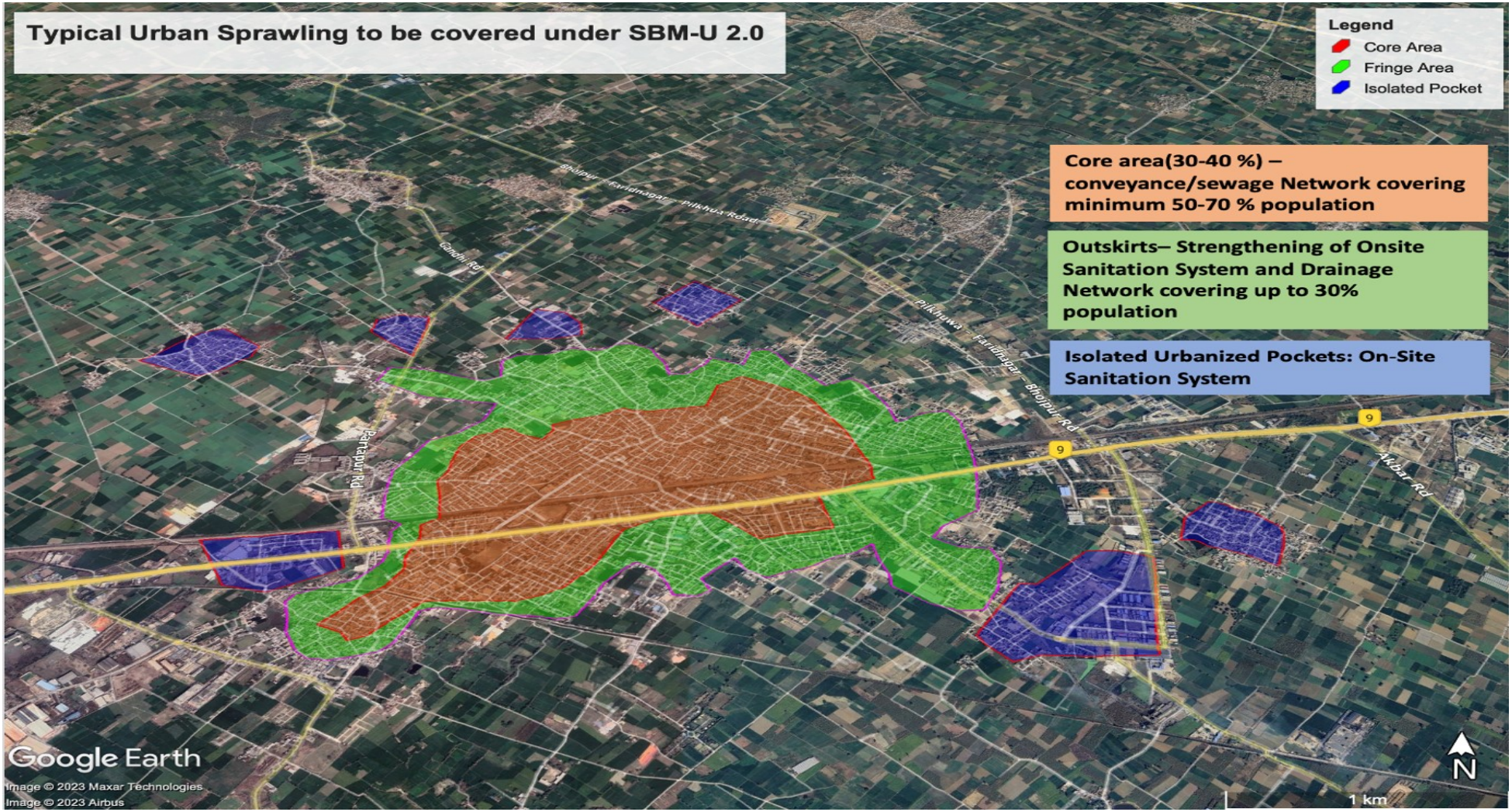
Salient Characteristics of Smaller Indian Towns

- Organic Growth- No major out growths
- Density (1000-4000 per Sq KM)
- Vacant plots
- Low Rise
- Ribbon Development along arterial roads
- Small pockets of high congestion.

Conventional Approach: Sewerage system for entire town



Incremental Approach: Sewerage system for partially covered town



Advised Concept for Used Water Management Under SBM 2.0

Design Philosophy

- Provide Sewage Treatment Plant (STP) designed for **Current** and Not the Future population
- Connect **Maximum** Premises in **Denser (Core) Areas of the Town** through a Sewer Network
- Minimise the **Trunk Sewer** Length- Locate STP at as close as possible
- Connect **Outfalls of Major Drains** leading to any water body/marsh to an **Interceptor sewer/Drain**
- Flow from Intercepted drains diverted to STP
- Improve conveyance capacity and quality of discharge in surface drains
- Improve discharge quality from Unsewered Houses(Fringe Area)- Provide Soak aways
- Septage Management from Unsewered Houses(Fringe Area)- at STP(Co-treatment)
- In Future, identify other maturing areas to provide sewerage – **Decentralised + Incremental Approach**

Concept of Core Sanitation Zone

- Identify and Delineate a **Core Sanitation Zone (CSZ**) in the town which caters for 70% of Population residing in 30% of Area
- This Zone is not regular in shape or follows any defined ward boundary.
- Identify HHs based on Septic Tanks within CSZ which are still possible to connect into sewerage with reasonable effort/ retrofit pain (Say 70% of population of CSZ or 50% overall)
- Set up an STP sized for about 80-100% of current population need
- Arrange to execute sewer network to connect 50% of current HH from within CSZ in the period of the SBM 2.0 (The exercise may continue beyond the mission).

Concept of Core Sanitation Zone (Contd…)

- **In areas outside CSZ, the ULB will strive to-**

a) enforce FSM (FSM also extends to the excluded dwellings within CSZ.

b) provide Soak pits in premises where missing, OR set up community level soak pits

c) repair the surface drains carrying grey/ mixed water.

d) Provide an I&D drain system to collect and carry at least 50% of DWF to the STP

e) All Faecal Septage to be transported to the STP for co-processing

Future Development

- As town develops and number of houses in any fringe zone exceeds a threshhold, a secondary Sanitation Zone (SSZ) is identified and similar network and STP extended here **(Decentralisation with Time)**

Per Capita Sewer Length in Major Cities in India

ULB	Population	Sewer Coverage (%)	>900 mm dia (m)	600- 899 mm dia (m)	300-599 mm dia (m)	<300 mm dia (m)	Total Sewer Length (KM)	Sewer length per Capita (m)
Indore	2939406	99	52312	45731	337984	1688973	**2125.0**	**0.723**
Bhopal	2238202	56.74	3900	7230	141000	633000	**785.1**	**0.351**
Surat	5823040	99	726120	87153	314824	1165964	**2294.1**	**0.394**
Thane	2703574	97	29100	52380	64020	145500	**291.0**	**0.108**
Pimpri Chinchwad	2403860	98	25500	89535	1078515	867680	**2061.2**	**0.857**
Greater Mumbai	15470527	98	142938	109364	319523	1451752	**2023.6**	**0.131**
Gvmc	2242239	40	345024	211236	100227	124513	**781.0**	**0.348**
Ahmedabad	7751405	100	156000	71000	1475000	1600000	**3302.0**	**0.426**
Pune	4294225	100	65718	88889	475933	1492688	**2123.2**	**0.494**
Nagpur	3043221	70	167000	250500	334000	918500	**1670.0**	**0.549**
Lucknow	3453930	60	47500	78000	187200	468000	**780.7**	**0.226**
Rajkot	2137402	100	27500	180010	86420	2312170	**2606.1**	**1.219**
Vadodara	2677564	80	214200	314160	528360	371280	**1428.0**	**0.533**

Key Advantages of Core Sanitation Zone Concept

Saves Cost to Municipal Body

- ❑ The excessive cost of laying sewers is avoided in less densely populated, fringe areas
- ❑ Network and sewage treatment is delayed (Concept of **Just-in-Time Investment**) in these areas
- ❑ Supports concept of Decentralisation

Saves Effort and Time for laying Sewers and Inconvenience to general Public

- ❑ Congested HH/ groups in the Core area are not linked to sewerage and thus the extra effort and inconvenience is avoided.

Cost Effective for new/ future HHs

- ❑ Future Premises to come up in the Core Zone (in left over patches) do not have to arrange own septic systems in future @ about Rs 25-40,000/-

Mitigates Environmental Pollution

Enables treatment of maximum used water and its Reuse

SBM 2.0 : Eligible components for funding

Eligible components for Central Share

1. Sewage treatment plant with facility to co-treat septage
2. Interception & Diversion
3. De-sludging vehicles

Components to be funded through 15th FC/ State/ ULB/ Private Sector

1. Construction of sewer networks
2. Strengthening of Municipal drains
3. Diversion of used water to nearby sewer network

Typical town sewage outfall

Typical drains carrying Sullage

Drains of Delhi and Ghaziabad

Interception and Diversion (I&D) of Drains

FSM Facility integrated with STP