Smart Water Distribution

Challenges and Issues in Providing Drinking Water to 20 Crore Indian households

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Introduction

- Rising Demand- Population Growth, Urbanization, Lifestyle Changes
- Increasing risk of contamination
- Reluctance in Smart technology adoption by water companies
- Poor Wastewater Management
- Excessive reliance on Ground Water
- Inadequate capacity of participating water companies to deliver projects with required quality and within stipulated timelines
- Lack of strict adherence during O&M in terms of KPIs and penalties
- High leakages during water distribution and unavailability of robust leakage repair arrangement

Rising Demand

Sector wise projected water demand in India (Press Information Bureau 2013)

Sector	Water demand in bcm					
	2010		2025		2050	
	High	Low	High	Low	High	Low
Irrigation	543	557	561	611	628	807
Drinking Water	42	43	55	62	90	111
Industry	37	37	67	67	81	81
Energy	18	19	31	33	63	70
Other	54	54	70	70	111	111
Total	694	710	784	843	973	1180

High Contamination

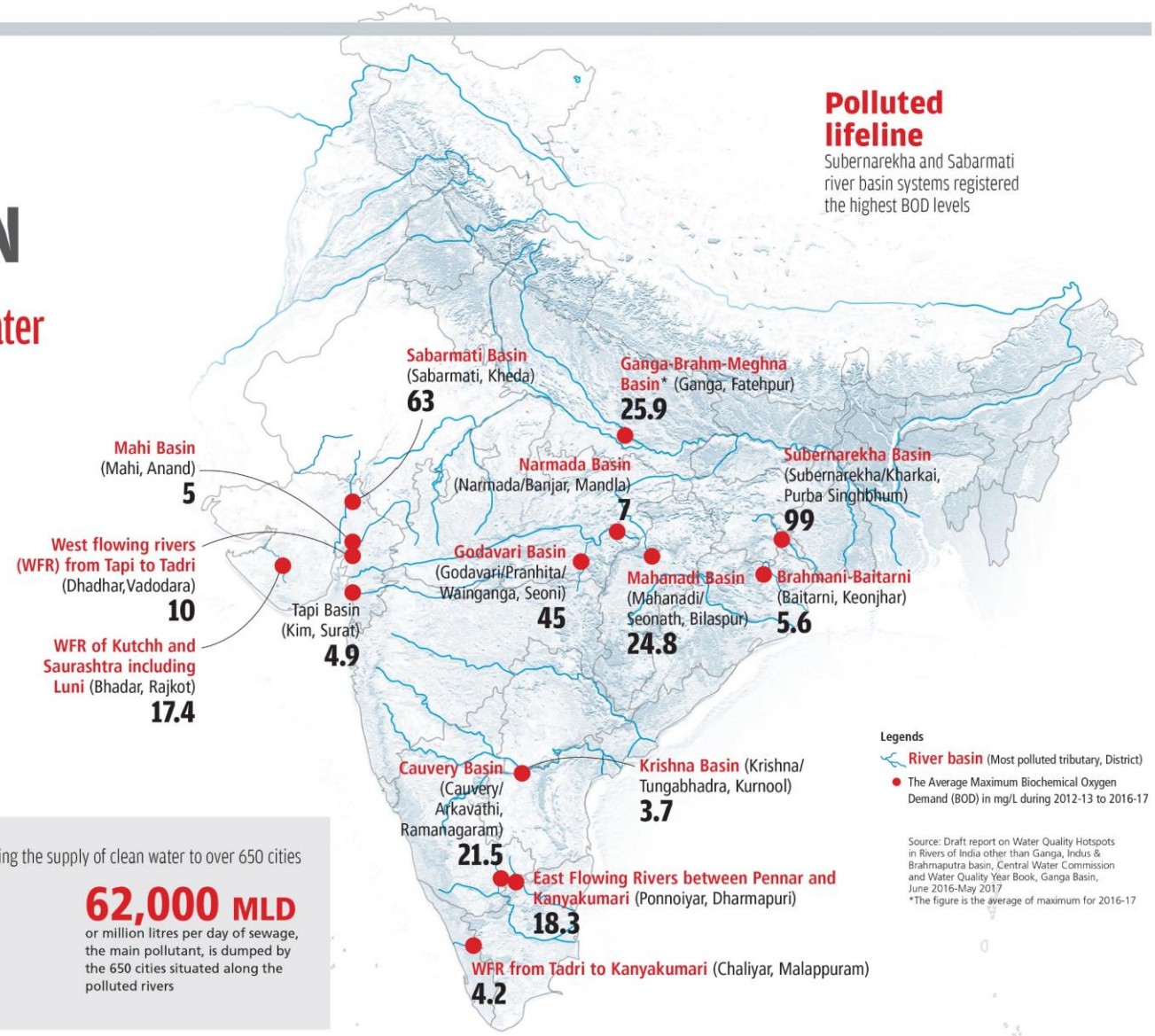
DATA DIVE

STATE OF RIVER POLLUTION

30% sites have polluted water

Of the 222 sites monitored by the Central Water Commission for water quality between 2012-13 and 2016-17, water quality at 67 locations was beyond the permissible limits. Out of the 67 sites, 14 sites fell in category I (severely polluted) and 12 sites fell under category II. This excludes Ganga and Brahmaputra, the two most important and polluted river basin systems

What is Biochemical Oxygen Demand (BOD)
The amount of dissolved oxygen that must be present in water in order for microorganisms to decompose the organic matter in the water. It is a used as a measure of the degree of pollution. The BOD value is most commonly expressed in milligrams of oxygen consumed per litre (mg/L). If the BOD level is higher than 3mg/L, it is unfit for drinking



THE OTHER STORIES

Rivers in distress | River pollution is threatening the supply of clean water to over 650 cities

275 rivers are polluted out of the monitored 445 rivers. It was 121 in 2009

302 the number of polluted river stretches. It was 150 in 2009

62,000 MLD or million litres per day of sewage, the main pollutant, is dumped by the 650 cities situated along the polluted rivers

Source: SoE in Figures 2016

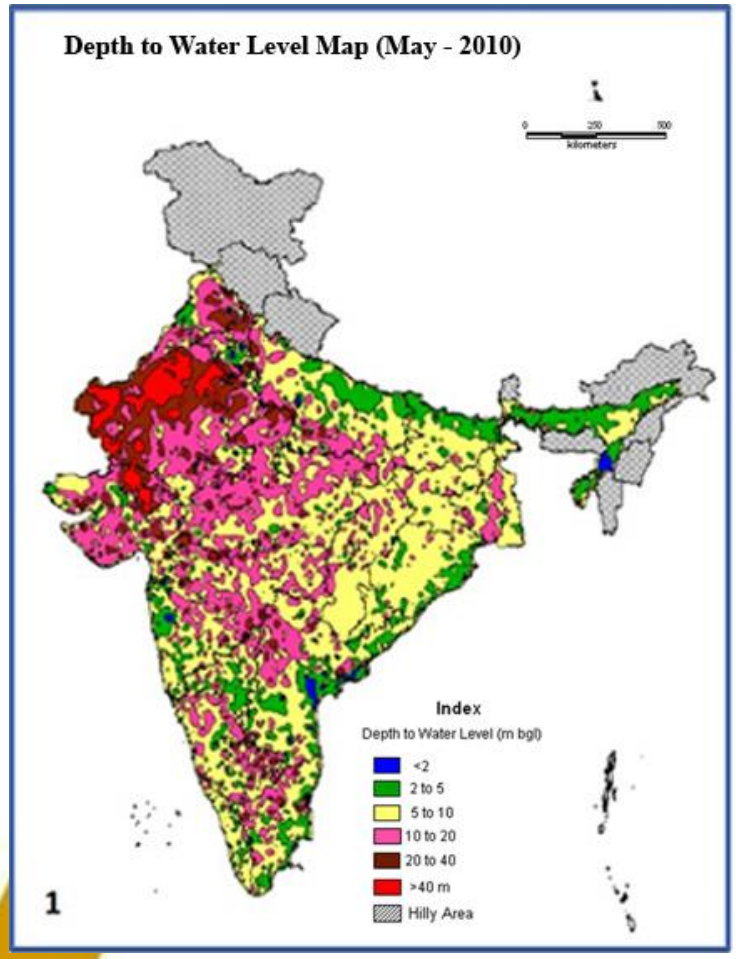
As to date, over 21% of India's diseases are water-related, 1 in 5 children in India die before the age of 5 as a result of contaminated water, lack of sanitation, or inadequate hygiene. Almost 2 in 3 people who lack access to safe drinking water survive on less than $2 a day.

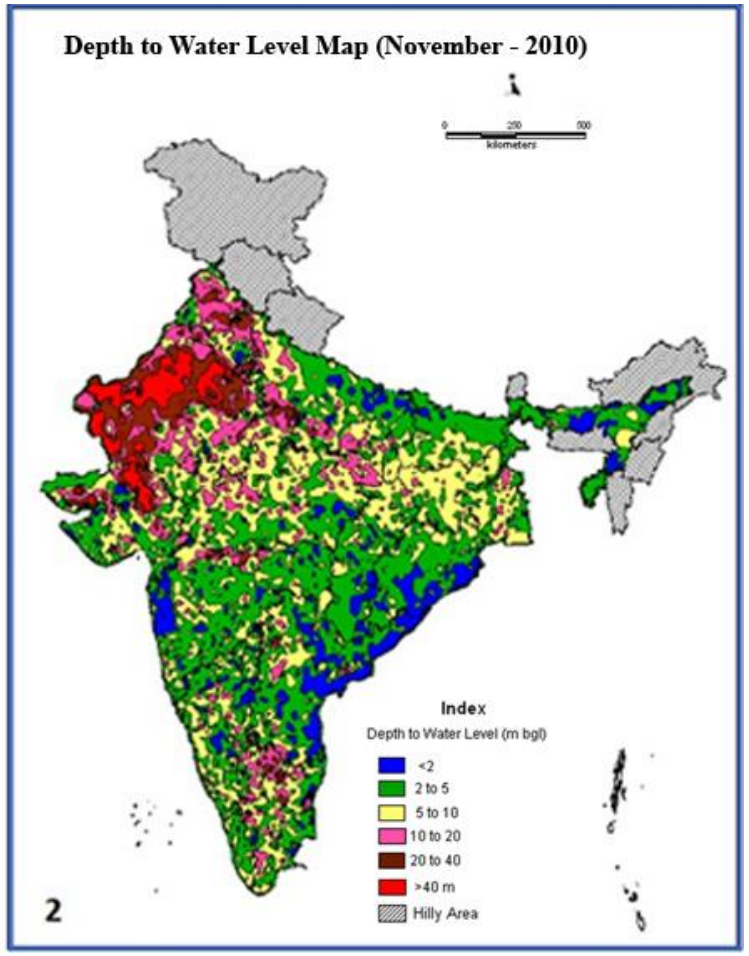
Poor Waste Water Management

- Due to lack of low cost, sustainable, disruptive water management solutions, more than 70% of sewage in India is discharged untreated, polluting rivers, coastal areas and wells
- pouting three-fourths of the country's water bodies. Ingenious ways of treating waste water is fast emerging as the key solution for meeting the ever-increasing demands of water consumption and conservation.

- As of now, only **30 per cent** of India's urban wastewater is recycled.
- The apathy with regard to sewage treatment plants (STPs) lies in the fact that those in urban spaces are neither properly financed nor designed.
- For example, in Delhi, the situation of wastewater treatment is better on paper. A consumption of 3,420 million litres per day (MLD) leads to wastewater of over 2,600 MLD. Of this 1,600 MLD is treated and 338 MLD is reused.
- Mumbai is worse. According to officials in the Municipal Corporation of Greater Mumbai, out of a supply of 3,750 MLD, 2,300-2,400 MLD goes into the sea, almost untreated.
- Instead of constructing large conventional STPs in which emphasis is placed on setting up a large infrastructure network, what we need to look at are alternative methods which don't burden the economy and environment.

High Reliance on Ground Water





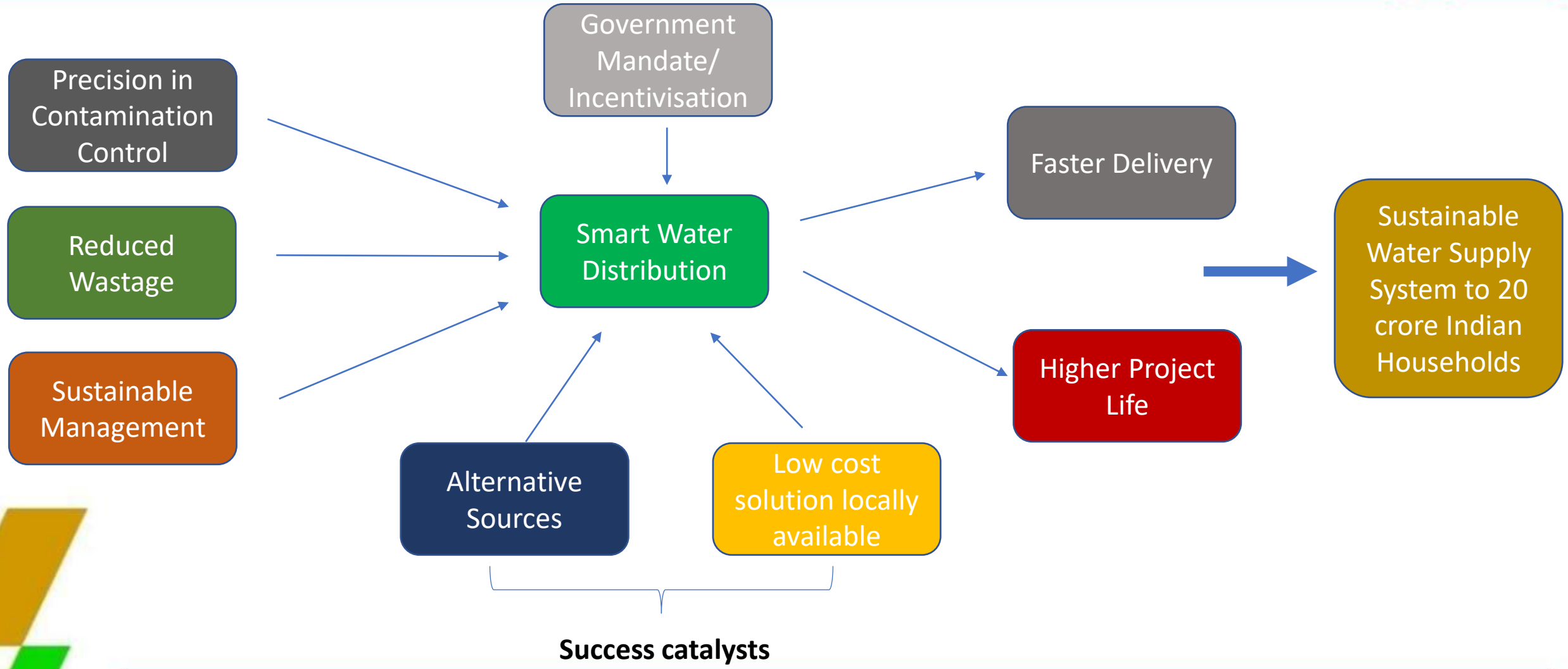
The first Indian state to make **rainwater harvesting** compulsory for buildings to reduce groundwater depletion was Tamil Nadu in 2001, which has reaped enormous benefits for the state. Groundwater levels in Chennai five years hence, rose almost 50 percent, and consequently, the quality of water improved. The Parliament made efforts towards the cause by introducing central legislation- The Rainwater (Harvesting and Storage) Bill, in the Lok Sabha, in 2016.

Other Alternative solutions – Atmospheric water generation, desalination plants, Greywater etc.

Smart Technology Adoption

- Unawareness and reluctance by small water contractors to adopt smart technologies
- Big players hesitant to participate in small ticket projects
- Lack of availability of smart solution providers locally
- Ways and means to make smart technologies more cost effective
- Mandate or incentivisation to adopt smart technologies by Government agencies non-existent

Relevance


Government Mandate/ Incentivisation
Precision in Contamination Control
Reduced Wastage
Sustainable Management
Smart Water Distribution
Faster Delivery
Higher Project Life
Sustainable Water Supply System to 20 crore Indian Households
Alternative Sources
Low cost solution locally available
Success catalysts

Classic Example- Mission Bhagiratha

Vision

To ensure safe and sustainable PIPED drinking water supply

Mission Bhagiratha Geography

Geographical features of project based on Area,Sources and Scale of supply

Scope

The Project comprises 26 segments in 32 districts

Structures

Intake Structures ,WTP's, Over Head Balancing Reservoirs (OHBRs)/ GLBRS ,(OHSRs)

State Initiatives

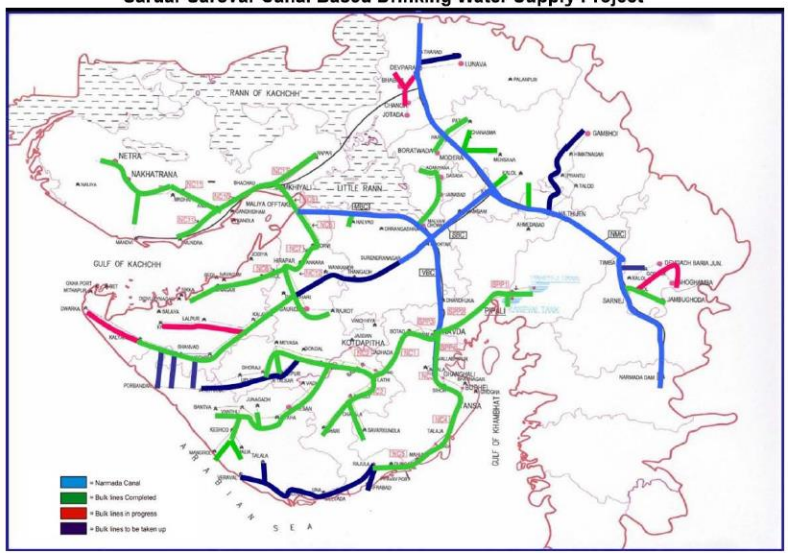
Flagship Programme

Appreciations For The Project

Encomium from Hon'ble Prime Minister

Classic Example- Narmada Water Supply

Sardar Sarovar Canal Based Drinking Water Supply Project



Pani Samitis

Water transmission lines- 1888km completed out of planned 2700km

Bulk transmission lines are under implementation along with required distribution network. Areas like Saurashtra, Kutch and North Gujarat have been covered with this "State Wide Drinking Water Grid" based on Sardar Sarovar Canal based water.

Classic Example- Jal Jeevan Mission

India | Status of tap water supply in rural homes

Total number of households (HHs)	Households with tap water connections as on 15 Aug 2019	Households with tap water connections as on date +66,266
19,31,99,823	**3,23,62,838** (16.75%)	**9,12,42,972** (47.23%)

Households provided with tap water connection since launch of the Mission

5,88,80,134 (30.48%)

100% FHTC States/UTs

100% FHTC Districts	100% FHTC Blocks	100% FHTC Panchayats	100% FHTC Villages
101	1,159	67,473	1,39,366

Key Takeaways/ Recommendations

- Smart technology adoption is need of the hour
- To adopt holistic approach
- Awareness and incentivisation
- Waste water management is equally important
- Scrutinize demographic changes to suit demand

Thank You

For discussions/suggestions/queries email: www.indiasmartgrid.org
www.isgw.in
Links/References (If any)

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