SuSanA Meeting

South Asia Edition

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Welcoming & Introductions

Nitya Jacob & Dayanand Panse

SUSANA INDIA CHAPTER

A DECADE OF SUPPORTING THE SANITATION SECTOR

Nitya Jacob, SuSanA India Chapter Coordinator

THE BACKGROUND

SINCE ITS INCEPTION A DECADE AGO, THE SUSANA INDIA CHAPTER HAS EXPANDED INTO A NETWORK OF ABOUT 4,200 WASH PRACTITIONERS IN INDIA. IT HAS A LIVELY DISCUSSION FORUM AND WEB PRESENCE ON THE SUSANA PORTAL. THE CHAPTER HAS BEEN SUPPORTED BY MANY OF THE LEADING WASH ORGANIZATIONS.

THE CHAPTER IS GOVERNED BY A CORE GROUP COMPRISING PEOPLE FROM THE SECTOR. IT HAS PROVIDED KNOWLEDGE SUPPORT TO WASH IMPLEMENTING ORGANIZATIONS AND THE CENTRAL AND STATE GOVERNMENTS IN INDIA. ITS EFFORTS HAVE BEEN RECOGNIZED BY THE GOVERNMENT OF INDIA, SEVERAL STATE GOVERNMENTS AND WASH IMPLEMENTING ORGANIZATIONS.

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India Chapter

OVERVIEW

STARTED IN 2016

SUPPORTED BY A CONSORTIUM OF LEADING WASH ORGANIZATIONS IN INDIA

OVER 20 THEMATIC DISCUSSIONS RESULTING IN SYNTHESIS DOCUMENTS AND POLICY NOTES ON RURAL AND URBAN SANITATION, INSTITUTIONS, GOVERNANCE, TECHNOLOGY, FINANCE AND BEHAVIOUR CHANGE

OVER 12 WEBINARS AND FIVE IN-PERSON MEETINGS, INCLUDING ONE ON WASTEWATER-BASED EPIDEMIOLOGY FOR SURVEILLANCE OF THE CORONAVIRUS

ABOUT 4200 MEMBERS

RATIONALE

IN 2016, INDIA HAD THE LARGEST POPULATION OF PEOPLE WITHOUT ACCESS TO BASIC SANITATION AND HYGIENE: SCALE, ACCESS, FINANCE, BEHAVIOUR CHANGE AND TECHNOLOGY

THERE IS A DISCONNECT BETWEEN RESEARCH AND COMMON CHALLENGES IN IMPLEMENTATION AND POLICY

THERE WAS NO LOCALLY-RELEVANT REPOSITORY OF INFORMATION, EVIDENCE AND TOOLS THAT PRACTITIONERS AND WASH IMPLEMENTING ORGANIZATIONS COULD ACCESS, OR THAT FACILITATED CROSS-LEARNING

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India Chapter

AIMS

PROMOTING COLLABORATIVE LEARNING AND BUILDING EVIDENCE: AMONGST INDIVIDUAL AND ORGANISATIONAL ACTORS FOR MORE EFFECTIVE PROGRAMME IMPLEMENTATION AND INFLUENCING POLICY IN AREAS OF CONCERN TO THE WASH SECTOR. SUPPORT WAS PROVIDED TO THE CENTRAL AND STATE GOVERNMENTS, NGOS AND ACADEMIC INSTITUTIONS.

BUILD AND STRENGTHEN THE CAPACITY AND PARTICIPATION OF CIVIL SOCIETY ORGANIZATIONS IN ONGOING SECTOR PROCESSES AND FORUMS

INDEPENDENT CURATED KNOWLEDGE REPOSITORY OF CONTENT FROM THE WASH SECTOR THAT IS WELL-ORGANISED AND DISSEMINATED TO MEMBERS



ACTIVITIES

- EXPANDING THE LIBRARY OF WASH RESOURCES ON SUSANA.
- CONDUCTING THEMATIC DISCUSSIONS AND WEBINARS TO ENGAGE PRACTITIONERS AND ELICIT THEIR TACIT KNOWLEDGE THAT CAN BE MADE WIDELY AVAILABLE THROUGH THE FORUM AND MAILING LISTS.
- INITIAL CONTENT WAS FOCUSSED ON SBM, AND LATER EXPANDED TO SPECIFIC SANITATION AND HYGIENE CHALLENGES THROUGH DISCUSSIONS AND KNOWLEDGE-SHARING.
- DISSEMINATING WASH INFORMATION SO OBTAINED, OR PROVIDED IN READYMADE DOCUMENTS, TO A WIDE AUDIENCE.
- DISTILLING EVIDENCE FROM SUSANA'S DATABASE.



ACTIVITIES
CONNECTING THE SECTOR

- THE SUSANA MEMBERSHIP WAS EXPANDED TO REPRESENT THE WASH SECTOR.
- PROVIDED FORUM CHANNELS TO REACH OTHERS.
- CONDUCTED MEETINGS AROUND COMMON AREAS OF CONCERN IN COLLABORATION WITH MEMBER ORGANIZATIONS, FOCUSING ON THE IDENTIFIED AREAS.



ACTIVITIES – STRENGTHEN THE SECTOR'S VOICE

- THE CHAPTER AMPLIFIED COMMON CONCERNS AND INTERESTS OF MEMBERS TO THE LARGER WASH SECTOR THROUGH MULTIPLE CHANNELS.
- THE CHAPTER IS A PLATFORM FOR MEMBERS, ORGANIZATIONS TO RAISE CONCERNS AND DISCUSS ISSUES.
- THE CHAPTER LINKED OTHER WASH NETWORKS AND KNOWLEDGE PORTALS.

OUTPUTS

- **KNOWLEDGE PRODUCTS** FROM THEMATIC DISCUSSIONS, SERIES OF WEBINARS AND SUMMARIES OF EXISTING SUSANA RESOURCES.
- SUSANA **REGIONAL MEETINGS** AMONGST MEMBERS, WITH THE AGENDA DECIDED BY THE MEMBERS.
- **HIGHLIGHTING THE WASH ISSUES** THAT MEMBERS HAD FLAGGED AS BEING OF CONCERN FOR ADVOCACY WITH THE SECTOR.
- **WORKING GROUPS** AROUND AREAS OF CONCERN, LIKE EXISTING WORKING GROUPS ON SUSANA.



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Experiences with SuSanA

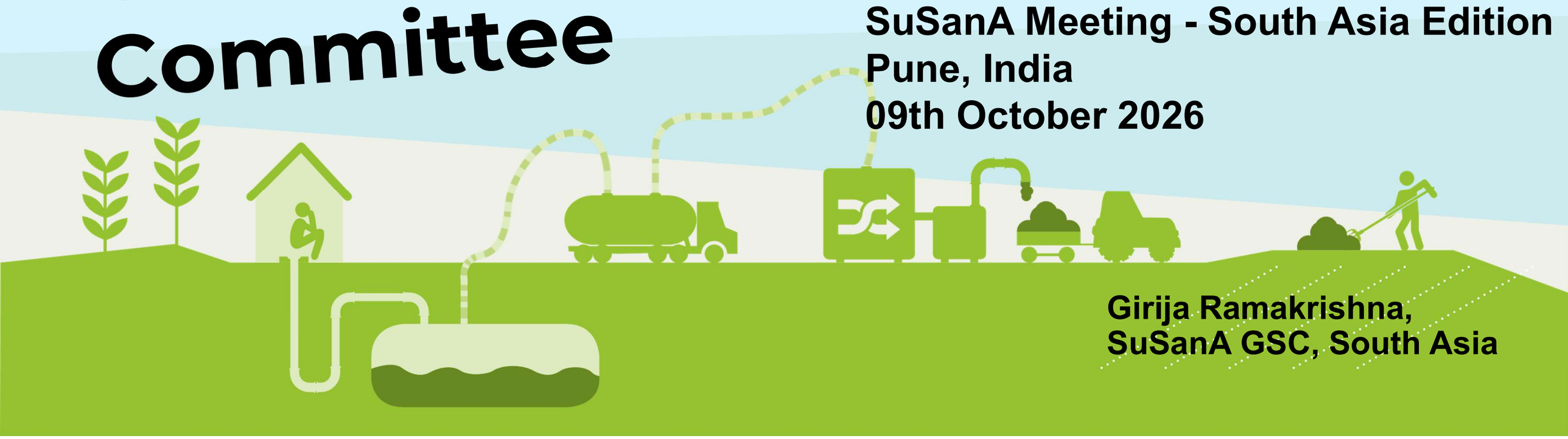
Dayanand Panse

Updates from the SuSanA

SuSanA
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Global Steering Committee

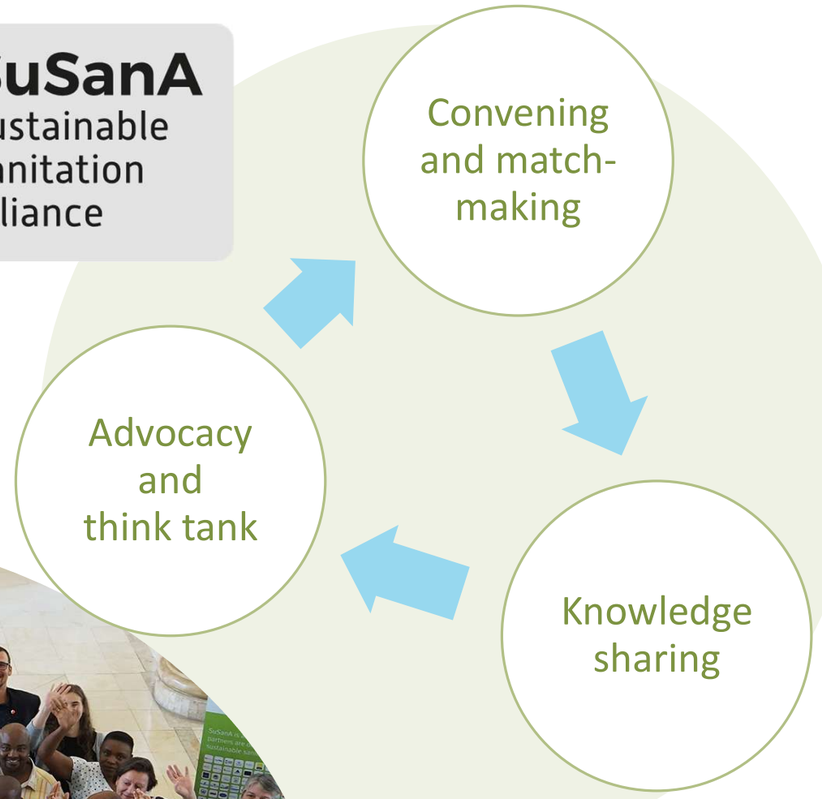
SuSanA Meeting - South Asia Edition
Pune, India
09th October 2026



Girija Ramakrishna,
SuSanA GSC, South Asia

Get to know SuSanA
who we are and what we do

SuSanA
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16,000+
individual members

180+
countries

360+
partner organisations



- **Active since 2007**
- **Governed by a Global Steering Committee** *with strong Global South representation*
- **Secretariat hosted by GIZ**
  core backbone financed by BMZ

KM: discussion forums, thematic WGs, blogs, networking, advocacy and regional chapters.

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ON THE WAY TO SUSANA 2.0

Global Steering Committee 2025 - 2028

South Asia



Sub-Saharan Africa



North America



Middle East & North Africa



Latin America & Caribbean



East Asia & Pacific



Europe & Central Asia



- **Girija Ramakrishna** (India) */ South Asia*
- **Malesi Shivaji** (Kenya) */ Sub-Saharan Africa*
- **John Sauer** (USA) */ North America*
- **Munjed Mahmoud Al Sharif** (Jordan) */ West Asia & North Africa*
- **Tomaz Gregori Kipnis** (Brazil) */ Latin America & Caribbean*
- **Amelia Wenger** (Australia) */ East Asia & Pacific*
- **Dorothee Spuhler** (Switzerland) */ Europe & Central Asia*

Top-on-the-Agenda

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Key priorities for GSC:

- By-laws: finalization
- Strategy: to be further developed and implemented
- Funding: Attract additional donors, diversify and secure funding
- Advocacy for future political processes
- Approaches for:
  - AI integration
  - Advancing existing Tools (SFD, ECAM)
  - Youth Engagement
  - New anchor points

Strengthening SuSanA's Digital Outreach and Visibility



Latest Blog Articles →



Teresa Häberlein (GIZ)

When Pregnancy Changes the Way You See Sanitation

05. Aug 2026



Isabell Hedke (Centre for Sustainable Development)

Malasana: What a Yoga Pose Taught Me About Sanitation

26. May 2026



Alisa Puga Keesey (University of California), Helvi Heinonen-Tanski (University of Eastern Finland), Surendra K Pradhan (University of Helsinki)

Turning human Urine Into fertilizer: Practical and Business Insights for food security.

10. Apr 2026



SuSanA Secretariat (SuSanA)

From Dakar to the 2026 UI Conference

08. Apr 2026

Sanitation Events →

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Expresso Presentations

Moderated by Arne Panesar

SANIHUB

Advancing Global Humanitarian Sanitation Knowledge Management

An initiative of WASH Cluster Water Sanitation Hygiene

Implemented by: German Toilet Organization, BAOBAB TECH

financially supported by Gates Foundation

What is SANIHUB?

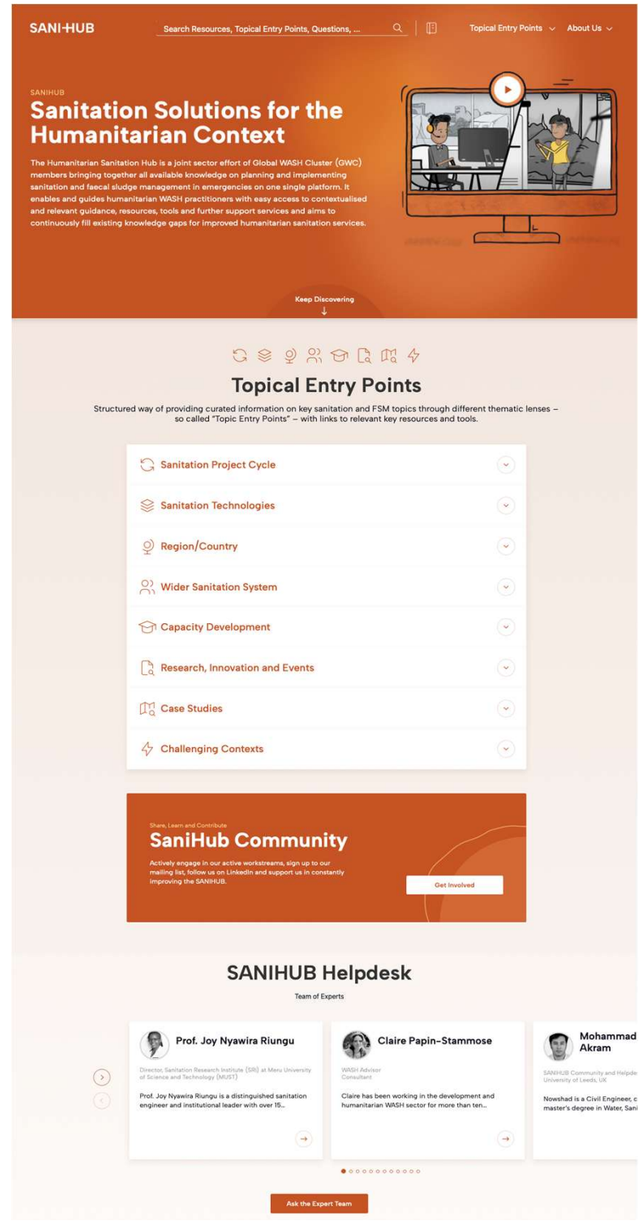
SANI+HUB

+ Global sector go-to-point for humanitarian sanitation practitioners with structured access to practical knowledge and resources

+ Personal remote support through an expert helpdesk and an active SANIHUB community

+ Domain-specific AI for multilingual, context-specific support

+ Sector-wide approach to KM to improve collaboration, quality and resource efficiency



Joint Sector Initiative

SANI-HUB

Knowledge Partners	ACTION CONTRE LA FAIM	ASIAN INSTITUTE OF TECHNOLOGY 1959	arche nova	BANKA BIO CONSERVING YOUR FUTURE	BAOBAB TECH	BORDA	CAWST	eawag aquatic research
	EEHF Emergency Environmental Health Forum	German Toilet Organization	GLOBAL COMMUNITY RESCUE GCR	ICRC	IFRC	IHE DELFT	JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH	Malteser International Order of Malta Worldwide Relief
	International Medical Corps	MERIT UNIVERSITY OF SCIENCE & TECHNOLOGY	NFSSM ALLIANCE	LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE	The Netherlands Red Cross	NRC NORWEGIAN REFUGEE COUNCIL	OXFAM	Save the Children
	solidarités international							
In partnership with	WASH Cluster Water Sanitation Hygiene							
Financial support	Gates Foundation							

Key Features

SANIHUB

SANIHUB Community

5 active workstreams & regular learning events

Helpdesk

Remote support on demand from team of experts

Domain-Specific AI

Multilingual and context-specific AI support

Online Platform

structured resource repository with topical entry points

Agency A internal public

Agency B internal public

Agency C internal public

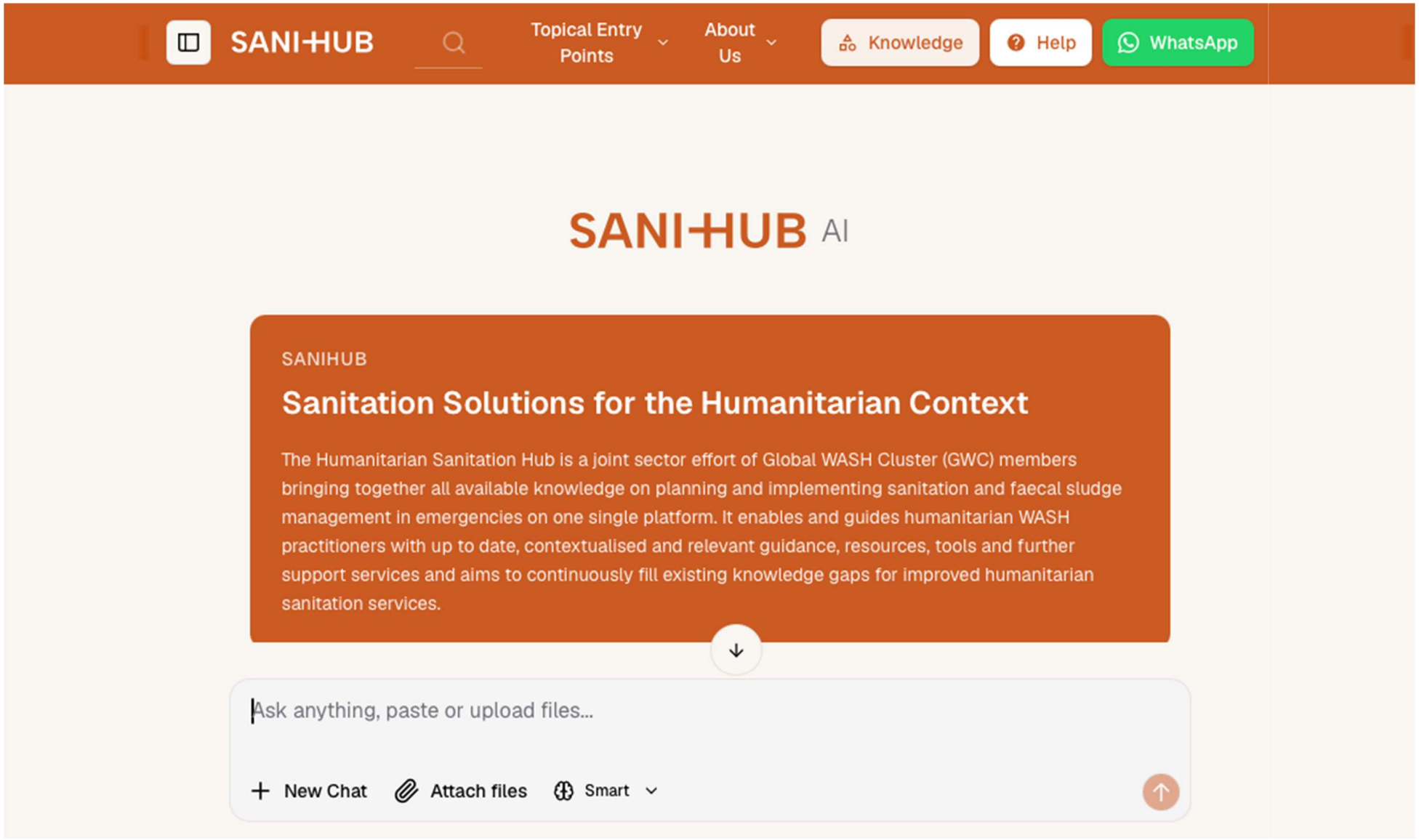
SANIHUB Knowledge Base

(comprehensive collection of available sanitation sector knowledge)

- Manuals
- Standards
- Training Materials
- BoQs
- SOPs
- Checklists
- Research Papers
- Case Studies
- Designs
- Events
- Country Compilations
- Tacid Knowledge
- Sector Tools

SANIHUB AI

SANI+HUB



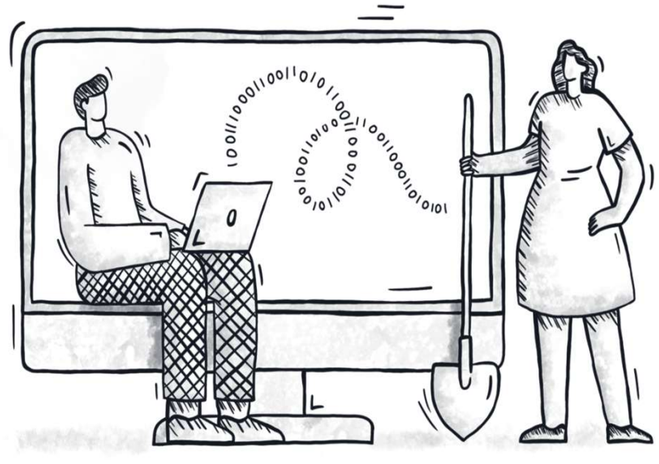
Web

WhatsApp

SANIHUB AI

SANI+HUB

+ **Domain-specific AI** powered by curated sanitation knowledge from SANIHUB
+ **Multilingual** and context aware
+ **Encourages user reflection** by asking clarifying questions to ensure context-sensitive responses
+ **Transparent** about sources and reasoning process
+ **Human-in-the-loop support** through an expert helpdesk
+ **Transformation process** from fragmented agency-based to more efficient sector-wide knowledge management



Engagement Options

SANI-HUB

1. Become an active user (and provide feedback)
2. Become a knowledge partner and share resources
3. Promote the use of the Hub within your agency and networks

Looking Beyond Sanitation

- Planned to widen scope and impact with development of an AI-powered WASH Hub
- SANIHUB AI used as the technical foundation
- Will include various thematic sub-hubs and is intended to become the virtual home of all existing sector initatives and working groups



SANIHUB AI

sanihub.info

Web

WhatsApp

info@sanihub.info

Re-imagining lakes and openwells for reuse of Domestic treated used water :

Building Climate Resilience

biome
environmental trust

Lift irrigation of Secondary Treated Water from Bengaluru city to lakes in adjacent semi-arid and arid districts

Total

770 MLD

269 tanks

KC valley

440 MLD

137 lakes

HN valley

210 MLD

65 lakes

Anekal

120 MLD

67 lakes

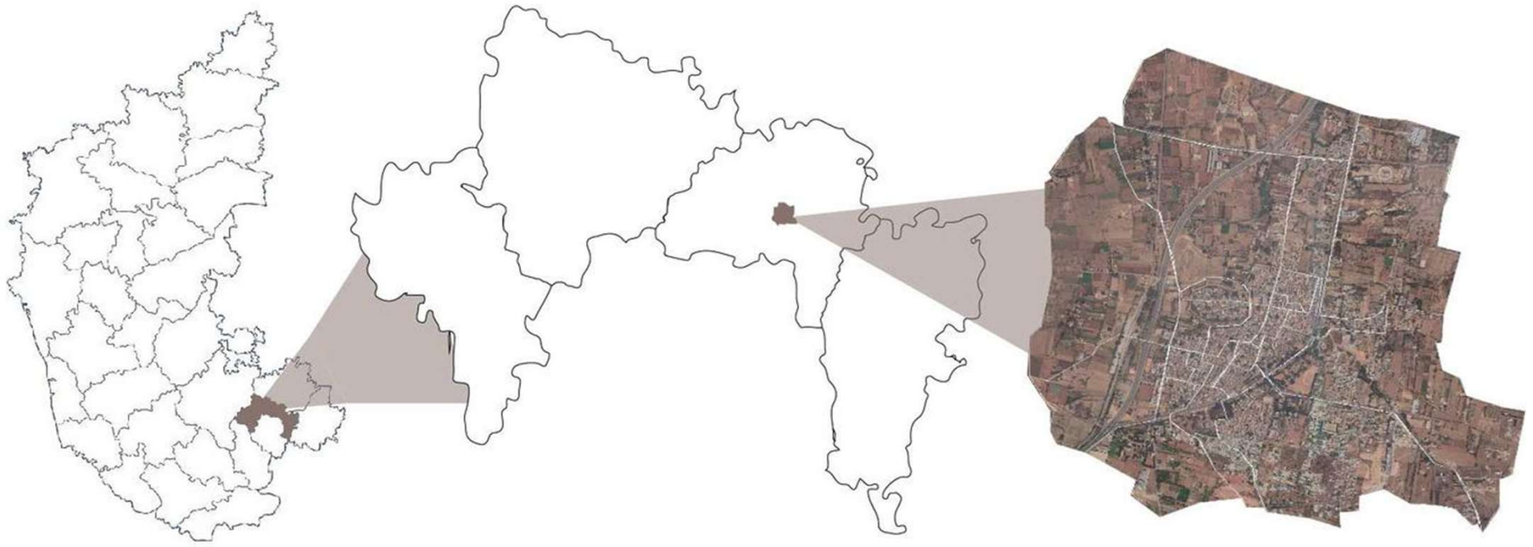


DEVANAHALLI TOWN- HERITAGE TOWN

- Total Population of TMC 40,000
- Water supply of 40 to 60 LPCD
- Deep borewell water supply (800-1200ft)
- High Rainfall variability





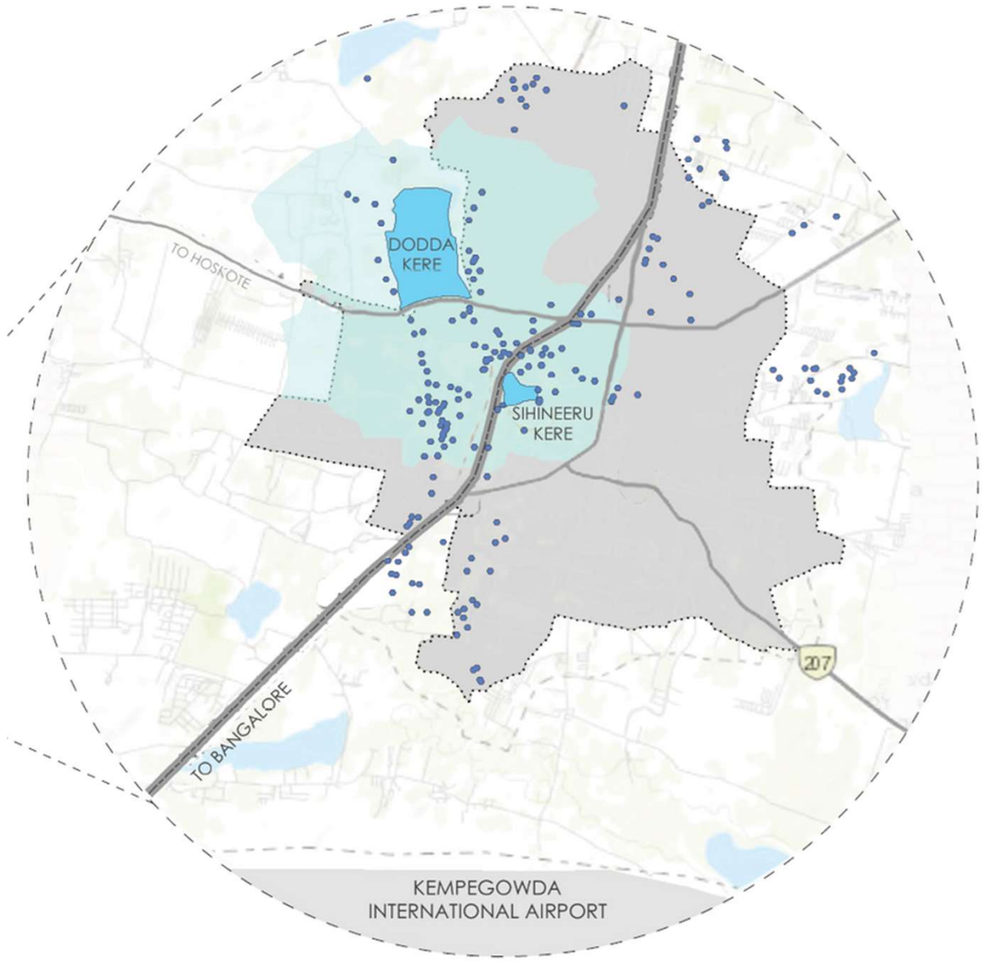


Karnataka State | Bangalore Rural District | Devanahalli Town





DEVANAHALLI LAKES AND OPEN WELLS





2019 - Sihineeru Kere



2020 - Sihineeru Kere



2019 - Open well

Rejuvenated



2020 - Open well

As the lake recharged the shallow aquifer

BRINGING SCIENCE TO BEAR : IISC

Prof. Lakshminarayana Rao
Associate Professor
Centre for Sustainable Technologies
Indian Institute of Science
Bangalore 560 012, India.
Phone: 91-80 2293 2051
Email: **narayana@iisc.ac.in**

30/01/2023

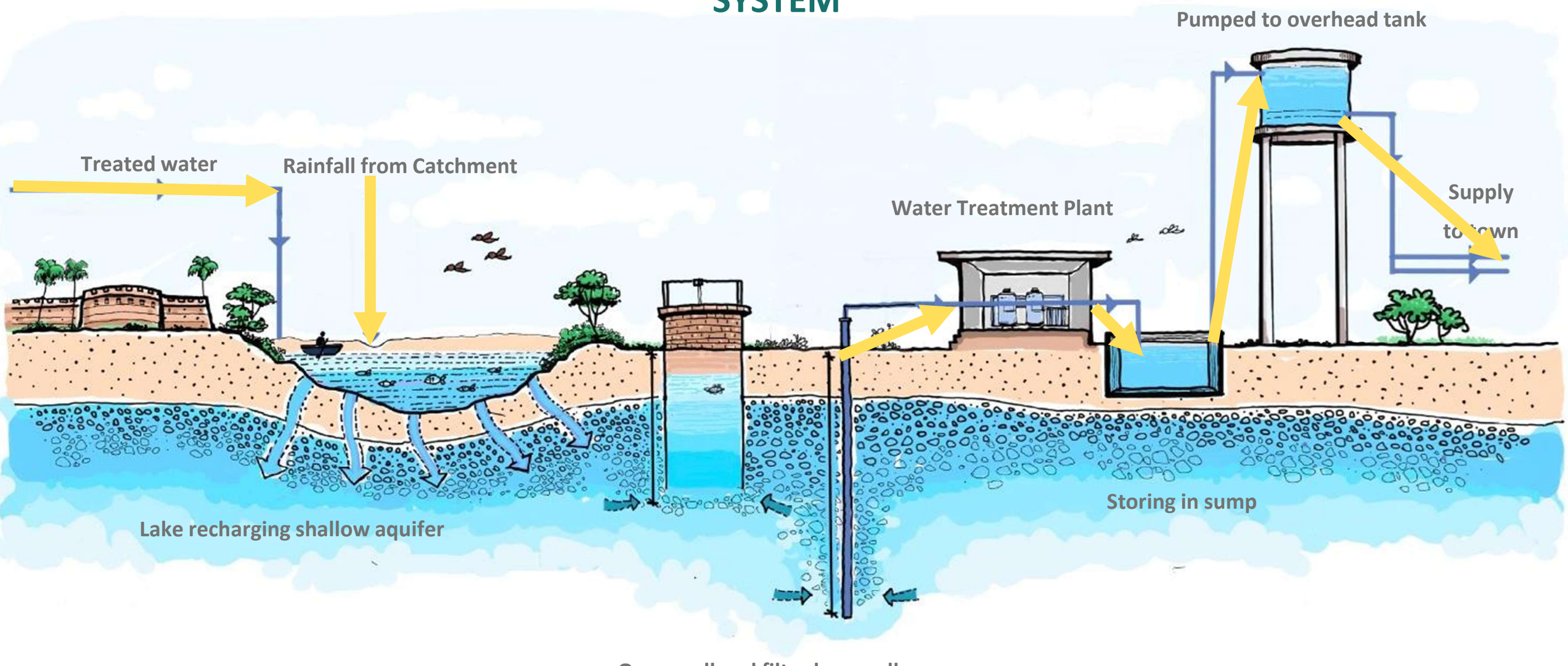
Recommendation for setting up a Water treatment plant for integrating open well water into Devanahalli town water supply system.

With reference to the above and based on the results of the water quality test of the sample collected from the open well water, we would recommend planning the Water treatment plant of 200 KLD as per the below specifications:

The following may be considered for the water treatment system:

- Removal of dust, and silt upto 130 Micron with **130 Micron Cartridge Filter**
- Disinfection with Dosing System - **Sodium Hypo dosing system**
- Reduce turbidity: **Multi-media Filter**
- Disinfection: **UV System or equivalent**
- Maintaining residual chlorine levels as per BIS 10500 Standards
- Maintaining all other water quality parameters as per BIS 10500 Standards

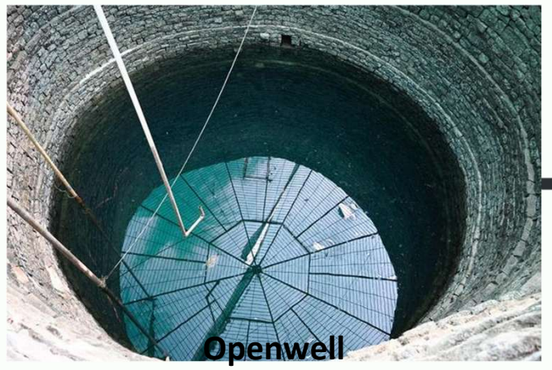
INTEGRATING THE SHALLOW AQUIFER INTO THE WATER SUPPLY SYSTEM



Open well and filter borewell

Tapping into shallow aquifer

biome
environmental trust



Openwell

+



Filter Borewell









Disk Filter → Multimedia filter with activated charcoal → UV Radiation → Chlorine Dosing

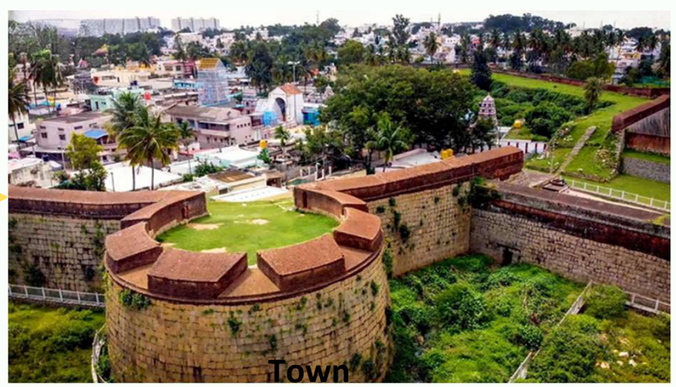
Ensuring - WTP Output is BIS 10500

Drinking water standard



Overhead Tank

→



Town

Building the solution : bringing everyone together



TMC and Water Men



Filter borewell diggers



Well diggers



Researchers



Political leaders



Academicians

IMPACT

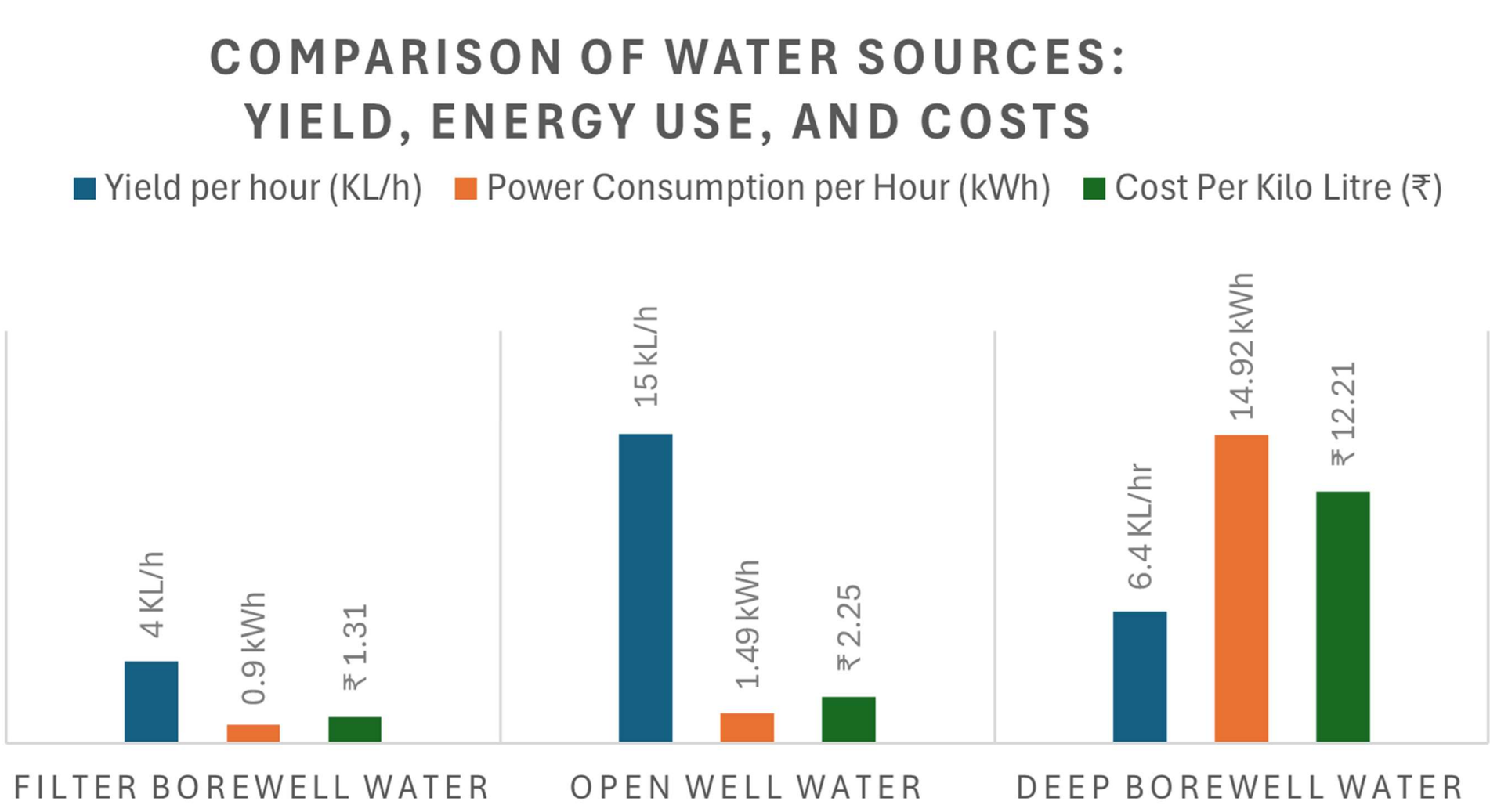
Current water supply from shallow aquifer	1 MLD
Current water supply of 2.8 MLD At 70 LPCD	Meets 35 %
Water supply of 5.4 MLD considering 135 LPCD	Meets 18%

Total Supplied water from the shallow aquifer since 2023: 184 ML

KUWSDB proposed to scale this up to 6 MLD,

biome
environmental trust

COMPARISON OF WATER SOURCES: YIELD, ENERGY USE, AND COSTS



biome
environmental trust

THANK YOU

Get In Touch

Thank you for your time.

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urbanwaters.in

avinash@biome-solutions.com

1st block, 15, 1st Main St, BEL Layout 1st Block, BEL Layout, Vidyaranyapura, Bengaluru, Karnataka 560097



Case study EWWTP Closing the Sanitation Loop

Dr. Eng. Iman Goher
Alexandria Sanitary Drainage Company

Closing the Sanitation Loop

From Sewage Sludge to Biogas and Energy



Lessons from Eastern Alexandria Wastewater Treatment Plant – Alexandria ,Egypt.

The East Wastewater Treatment Plant (EWWTP), one of the largest treatment plants in Alexandria with a treatment capacity of 800,000 m^3/day, produces secondary treated effluent with significant potential for non-potable reuse.

Sewage sludge › **Anaerobic digestion** › **Biogas** › **CHP** › **Electricity**

SuSanA Meeting – South Asia | Eastern Alexandria WWTP | Egypt

The Challenge

From sludge disposal to resource recovery

Sludge generation creates ongoing management and disposal requirements.

Transportation, disposal and odour management can add operational burdens.

Sewage sludge also contains recoverable organic energy.

Key question: Can we recover value from sludge instead of treating it only as waste?

The shift: Waste management → Resource recovery

Our Anaerobic Digestion System

Eastern Alexandria WWTP

~700 t/day	Aug 2022	~5 MW	5
Design sludge capacity	Start-up	CHP system	Generators

Sludge → **Digesters** → **Gas holders** → **CHP** → **Electricity**

3 generators in service + 2 standby

What Have We Achieved?

Operational results from the resource-recovery approach

Up to ~60%
Energy saving

~35%
Reduction in sludge disposal

~5,000,000 EGY
Average monthly saving in the electrical consumption invoice, 100% path-through ASDCO

Additional benefit
Improved odour management, including around sludge disposal areas

From Waste Treatment to Circular Sanitation

Closing the loop through resource recovery

Wastewater › **Treatment** › **Sludge** › **Anaerobic digestion** › **Biogas** › **Energy recovery**

Circular sanitation in practice

Sanitation • Resource recovery • Renewable energy • Reduced waste

Sludge becomes part of the resource-recovery chain.

Our Connection to SuSanA

Sharing utility-level experience through the sustainable sanitation network

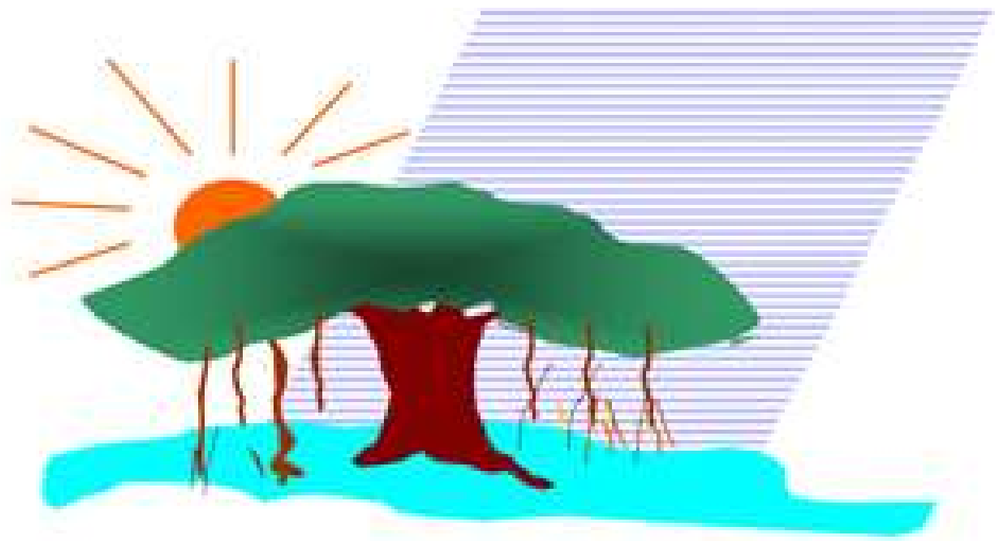
Knowledge exchange and networking on sustainable sanitation.

Our experience connects with resource recovery, energy recovery and sustainable sludge management.

We share the Eastern Alexandria experience to contribute practical utility-level lessons.

FROM
sanitation waste
TO
recovered resources

Thank you



Natural Solutions

Helping Mother Nature Heal Herself

Since 2003

OUR MISSION

To help ecofriendly initiatives

and

To spread environmental literacy





Dr. Ajit Gokhale

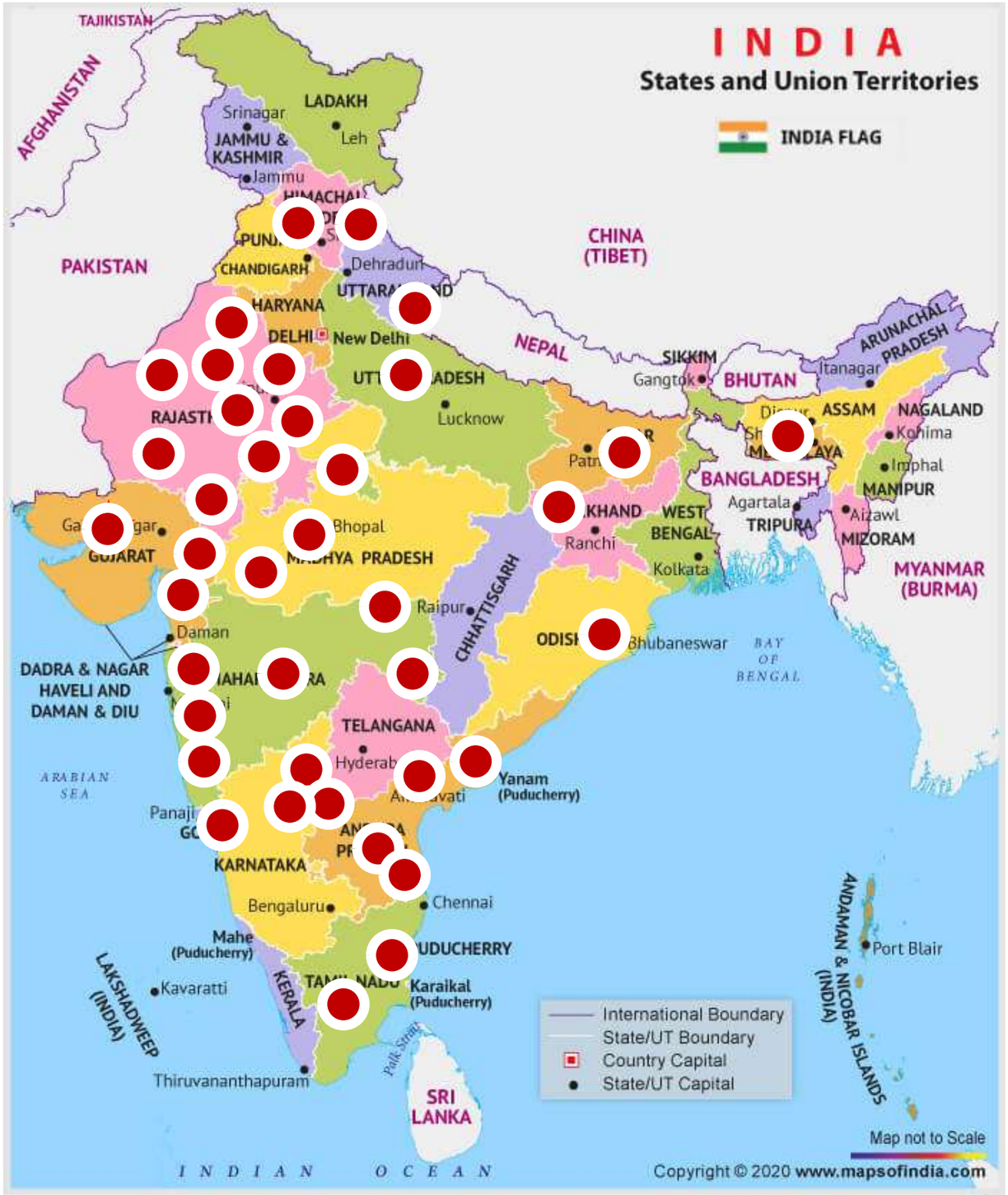
Founder and Principal Consultant of Natural Solutions

Jal Nayak

Qatar

Sudan

Locations where we have worked on Invitation basis



Our Services

1. Water harvesting : Urban and Rural
2. Natural Wastewater recycling (STP/ETP)
3. Pond and River Rejuvenation
4. Natural Farming and Urban Farming
5. Biodiversity improvement
6. Environmental Literacy

Ecological Sanitation (EcoSan), circularity, resource recovery, decentralised systems, nature-based solutions, and climate resilience

Jal Rakshak

Acknowledged by:

Ministry of Jal Shakti



ajit.naturalsolutions@gmail.com

What if every building has this?

Imagine the load it reduces on the STPs and our environment!

Natural Sewage Treatment Plant



3,00,000 Liter per day of composite sewage is treated in this STP

Natural Sewage Treatment Plant

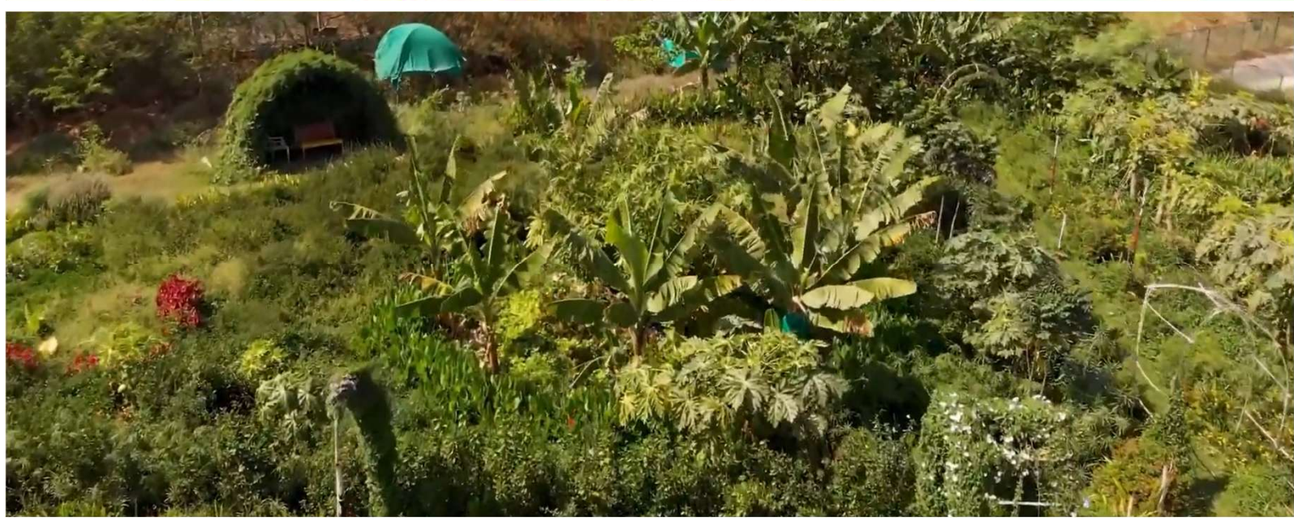


Natural Sewage Treatment Plant









Food forest that provides food and also enhances bio-diversity

Reed Bed Treatment

15 Lakhs Litres of Sewage Treated Per Day





This **Jal Rakshak** and **Reed Bed System** can be installed **anywhere and everywhere.**

Housing Societies, Educational Institutions, Companies, Offices, Villages, etc.

Reed Bed’s capacity to treat water?

From as low as 500 litres/day to 15,00,000 litres and even more!

Another Satisfied Client : Oneness University near Chennai
Replaced a Smelly STP with Natural Reed Bed



Mechanical STP

Was giving trouble

replaced by



Natural Reed Bed

Treating 50,000 litres on weekdays and

3,00,000 litres on weekends

Crazy Crab Resort - Dahanu



Honeymoon suites on a Boat

Symbiosis Hill Side Campus Reed Bed Treated Water -November 2019 (Date Sample collected :29 November 2019)						
Test Parameter	**Desirable Limits**	**North Zone Reed Bed Outlet**	**Central Zone Reed Bed Outlet**	**Girls Hostel Reed Bed Outlet**	**Boys Hostel Reed Bed Outlet**	**New Hostel Reed Bed Outlet**
Physical Character		Agreeable Odour, Slight Particles.	Agreeable Odour, Slight Particles,	Agreeable Odour, Slight Particles	Agreeable Odour, Slight Particles	Agreeable Odour, Slight Particles
PH	6-8	7.71	7.17	7.53	7.7	7.7
Turbidity		0.3	0.3	0.2	0.3	0.3
TDS		408	426	285	371	410
TSS	<30	14	6	18	<5.0	6
Residual Chlorine	Chorination NOT Done	<0.1	<0.1	<0.1	<.01	<.01
Dissolved Oxygen	>0.5	5.3	4.7	5.7	4.5	7.1
COD	<100	49	47	52	30	31
BOD		9	8	10	6	6
Oil & Grease	<10	<5.0	<5.0	<5.0	<5.0	<5.0

BOD 9 8 10 6 6


Nande - Balewadi Rd
Nande - Balewadi Rd
Lavale - Nande Rd
Sus Ln
Sus Ln
Baner Rd
Ravet BRTS Rd
Aundh
Ganeshkhind Rd
Baner Rd
Ram Nadi
Sus Ln
Sutarwadi Rd
Dr Homi Bhabha Rd
48
48
Sandipani International Convention Centre
Google Earth
Image © 2026 Airbus
N
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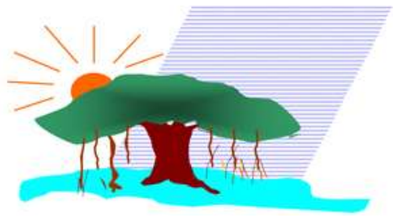


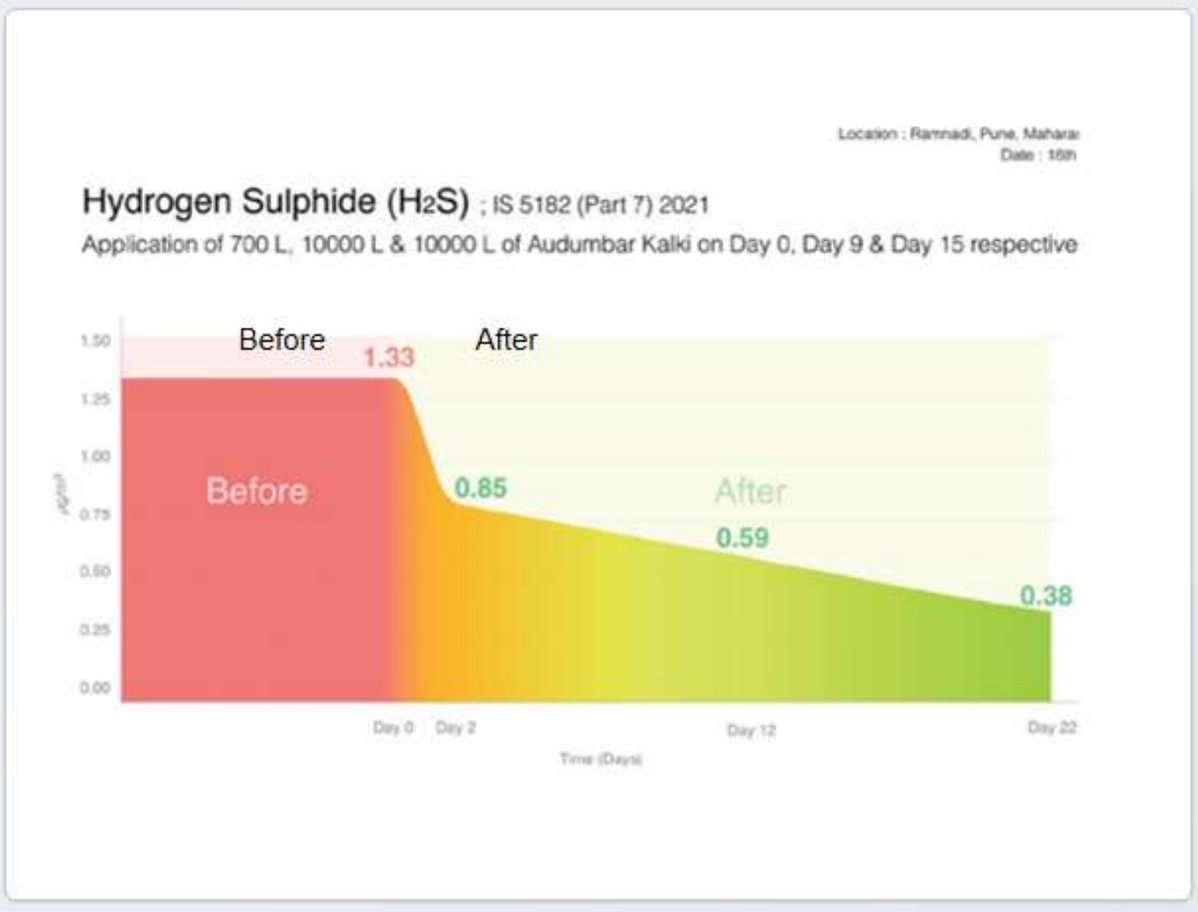


Polluted Ram Nadi



Introducing Kalki Bio-Culture



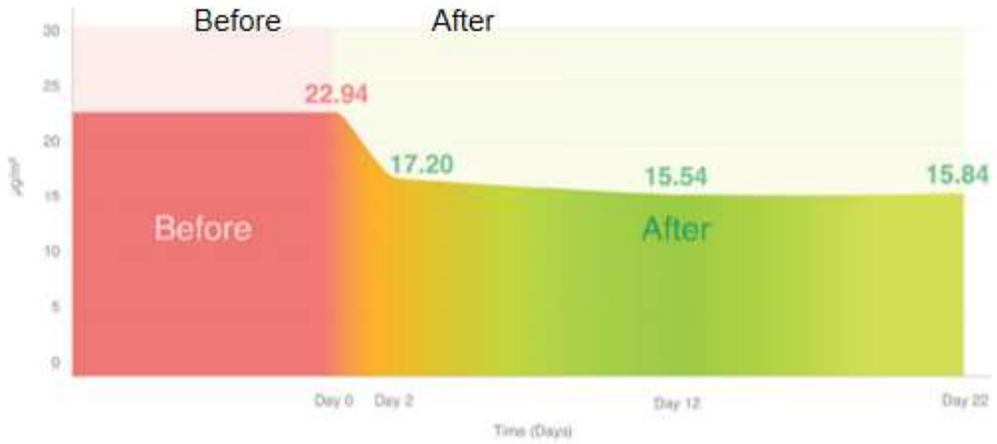

Location : Ramnadi, Pune, Maharas
Date : 16th
Hydrogen Sulphide (H2S) ; IS 5182 (Part 7) 2021
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective
Before
After
1.33
0.85
0.59
0.38
Day 0
Day 2
Day 12
Day 22
Time (Days)


Location : Ramnadi, Pune, Maharas
Date : 16th
Ammonia (NH3) ; IS 5182 (Part 25):2018
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective
Before
After
13.16
8.40
5.45
3.12
Day 0
Day 2
Day 12
Day 22
Time (Days)

Location : Ramnadi, Pune, Maharas
Date : 16th

Nitrogen Dioxide (NO_2) : IS 5182 (Part 6):2006 RA:2017

Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective



Location : Ramnadi, Pune, Maharas
Date : 16th

Particulate Matter ($PM_{2.5}$) : IS 5182 (Part 24):2019

Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective



Location : Ramnadi, Pune, Maharas
Date : 16th

Biochemical Oxygen Demand (BOD) at 27°C ; IS 3025 (Part 44):2019)

Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective



Location : Ramnadi, Pune, Maharas
Date : 16th

Chemical Oxygen Demand (COD) ; IS 3025 (Part 58)-2017

Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective



Location : Ramnadi, Pune, Maharas
Date : 16th

Total Suspended Solids ; APHA 23rd Ed. 2540(Part D)2017

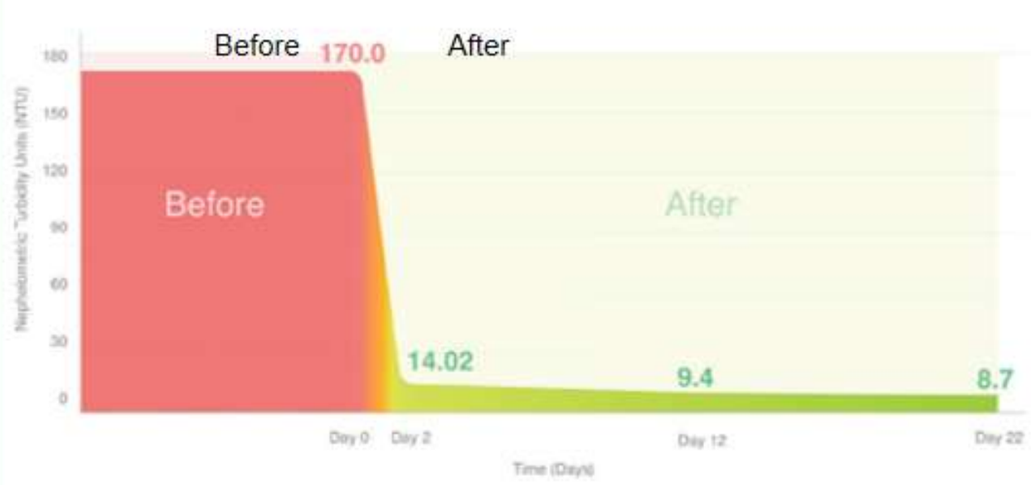
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective



Location : Ramnadi, Pune, Maharas
Date : 16th

Turbidity ; IS 3025 (Part 10): 1984 RA :2017

Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective



OUR TASK

Collaborations and Opportunities

To restore the health of our air, water and soil

So that we, our coming generations and the entire living world can LIVE

Not just live but THRIVE

OTHERWISE ….



Wishing all of you
Abundance of Pure Air
Clean Water
Healthy Food

Dr. Ajit S Gokhale
Natural Solutions
+91 9870423023
ajit.naturalsolutions@gmail.com
naturalsolutions.org.in

From Infrastructure-Rich to Service-Poor:

Why FSTPs Alone Do Not Deliver Citywide Sanitation Services

10 Oct 2026, Rajeev Munankami



SNV Impact that matters

The New Urban Sanitation Reality

South Asia has invested heavily in sanitation infrastructure.

- Improved attention to FSM and CWIS
- Hundreds of FSTPs built or planned
- Increased donor and government investment

Yet many cities continue to struggle with:

- Low utilisation of FSTPs
- Irregular desludging
- Weak cost recovery
- Limited enforcement
- Unclear institutional responsibilities

Why Infrastructure Often Fails to Deliver Services?

Governance failures

- Unclear mandates
- Weak municipal ownership
- Poor coordination among actors

Financial sustainability issues

- User fees insufficient
- O&M underfunded
- Reliance on projects

Political economy challenges

- Competing interests
- Weak incentives for service providers
- Short political cycles

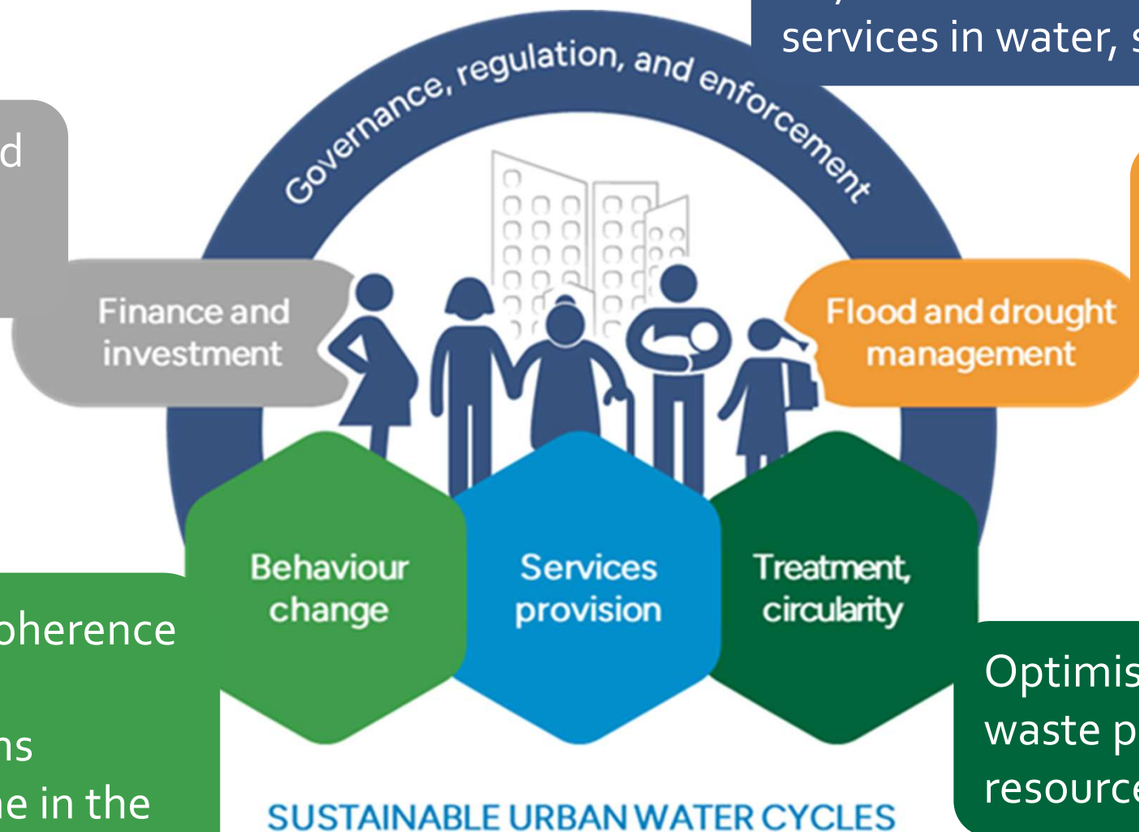
Behavioural factors

- Households not desludging
- Limited demand for services
- Weak enforcement

SUWC: Moving from Assets to Services

Improved governance and regulation for city-wide inclusive and climate resilient services in water, sanitation and waste

Strengthened local capacities and systems for sustainable cost-recovery in city-wide services



Improved capacity and preparedness for flood and droughts management

Increased professionalisation, coherence and institutional embedding of behavioural change interventions around water, waste and hygiene in the city

Optimised, sustainable and safe waste processing with appropriate resource recovery

Increased performance, accountability and transparency of operators of water and waste services

Closing Challenge

How can we make service quality the measure of success?

Metrics:

- Service coverage
- Scheduled desludging
- Facility utilisation
- Financial sustainability
- Treatment compliance
- Customer satisfaction



At the end of 90 days the product is now ready for sale or use in crop production

We sell it in shops or apply to our fields every other year for pest and disease free crops









HH-4

We transfer the finished product

to our row cropping system

and this is what stops all manner of

pests and disease in Agricultutre



Using no chemicals of any kind
The HH-2 system gives you Pest and Disease free crops for 25 years.







for any crop type and on any soil type

In short the HH-2 System solves all your Waste Management, Sanitation and Food Growing Problems in one



public broadcasts on the subject



BBC Radio 4 Farming Today



3rd African Congress for Water and Sanitation, Kigali, Rwanda



Thank you for your kind attention

Contact us for further details on export to Africa www.ggi.org.uk

Recognising the Workforce Behind Sanitation:

From Invisible Workers to Sanitation Professionals



10 Oct 2026, Rajeev Munankami

SNV Impact that matters

The Missing Link in Sanitation Systems

Toilets, sewers, and treatment plants do not provide services by themselves.





Sanitation workers are the human link that keeps sanitation systems functioning.

Progress and Remaining Gaps

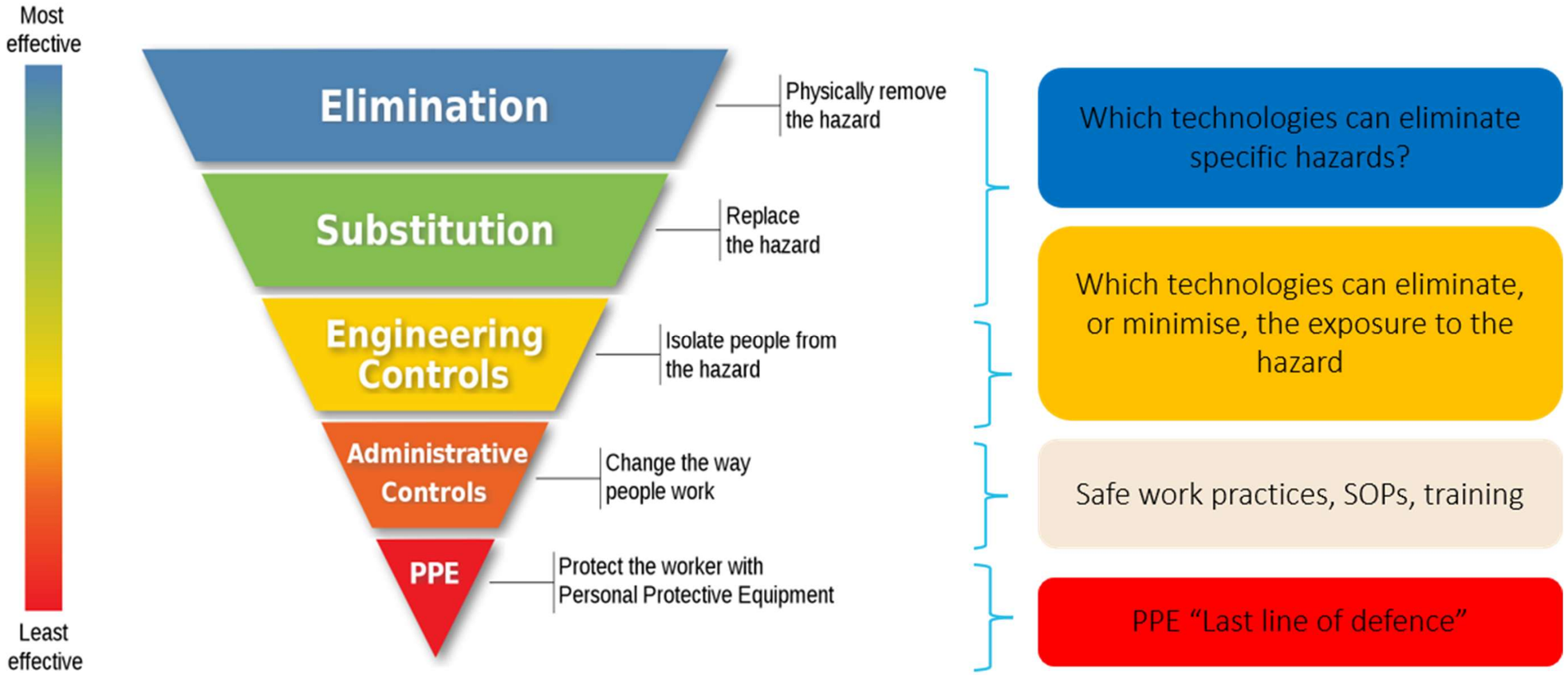
Progress

- Mechanisation
- Occupational safety discussions
- National FSM programmes

Gaps

- Limited recognition
- Weak occupational standards
- Insufficient skills pathways
- Limited representation in decision-making

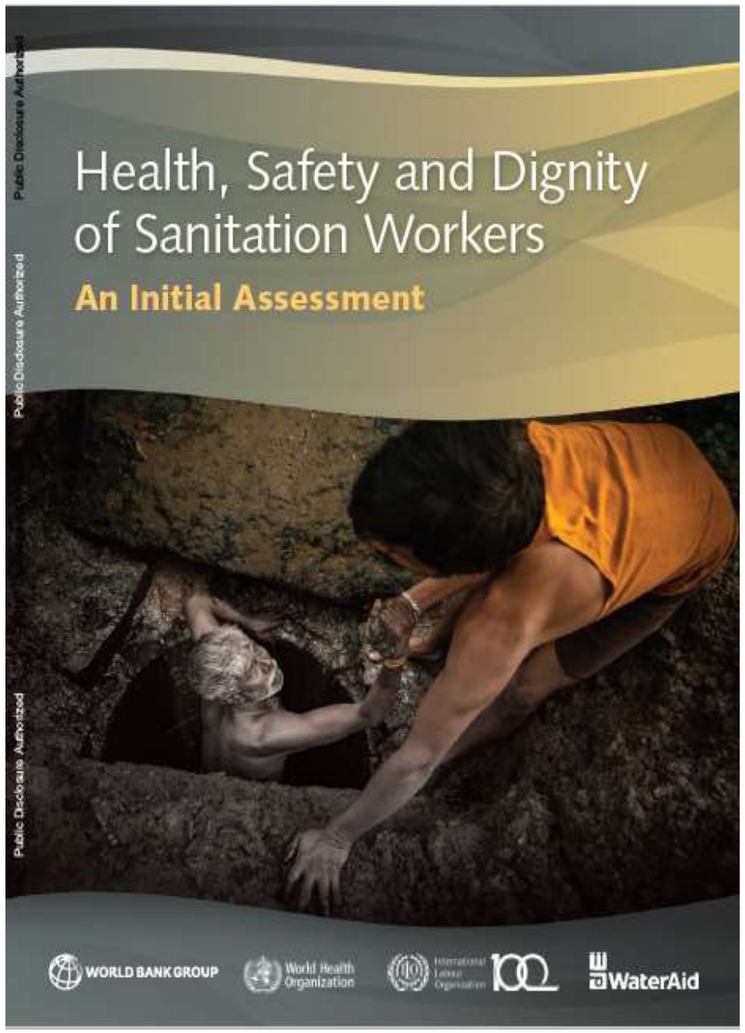
From Worker to Professional



Key elements needed:

- Occupational standards, Certification systems, Skills development,
- Health and safety protection, Social recognition, Career pathways

Global Recognition Movement



Initiative for Sanitation Workers (ISW)

Consultation on Recognition and Visibility of Sanitation Workers

SW Sanitation Workers Knowledge and Learning Hub

Call to Action

Infrastructure + Services + Workforce

Thank you

SNV Impact that matters

PLANT TO PAD HUB

How do we make biodegradable menstrual pads work at scale?

NIDISI
Humanity can do better



SPARŚA PRODUCTION PROCESS

Sparśa Production Process: From banana trunk to fibre paper

Fibre factory in Susta



01 **Collect banana trunks**



02 **Cut trunks in half**



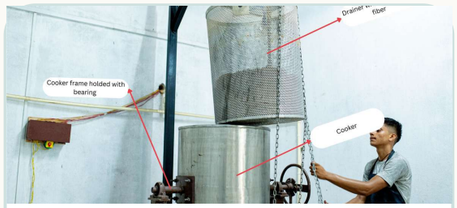
03 **Extract the fibre**



04 **Dry the fibre**



05 **Cut the fibre**



06 **Cook the fibre**



07 **Beat fibre into pulp**



08 **Form paper sheets**



09 **Press out water**



10 **Dry paper in the greenhouse**

SPARŚA PRODUCTION PROCESS

Sparśa Production Process: From absorbent core to finished pad

Pad factory in Bharatpur



01 **Heat the paper**



02 **Shred the paper**



03 **Feed paper into the hopper**



04 **Mattress making machine to process paper into fibre fluff**



05 **Form and cut fibre mats**



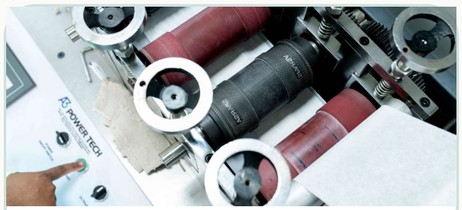
06 **Prepare three mat layers**



07 **Feed the core into the machine**



08 **Combine top and bottom layers**



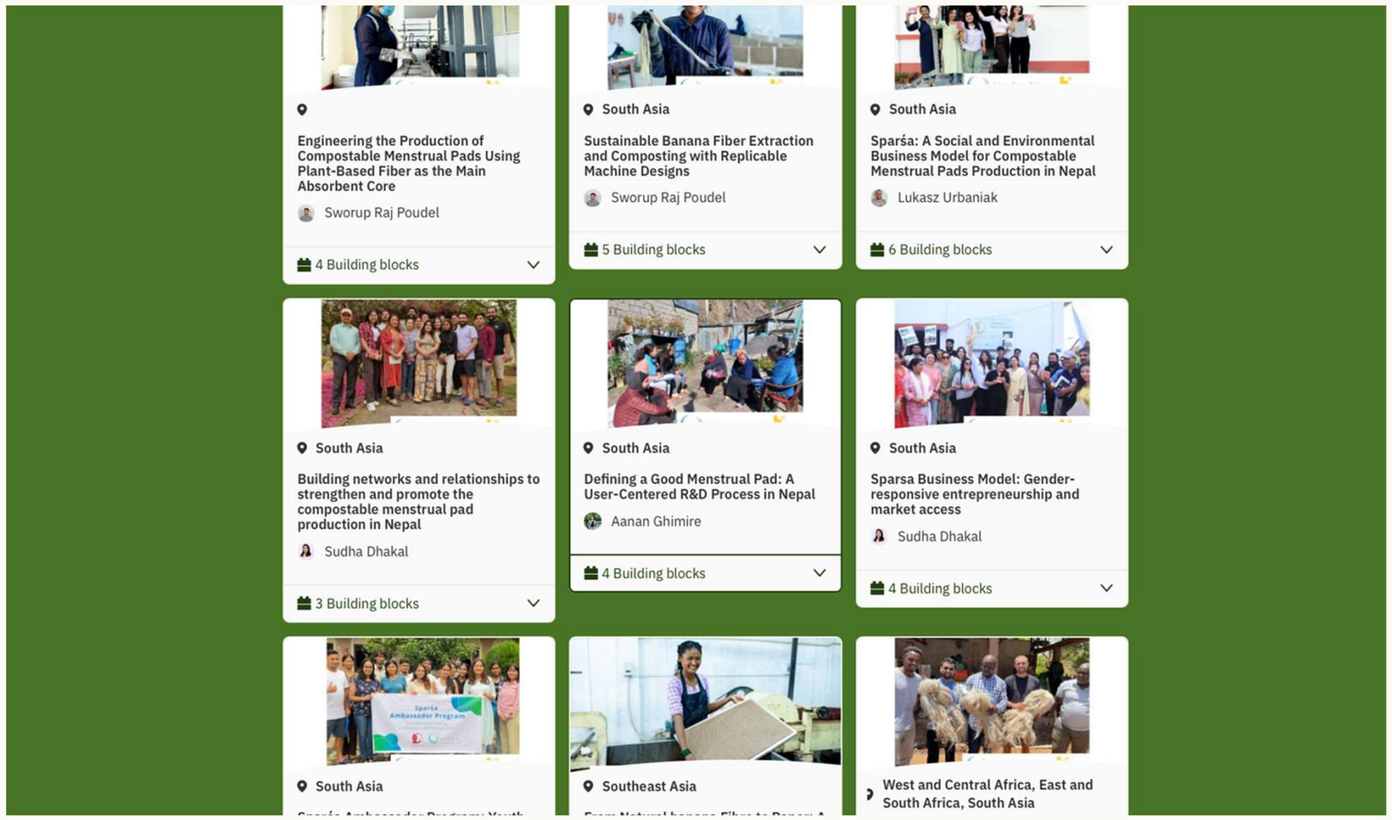
09 **Emboss and seal the pad**



10 **Inspect the pad for packaging**

Knowledge Sharing

Want to see some of our practical solutions?



Scan me!

Plant to Pad Hub: Learning travelled in both directions





NEPAL

Technical development
and production experience

KENYA

Replication, adaptation
and feedback to Nepal

Thank you

Contact us!

LinkedIn: Mara Heckmann

Email: mara.heckmann@nidisi.com



SuSanA Meeting

South Asia Edition

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From Circular Economy to Ecological Sanitation

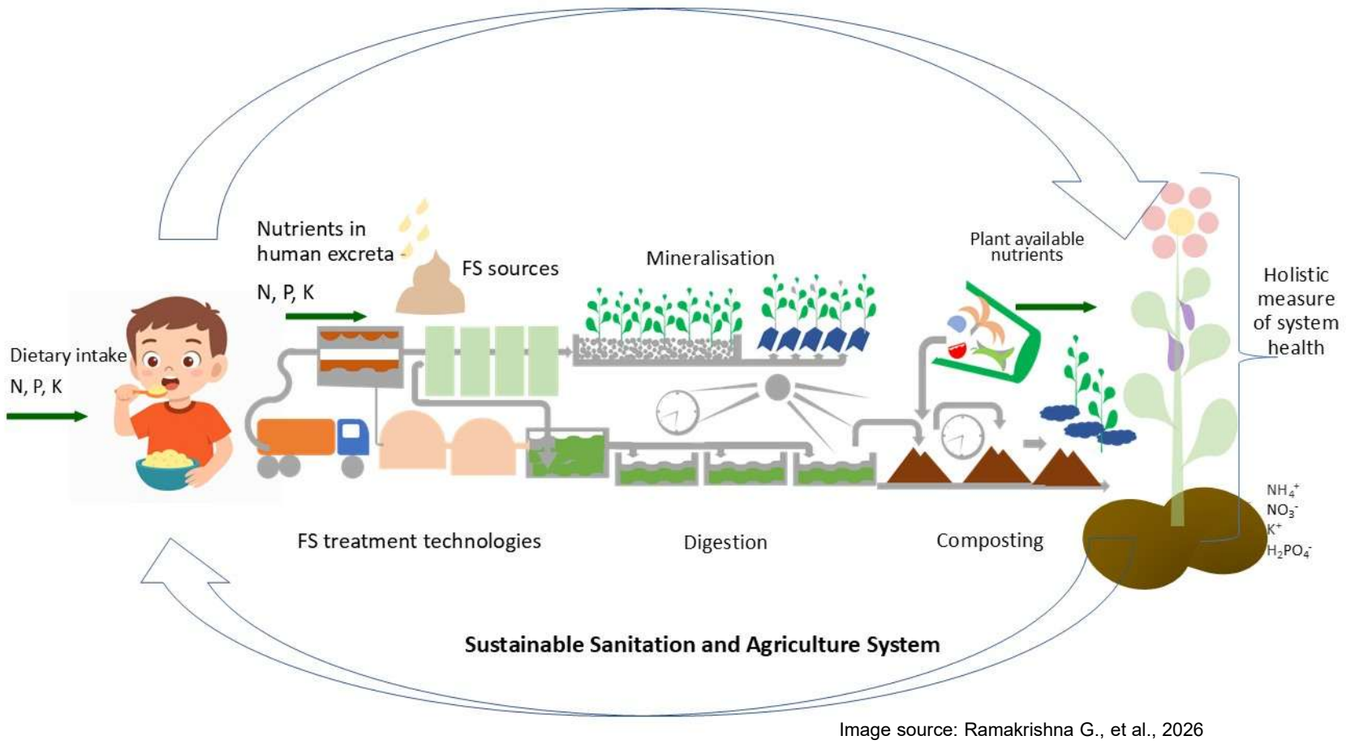


Image source: Ramakrishna G., et al., 2026

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From Sanitation to Soil: Closing the Nutrient Loop

Connecting Research, Practice and Regional Knowledge Exchange

Girija Ramakrishna, PhD
Technical Expert – Reuse & Circularity, CDD India
SuSanA Global Steering Committee – South Asia

Why Circular Sanitation?

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1 SAFE SANITATION
Containment, collection and treatment remain essential—but treatment alone does not create circularity.

2 RESOURCE RECOVERY
Faecal sludge contains organic matter and nutrients that can potentially be recovered as useful soil amendments.

3 PRODUCTIVE REUSE
The loop closes only when recovered resources are safely and beneficially returned to productive use.

Circularity is an outcome—not simply a treatment technology.

Faecal Sludge Reuse: A Pathway to Sustainable Agriculture

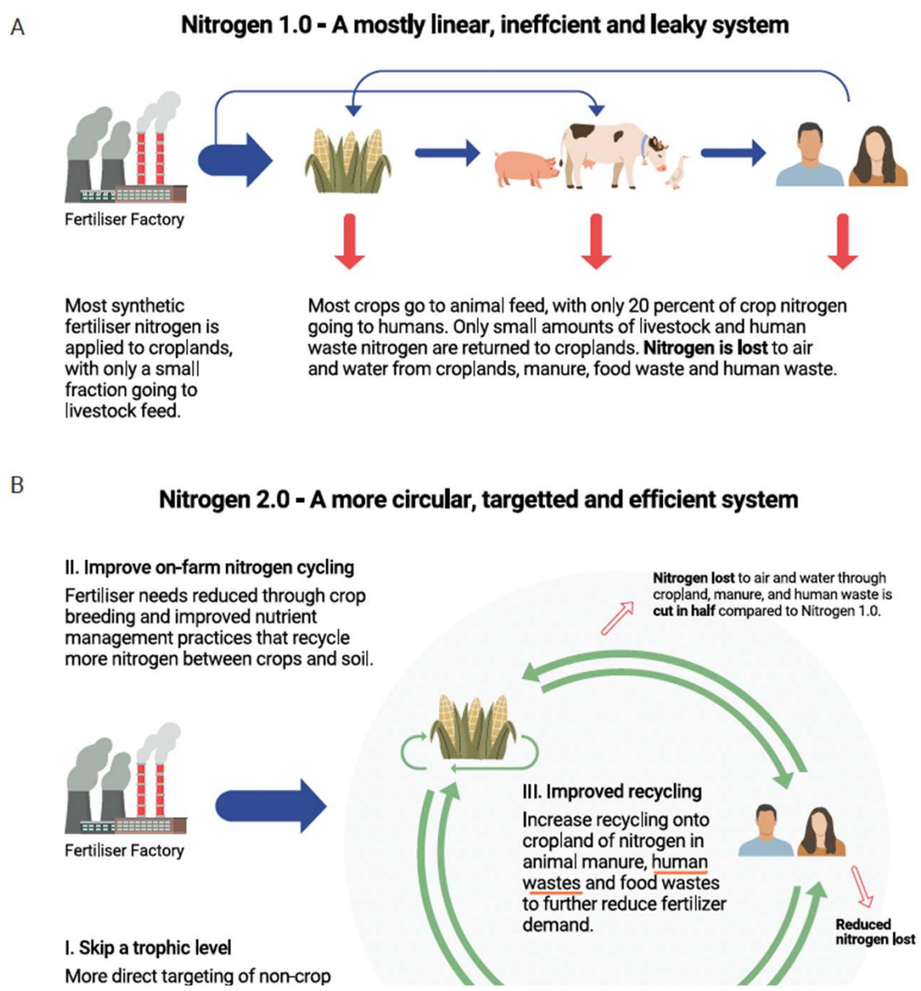
Faecal sludge (FS) rich in plant nutrients, particularly N, P, K (Allen et al., 2023; Odirile et al., 2024). They improve **soil fertility, nutrient availability, and crop yields,** especially in resource-constrained settings (Nikiema et al., 2020; Allen et al., 2023).

FS-derived products into agriculture aligns with **SDG 6 (Clean Water and Sanitation), SDG 2 (Zero Hunger), and SDG 13 (Climate Action).**

Nitrogen 2.0, a more circular, efficient, and targeted approach proposes recycling N from organic sources - animal manure and **human waste**, back into croplands : **40% reduction in N_2O** emissions by 2050 (Aziz et al., 2024).

Human waste has potential for reuse in fertiliser, energy, and feed, but requires sustained and long-term research (Marchuk et al., 2023)

In response to the combined challenges of soil nutrient depletion, declining organic matter, and the environmental costs of fertilizer overuse, the reuse of faecal sludge offers a promising pathway.



Nitrogen 1.0 vs. Nitrogen 2.0 – A transition from a linear and leaky nitrogen flow to a circular, efficient system that emphasises waste recycling and nutrient recovery. Source: Aziz et al., 2024.

What does “safe and beneficial reuse” require?

SAFE:
From Pathogens and contaminants to protect farmers, consumers, soil and the environment.

From Research to Field Evidence



Non-viable Ascaris egg



Sludge drying beds with GHSD, Angul FSTP



Solar pasteurisation unit, Dhenkanal



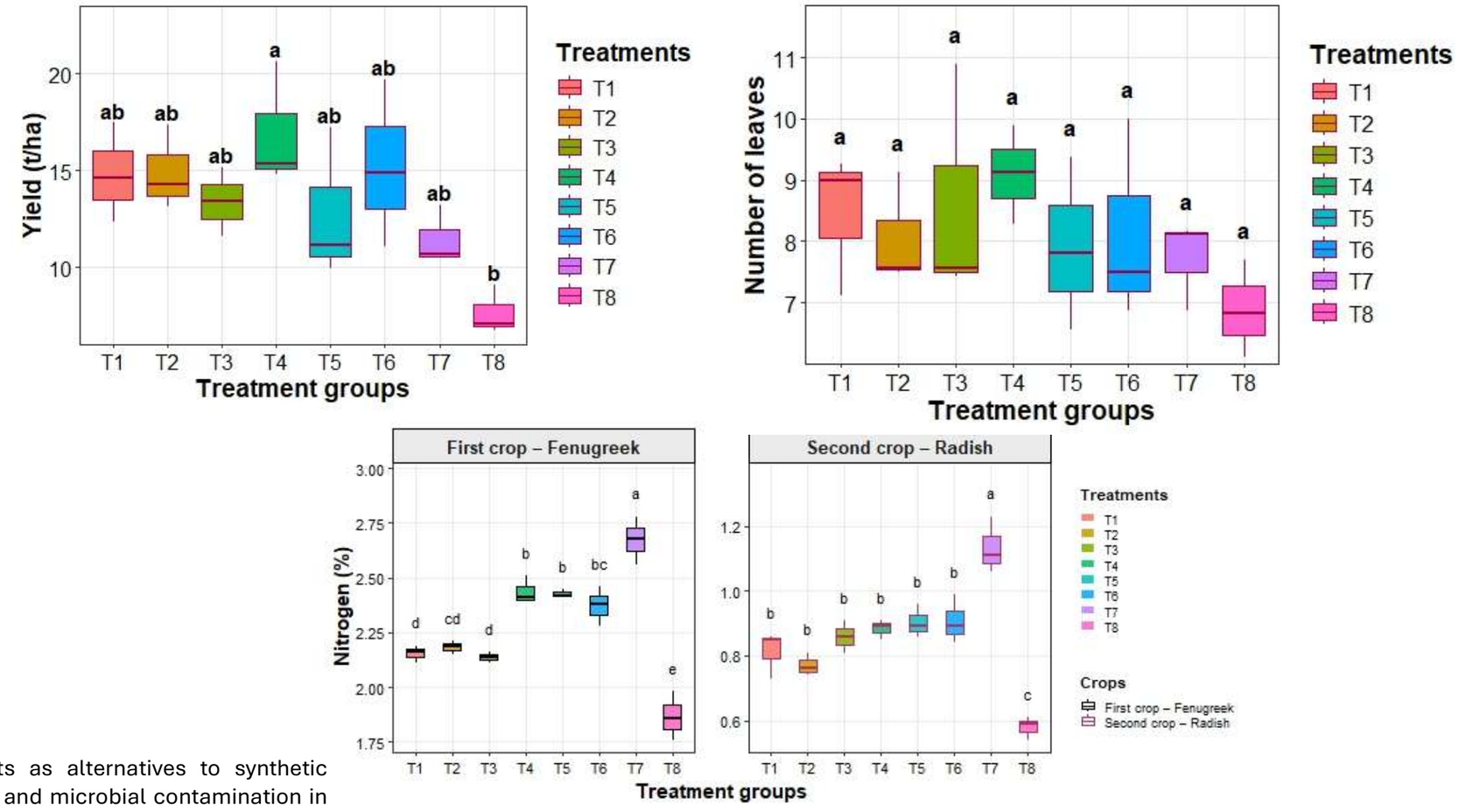
Co-composting, Devanahalli

Girija, R., Shettigar, N. A., Parama, V. R. R., & Gagana, S. (2019). Evaluation of co-composted faecal sludge application in agriculture. WIT Transactions on Ecology and the Environment, 238, 701-711.

What does “safe and beneficial reuse” require?

EVALUATE: AGRONOMIC POTENTIAL

Nutrient value, application rates, crop response and soil effects need to be demonstrated under field conditions.



Agronomic potential of FS-based inputs

From Research to Field evidence

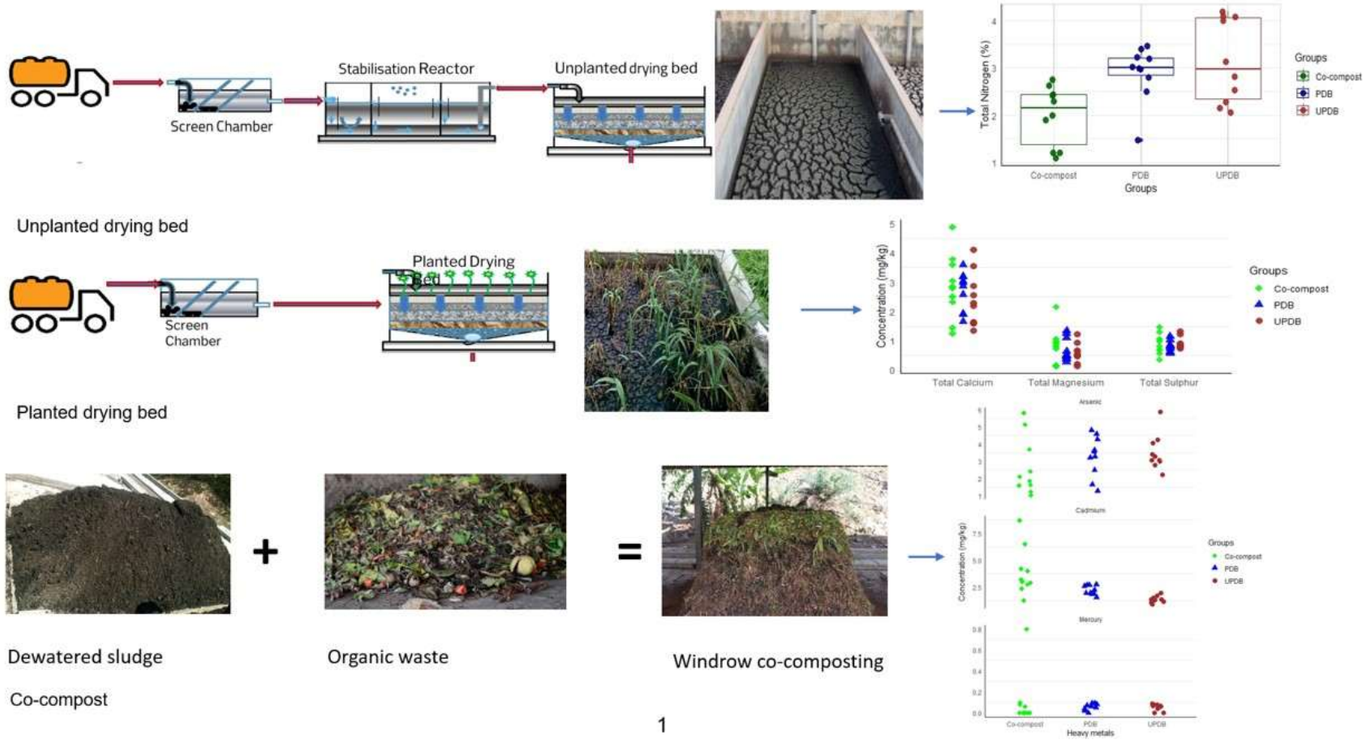
Ramakrishna, G., & Patil, B. Faecal sludge-based amendments as alternatives to synthetic fertilizers and organic manures: Crop performance, soil nutrients, and microbial contamination in maize–cowpea cropping systems. *Environmental Sustainability* (Under revision).

What does “safe and beneficial reuse” require?

FIT FOR PURPOSE:

Quality criteria should consider all physical, chemical and biological parameters relevant to the specific application.

- Treatment method significantly influences sludge composition
- UPDB and PDB produced more stable, predictable outputs; co-compost showed greater variability
- Co-composting produces a relatively balanced nutrient profile
- All FS products met most Indian Fetrilizer Control Order (FCO) standards



Ramakrishna, G., & Patil, B. (2025). Characterisation of Faecal Sludge from Different Nature-Based Treatment Processes for Agricultural Application. *Sustainability*, 17(13), 5683. https://doi.org/10.3390/su17135683

From Research to Field Evidence

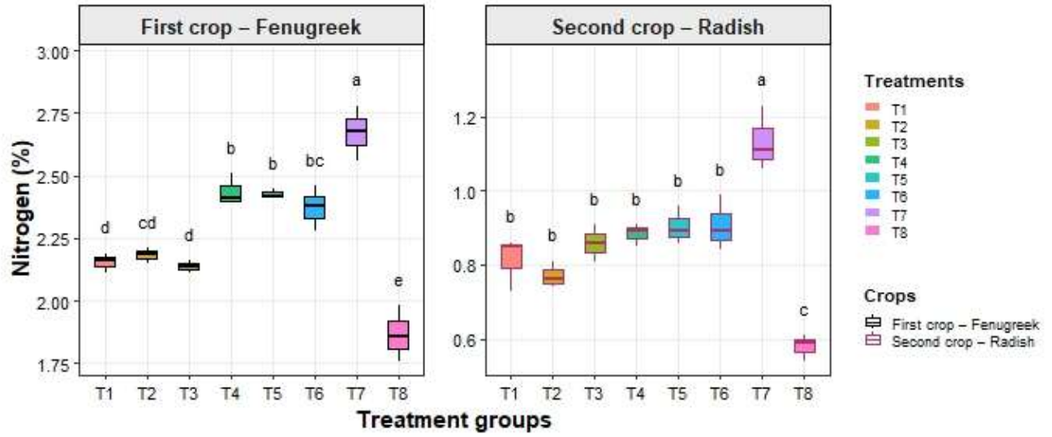
Best Paper Award at the International Conference on Sustainable Developments in Air and Waste Management, organized by AMU and Universiti Teknologi Brunei, Darussalam.

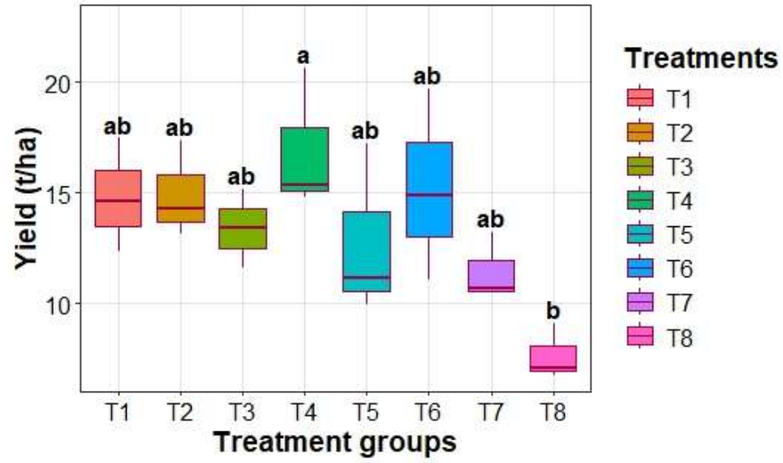
What does “safe and beneficial reuse” require?

EVALUATE: AGRONOMIC POTENTIAL

Nutrient value, application rates, crop response and soil effects need to be demonstrated under field conditions.







- FS products performed comparable to synthetic fertilizers in the first crop and to the highest performing organic amendments (FYM) in the second crop in crop yield, growth, crop and soil nutrients
- Stabilised FS is a safe, effective, and sustainable alternative to synthetic and traditional organic fertilisers
- Safe practices: Withholding period, suitable crops, application methods.

From Research to Field evidence

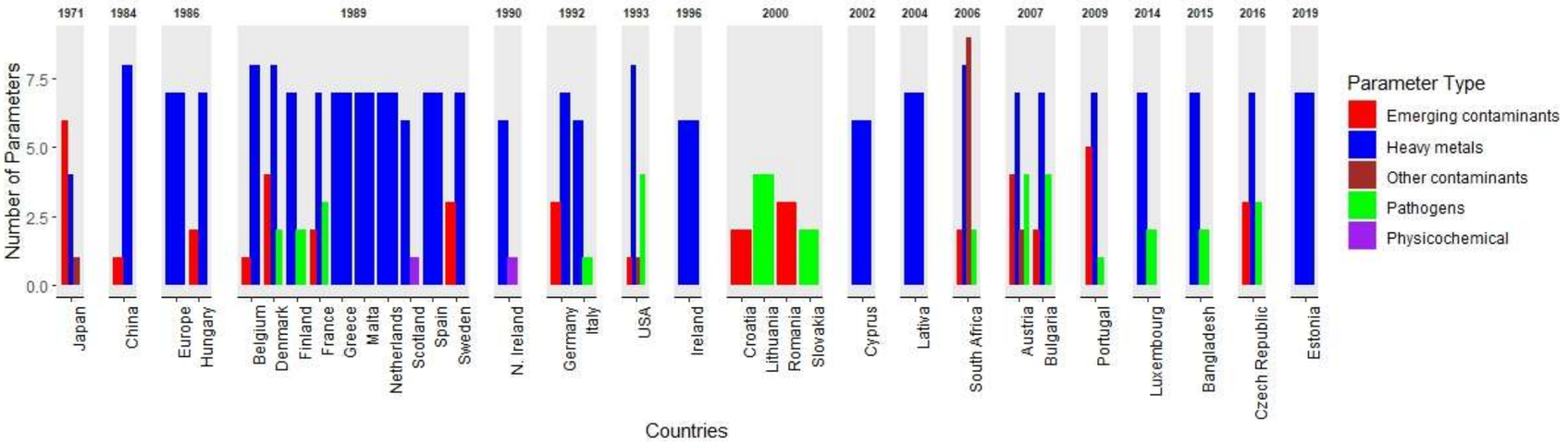
Ramakrishna, G., & Patil, B. Faecal sludge-based amendments as alternatives to synthetic fertilizers and organic manures: Crop performance, soil nutrients, and microbial contamination in maize–cowpea cropping systems. *Environmental Sustainability* (Under revision).

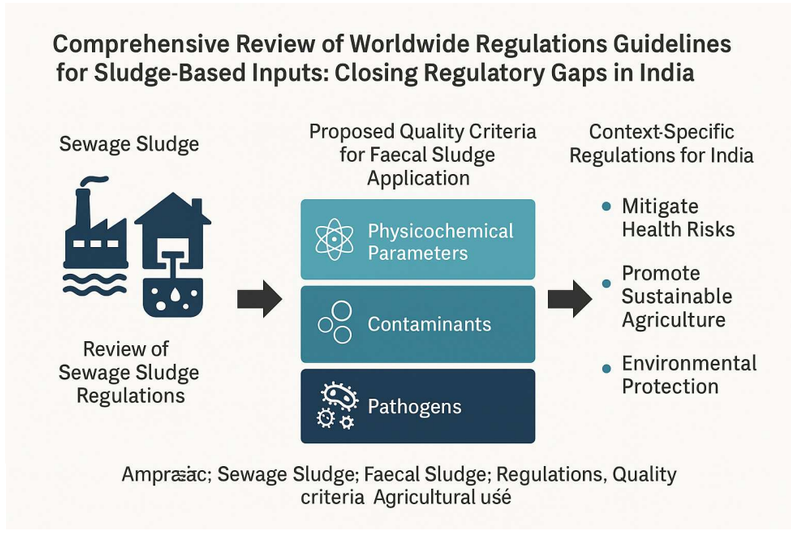
What does “safe and beneficial reuse” require?

QUALITY FRAMEWORKS

Clear criteria for recovered products, including safety, nutrient value and intended end use.

From Research to Policy





- Regulations evolved from heavy metal focus to broader coverage of pathogens, physicochemical indicators, and emerging contaminants
- Significant cross-country variability in parameters
- Dedicated FS quality standards remain absent in India
- Comprehensive quality criteria: FCO, WHO, USEPA and selected emerging contaminants.
- Context-specific, multi-barrier approach

Ramakrishna, G., & Patil, B. Comprehensive review of worldwide regulations and guidelines for sludge-based inputs: Closing regulatory gaps in India. In Nature-based solutions for water circularity and sustainability, edited volume, *Springer* (in press).

What needs to move from pilots to practice?

- Translate *Research – Practice - Policy*
- Circular reuse *needs enabling systems* around the technology.
- Clear criteria for recovered products, including *safety, nutrient value and intended end use*.
- *Cross-sector linkages*: Sanitation, agriculture, urban local bodies, operators, researchers and end users need to work together.
- Capacity and confidence: Operators and users need *practical guidance, monitoring capacity and confidence* in recovered products.

The challenge is not only: “Can we recover resources? "It is also: “Can we make reuse safe, practical and scalable?”

SuSanA: From Evidence to Regional Action

EVIDENCE

Research findings
Field experience
Implementation lessons

EXCHANGE

Practitioners
Researchers
Government
Civil society

CAPACITY

Knowledge products
Peer learning
Training
Young professionals

UPTAKE

Better practice
Policy dialogue
Replication
Scale

Closing the loop requires evidence, institutions and networks that connect sanitation, water, agriculture and people.

Thank you

From Scaling Innovation to Sustainable Services:

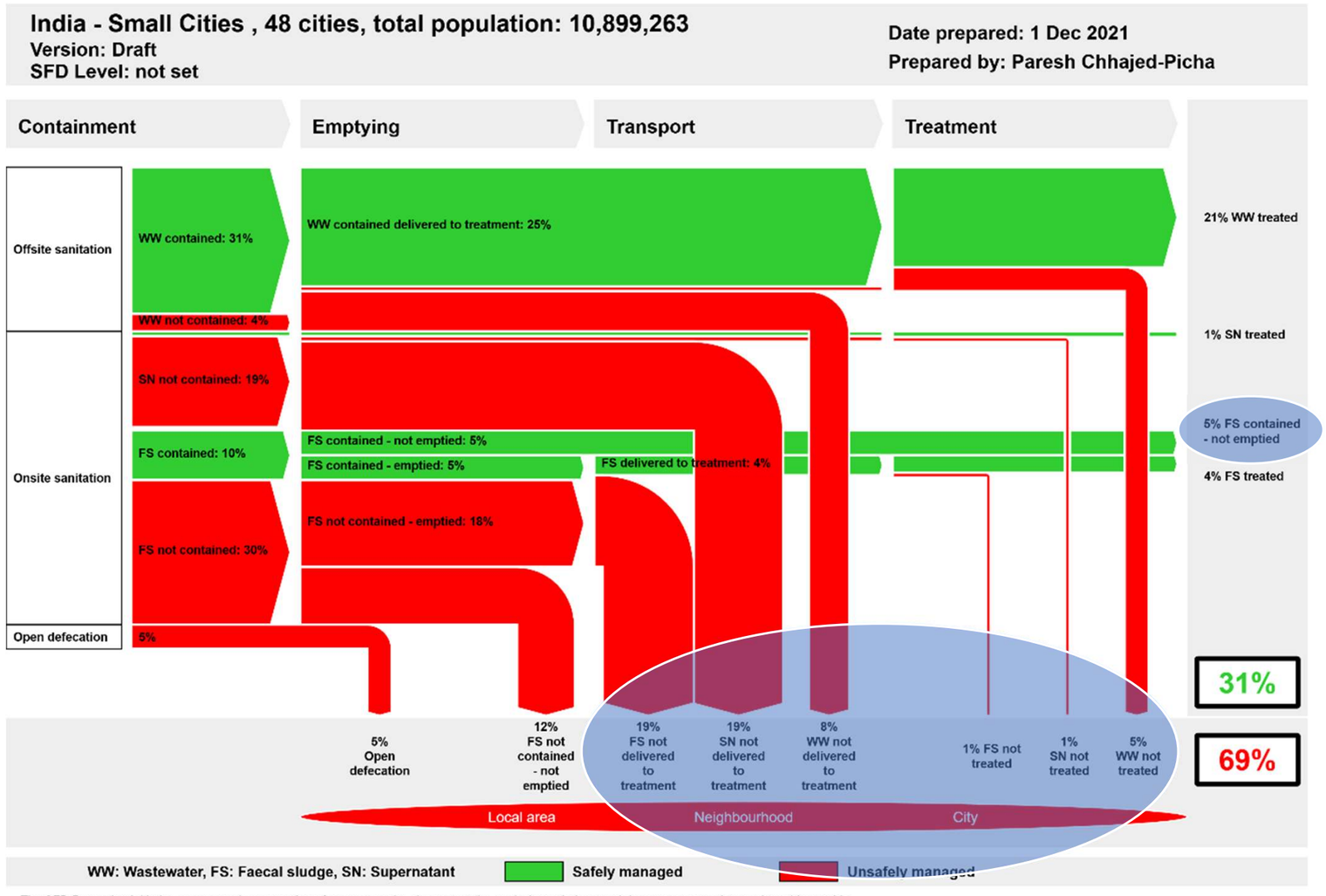
The Unfinished Business of FSM in India

Paresh Chhajed-Picha
Independent Researcher and Consultant
Associate, Riva
SuSana Forum Moderator

Oct 10, 2026

SuSanA South Asia Regional Chapter Meeting, Pune

FSM Service Chain in Small Cities

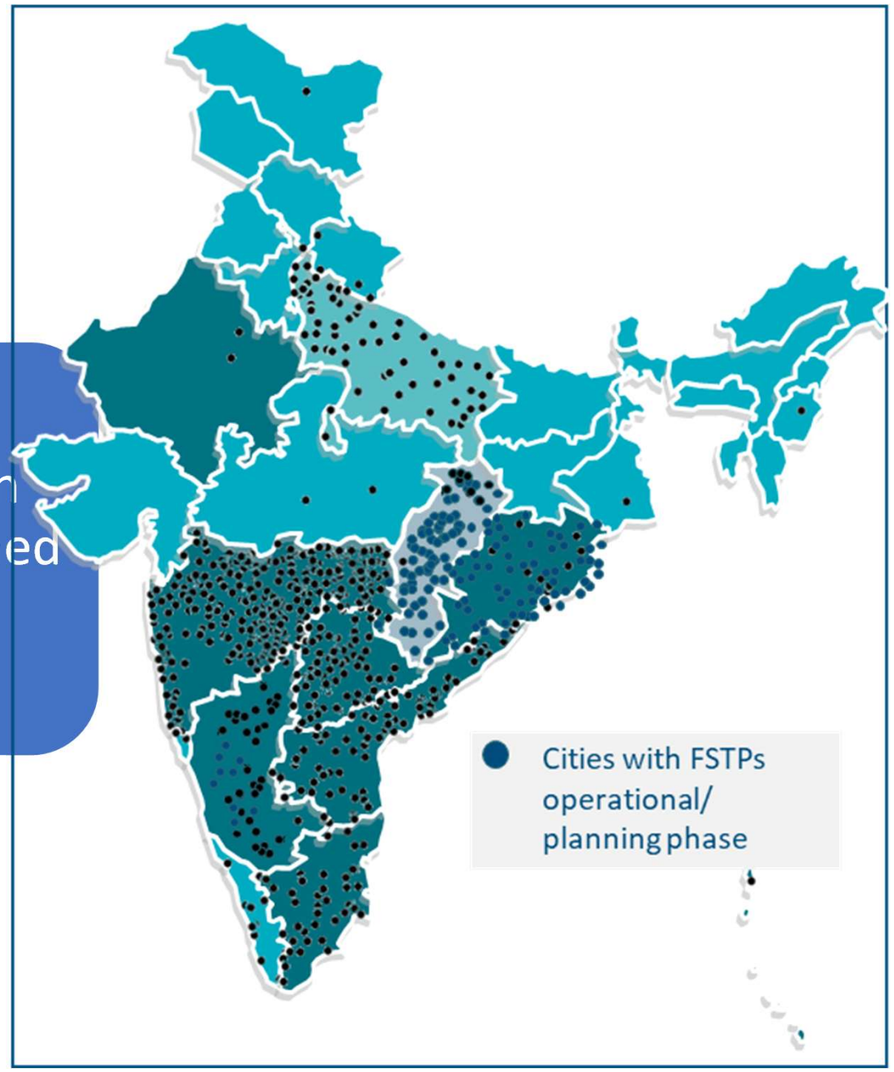


Source: Prepared by the author

The Rapid Scaling

1st FSTP in Devanahalli in Nov 2015

~1500 cities with operational/planned FSTP in 2023



Source of the map: Joshi (2022)

Supportive Union Government

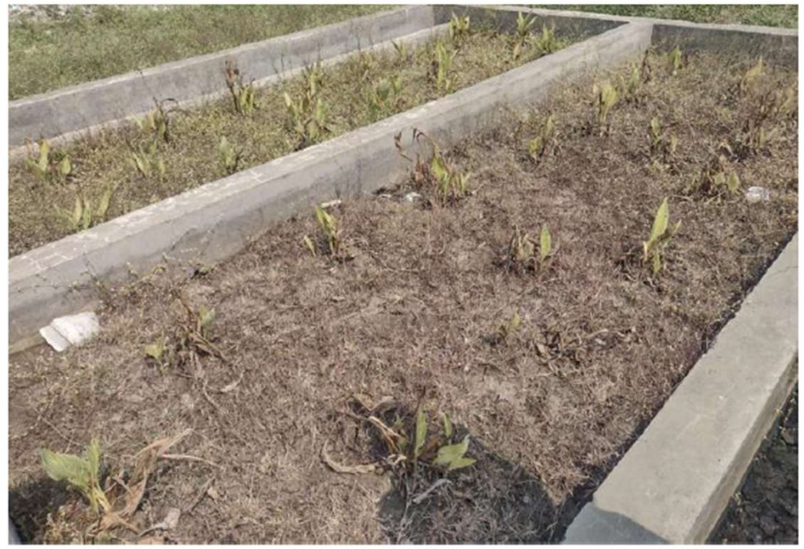
- National FSSM Policy 2017
- Finance – National infrastructure financing schemes
- Knowledge Management – SCBP
- Monitoring (Annual Ranking of cities)
- Gates Foundation - Financial Support to knowledge partners
- NFSSM Alliance and partners – Technical support

Scaling at State Level – Maharashtra

- Demonstration cities – Wai and Sinnar
- Strategy – existing STPs + New FSTPs
- Policy – Government Resolutions
- Pre-approved design (technology selection, capacity, costs)
- Finance – Local Government Funds
- Technical Support Unit at the Secretariat

The Unfinished Business

- Backward and forward linkages
  - Scheduled desludging
  - Market for reuse
- Integration with urban management systems
  - Regulating Treatment
  - Monitoring services
- Greywater management
- (Local) Government ownership





Source of Images: Maharashtra Urban Environmental Sanitation Coalition (2024)

Thank you

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Q&A Session and Summary

Paresh Chhajed-Picha & Girija Ramakrishna

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Wrapping Up

Dhawal Patil

SuSanA Meeting

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