

SuSanA Meeting South Asia Edition

SuSanA
sustainable
sanitation
alliance



Welcoming & Introductions

Nitya Jacob & Dayanand Panse

SUSANA INDIA CHAPTER

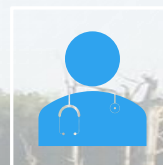
A DECADE OF SUPPORTING THE SANITATION SECTOR

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.

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

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.



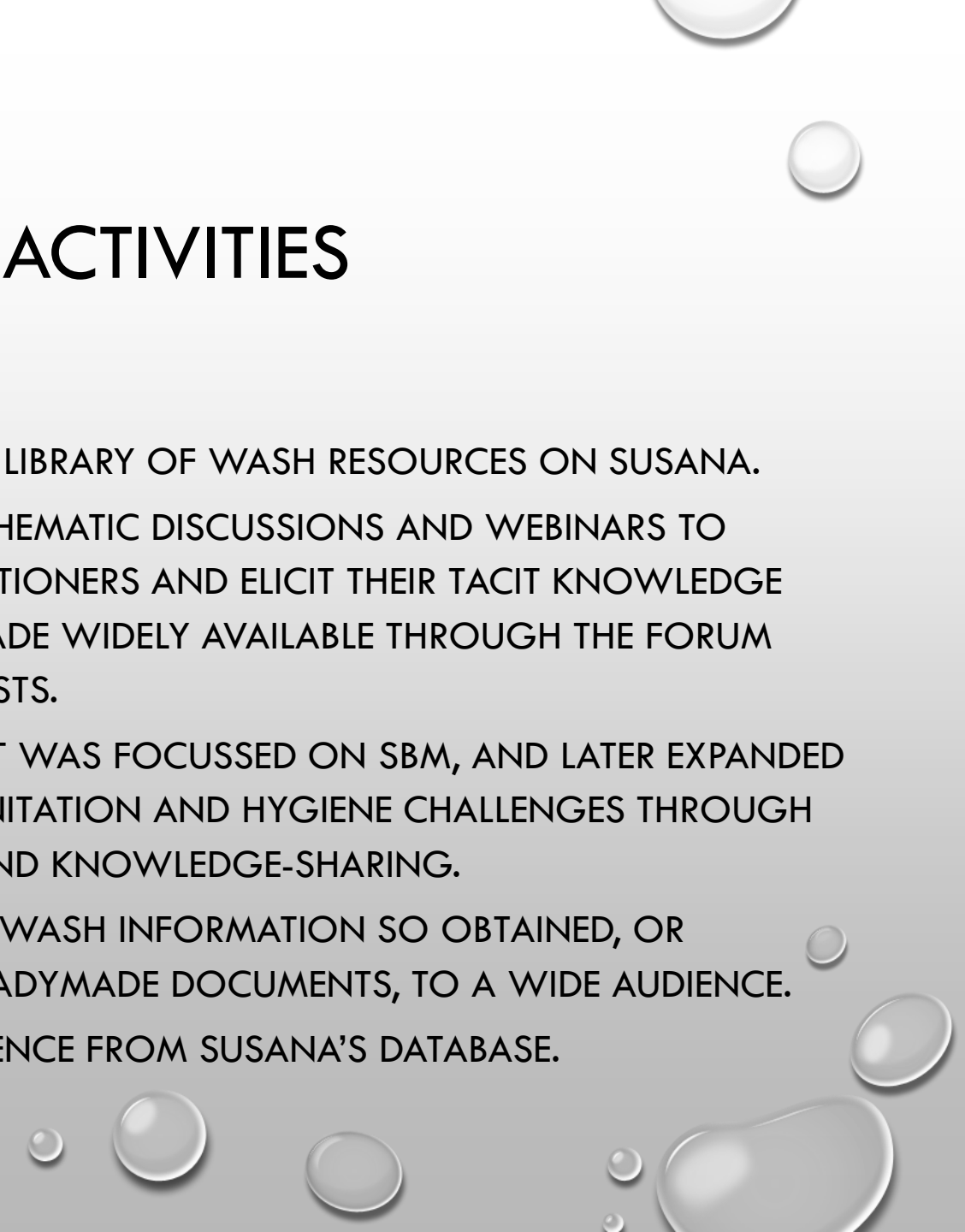
BUILD AND STRENGTHEN THE CAPACITY AND PARTICIPATION OF CIVIL SOCIETY ORGANIZATIONS IN ONGOING SECTOR PROCESSES AND FORUMS



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.



Experiences with SuSanA

Dayanand Panse

Updates from the SuSanA Global Steering Committee

SuSanA
sustainable
sanitation
alliance



**Malesi Shivaji,
SuSanA GSC
Pune, India
10-09-2026**

Global Steering Committee 2025 - 2028



- **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*

Get to know SuSanA who we are and what we do

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*



SuSanA
sustainable
sanitation
alliance

Convening
and match-
making

Advocacy
and
think tank

Knowledge
sharing



Top-on-the-Agenda

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

Espresso Presentations

Moderated by Arne Panesar

SANI-HUB

Advancing Global Humanitarian Sanitation Knowledge Management

An initiative of



Implemented by:



German
Toilet
Organization



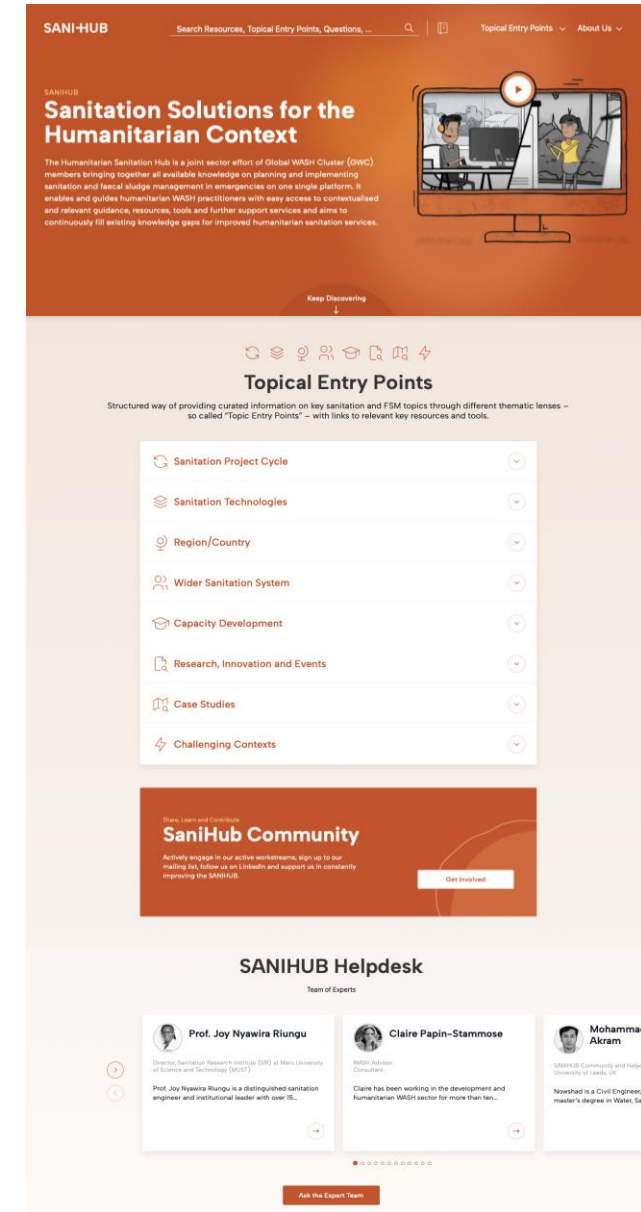
financially supported by



What is SANIHUB?

SANI+HUB

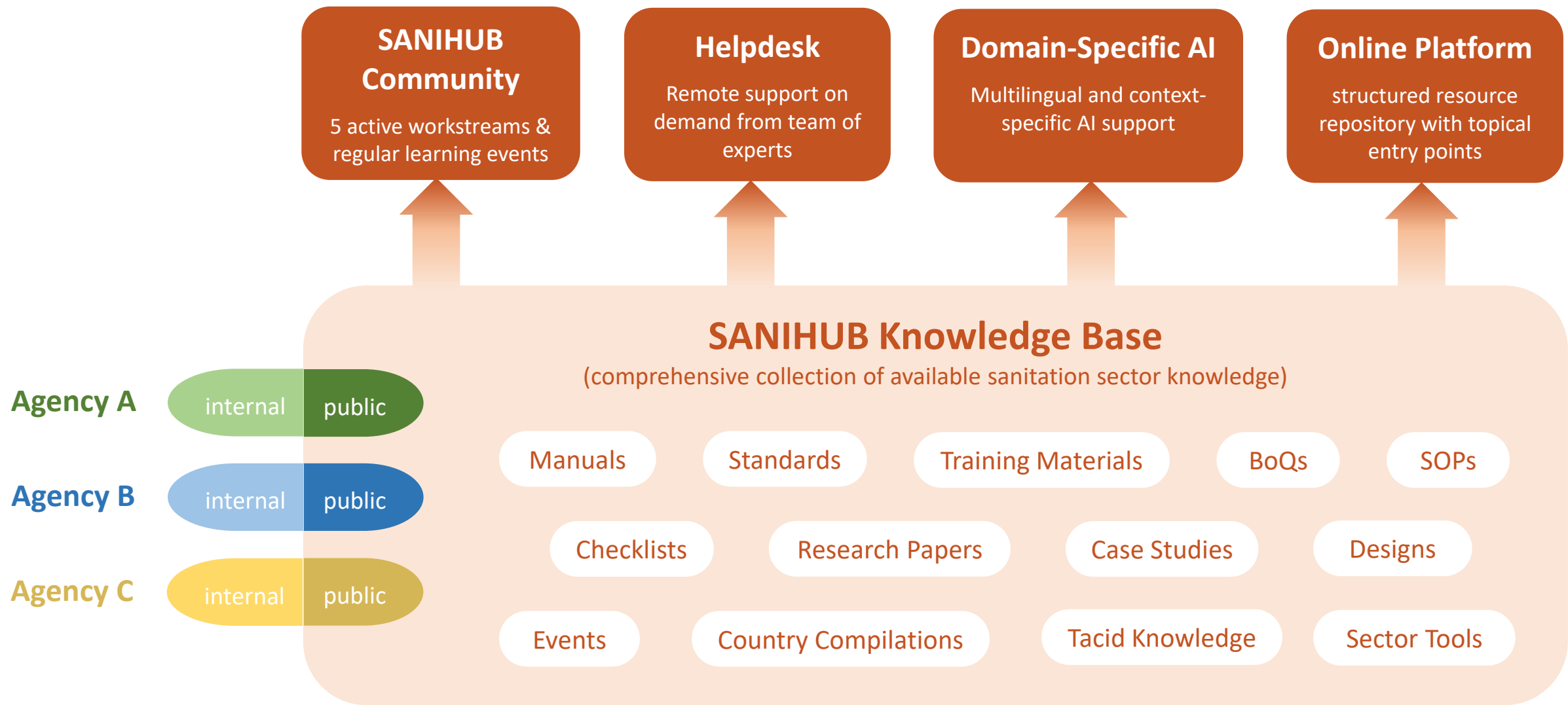
- + **Global sector go-to-point** for humanitarian sanitation practitioners with structured access to practical knowledge and resources
- + **Personal remote support** through an expert helpdesk and an active SANIHUB community
- + **Domain-specific AI** for multilingual, context-specific support
- + **Sector-wide approach to KM** to improve collaboration, quality and resource efficiency



Joint Sector Initiative

SANI-HUB

Knowledge Partners								
								
								
								
In partnership with								
Financial support	Gates Foundation							



 **SANIHUB** 

Topical Entry Points  About Us 

 Knowledge  Help  WhatsApp

SANI+HUB AI

SANIHUB

Sanitation Solutions for the Humanitarian Context

The Humanitarian Sanitation Hub is a joint sector effort of Global WASH Cluster (GWC) members bringing together all available knowledge on planning and implementing sanitation and faecal sludge management in emergencies on one single platform. It enables and guides humanitarian WASH practitioners with up to date, contextualised and relevant guidance, resources, tools and further support services and aims to continuously fill existing knowledge gaps for improved humanitarian sanitation services.

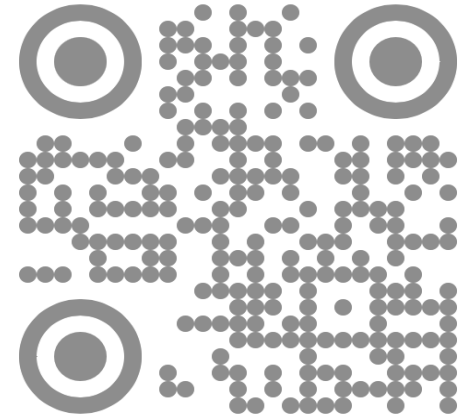


Ask anything, paste or upload files...

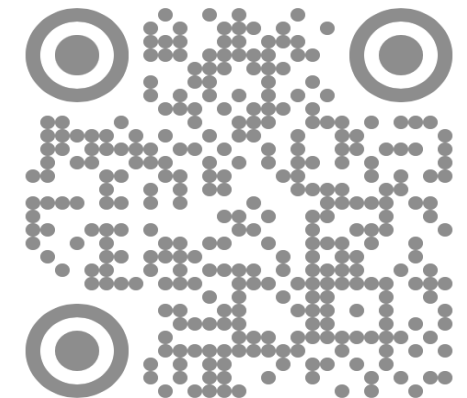
 New Chat  Attach files  Smart 



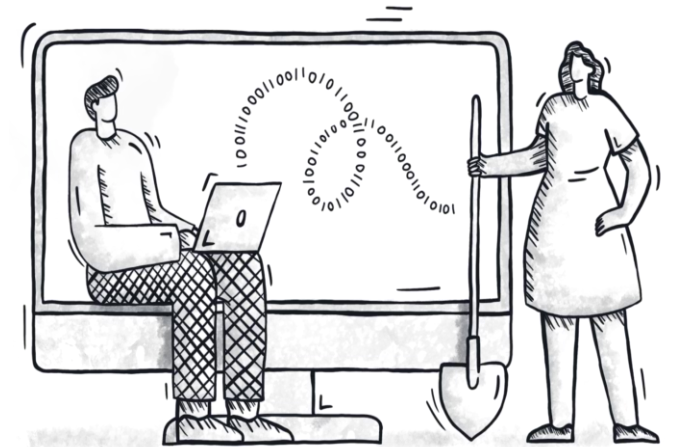
Web



WhatsApp



- + **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



- 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 initiatives and working groups

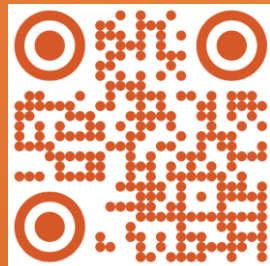
The logo for WASH+HUB is displayed within a stylized browser window. The window has a grey header bar with three small circles on the left. The text "WASH+HUB" is written in a bold, white, sans-serif font. The background of the window is a solid blue color, and there are large, semi-transparent blue circles behind the text, creating a modern, digital feel.

WASH+HUB

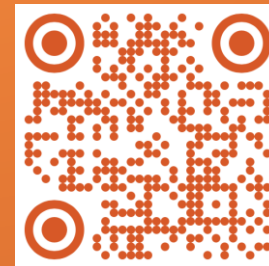
SANI-HUB AI

sanihub.info

Web

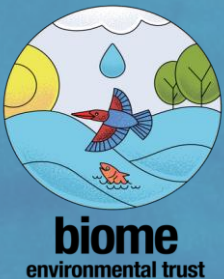


WhatsApp



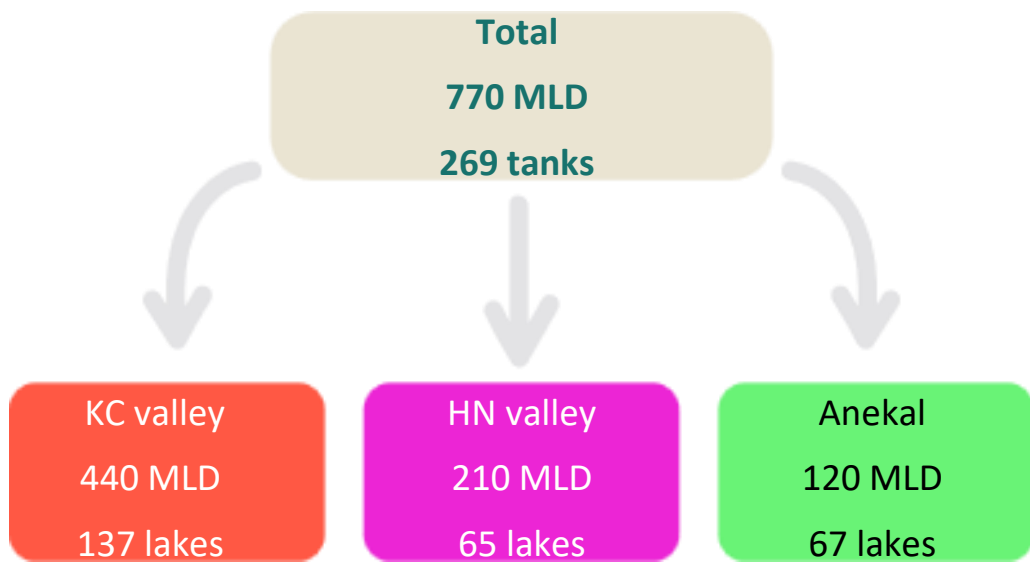
info@sanihub.info

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



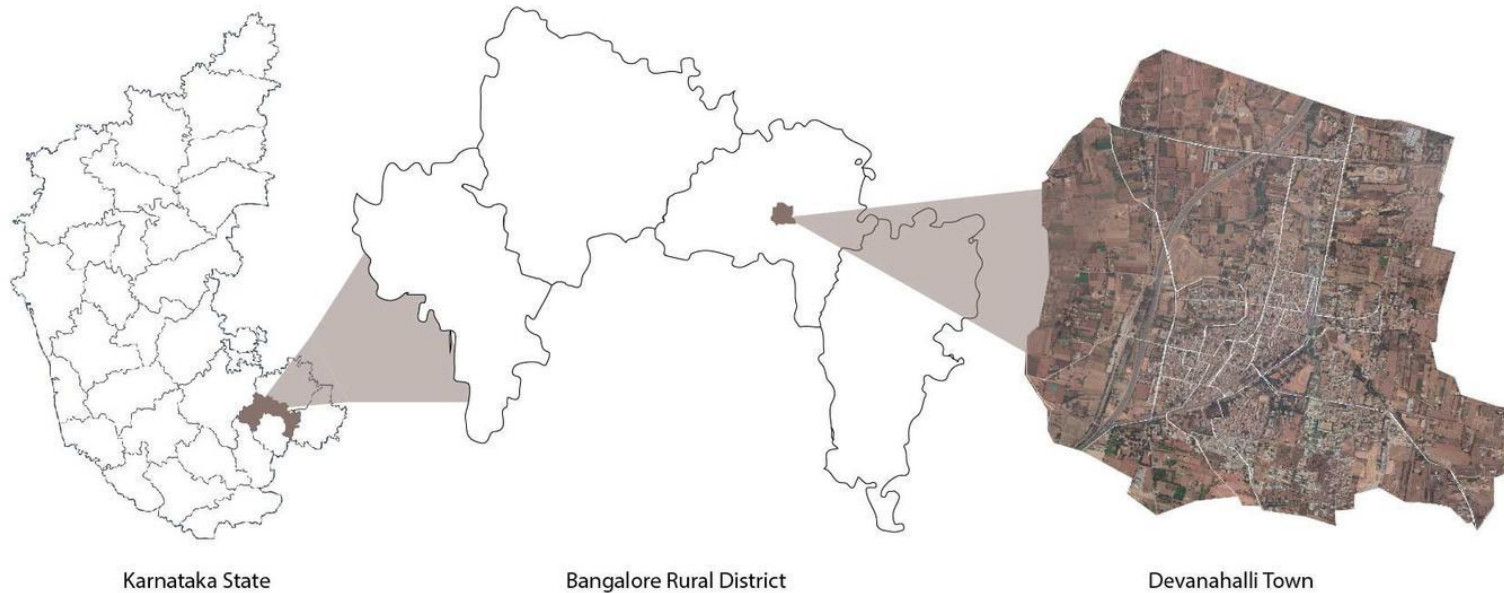


Lift irrigation of Secondary Treated Water from Bengaluru city to lakes in adjacent semi-arid and arid districts

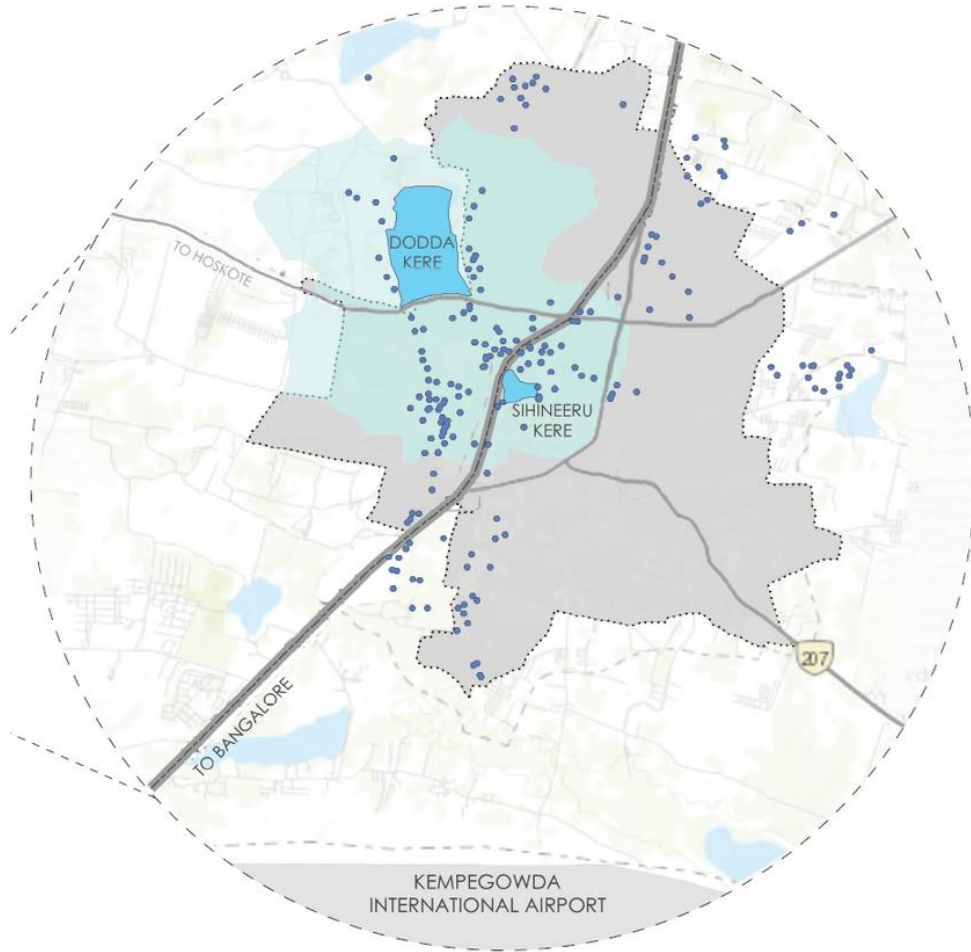


DEVANAHALLI TOWN- HERITAGE TOWN

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



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

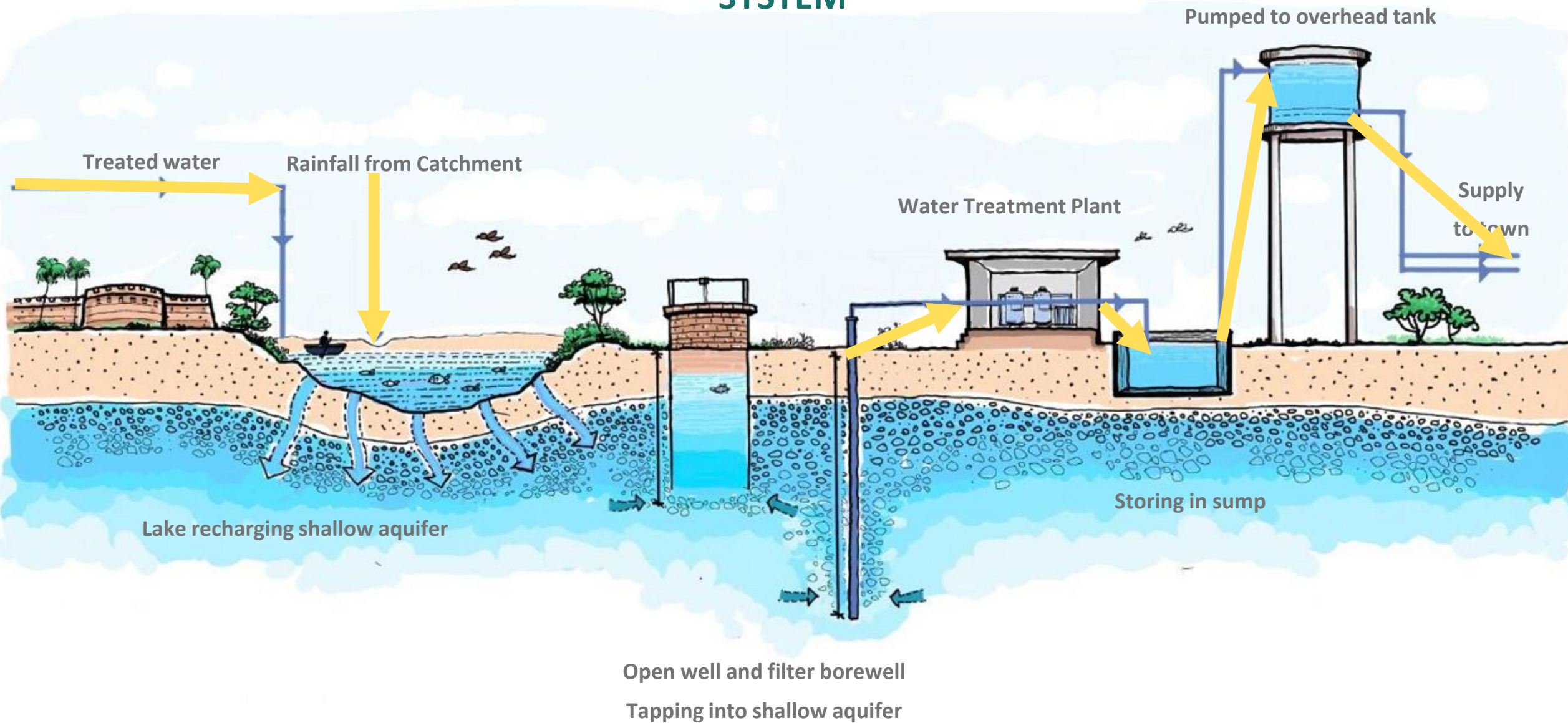
Recommendation for setting up a Water treatment plant for integrating open well water into Devanahalli town water supply system.

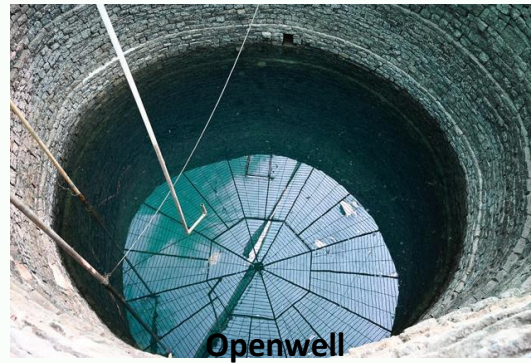
With reference to the above and based on the results of the water quality test of the sample collected from the open well water, we would recommend planning the Water treatment plant of 200 KLD as per the below specifications:

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





+



Disk Filter



Multimedia filter
with activated charcoal



UV Radiation



Chlorine Dosing

Ensuring - WTP Output is BIS 10500
Drinking water standard



Building the solution : bringing everyone together



TMC and Water Men



Filter borewell diggers



Researchers



Political leaders



Well diggers



Academicians



IMPACT

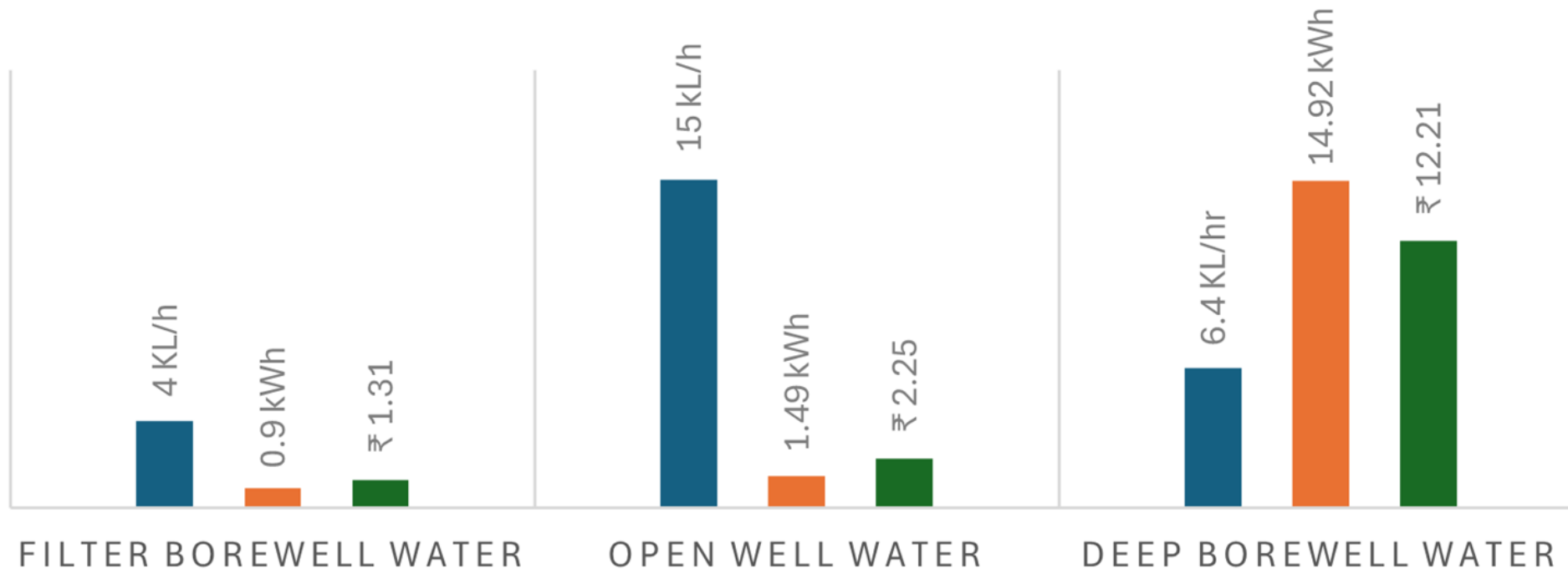
Current water supply from shallow aquifer	1 MLD
Current water supply of 2.8 MLD At 70 LPCD	Meets 35 %
Water supply of 5.4 MLD considering 135 LPCD	Meets 18%

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

KUWSDB proposed to scale this up to 6 MLD,

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

■ Yield per hour (KL/h) ■ Power Consumption per Hour (kWh) ■ Cost Per Kilo Litre (₹)





THANK YOU

Get In Touch

Thank you for your time.



9341324692



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 m³/day, produces secondary treated effluent with significant potential for non-potable reuse.



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

Design sludge capacity

Aug 2022

Start-up

~5 MW

CHP system

5

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



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

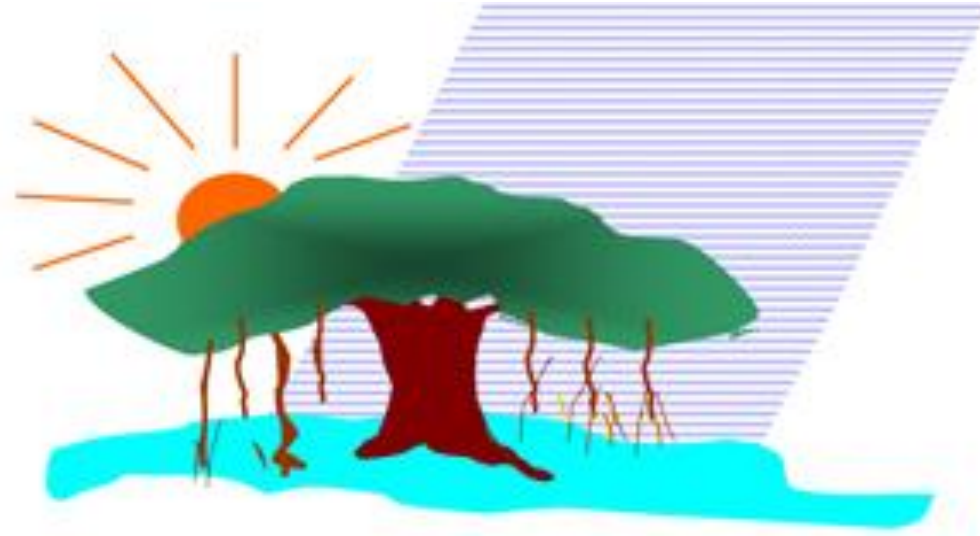
Knowledge exchange and networking on sustainable sanitation.

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

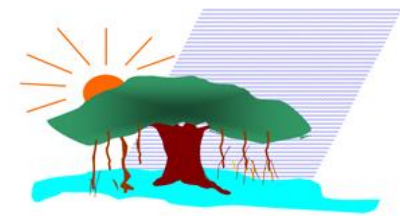
Thank you



Natural Solutions

Helping Mother Nature Heal Herself

Since 2003

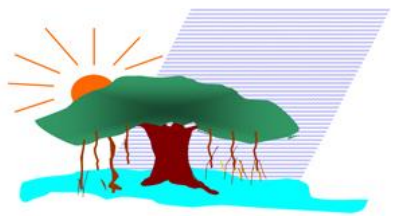


OUR MISSION

To help ecofriendly initiatives

and

To spread environmental literacy

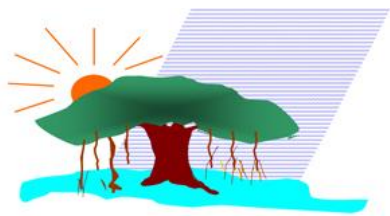


Dr. Ajit Gokhale

Founder and Principal Consultant of Natural Solutions



Jal Nayak



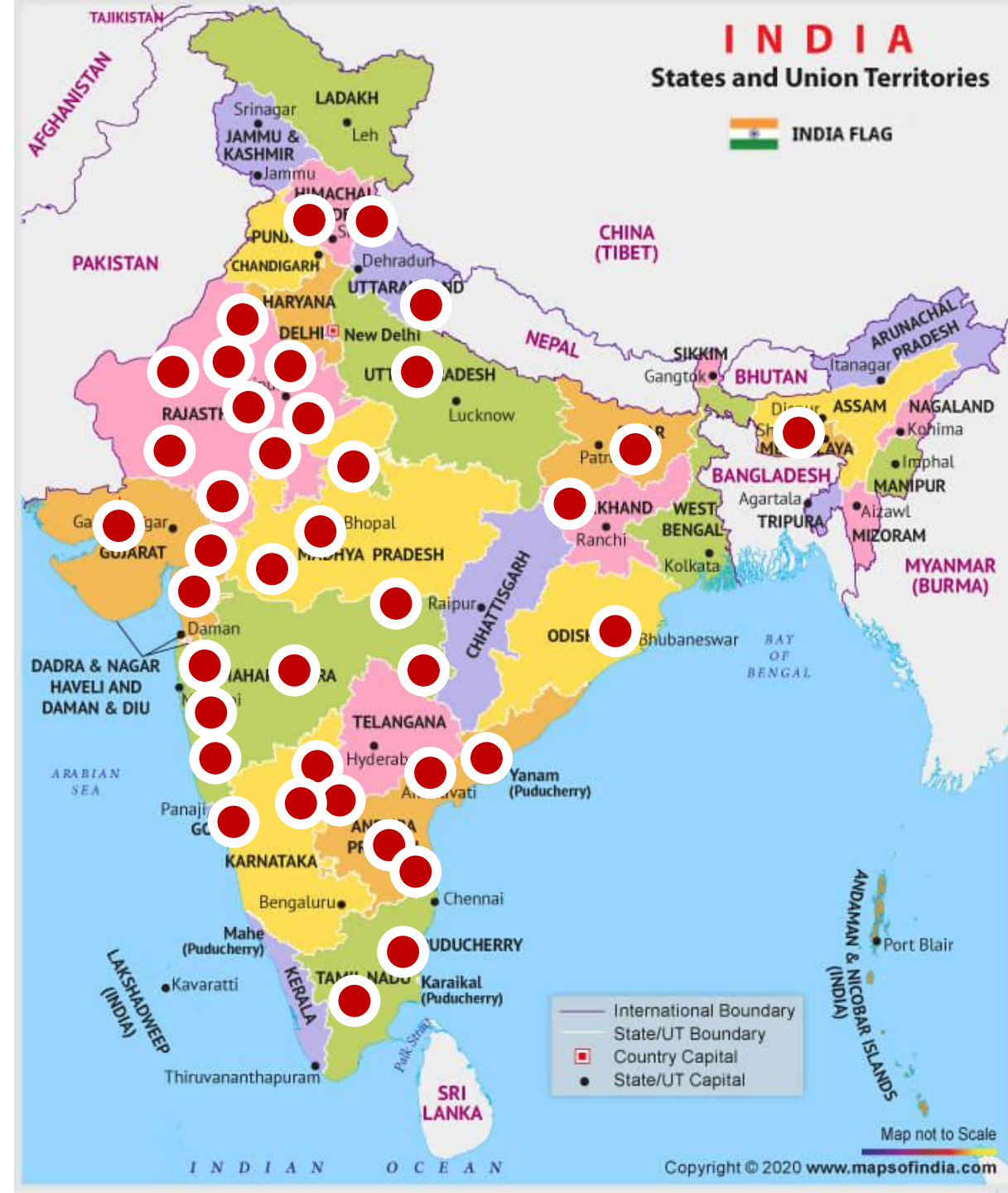
Qatar

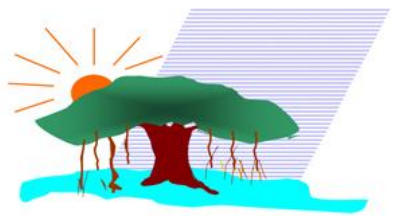


Sudan



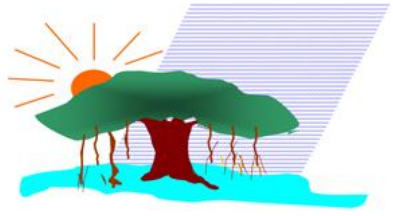
● Locations
where we have worked
on Invitation basis



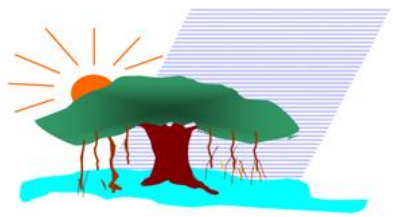


Our Services

- 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**



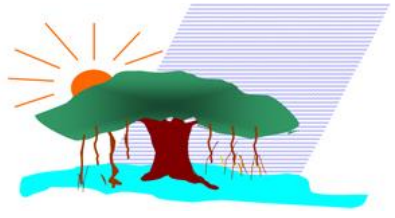
Jal Rakshak

Acknowledged by:

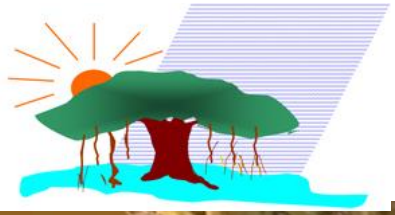
Ministry of Jal Shakti



|



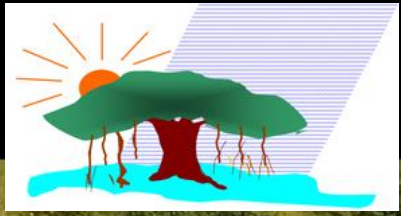
What if every building has this?
Imagine the load it reduces on the STPs
and our environment!



Natural Sewage Treatment Plant

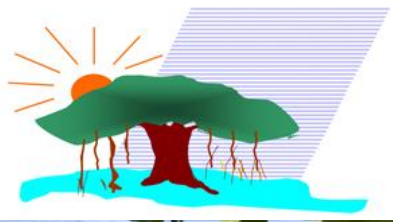


3,00,000 Liter per day of composite sewage is treated in this STP



Natural Sewage Treatment Plant

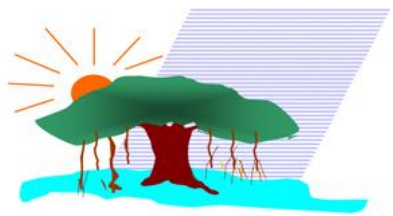




Natural Sewage Treatment Plant



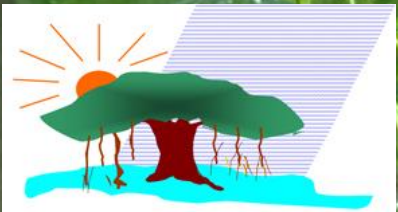
Food forest that provides food and also enhances bio-diversity

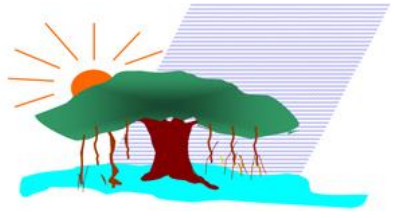


Reed Bed Treatment

**15 Lakhs Litres of Sewage
Treated Per Day**

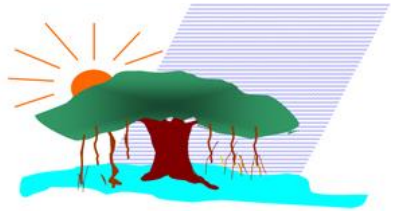






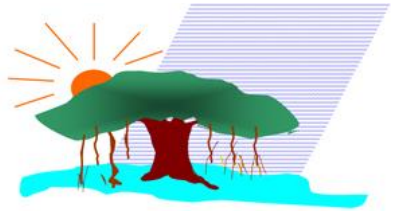
This **Jal Rakshak** and **Reed Bed System** can be installed **anywhere and everywhere**.

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

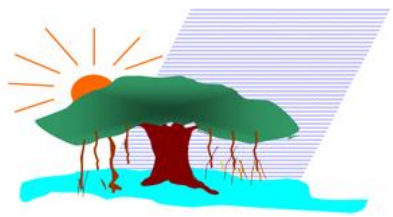


Mechanical STP
Was giving trouble

replaced by



Natural Reed Bed
Treating 50,000 litres on weekdays and
3,00,000 litres on weekends

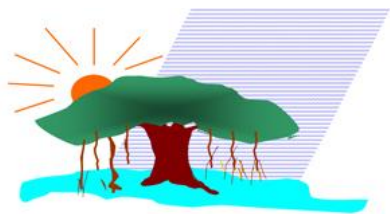


Crazy Crab Resort - Dahanu



Reed Bed System
Treating Sewage 24x7x365

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	Chlorination 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

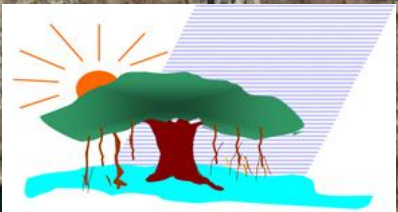
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8

10

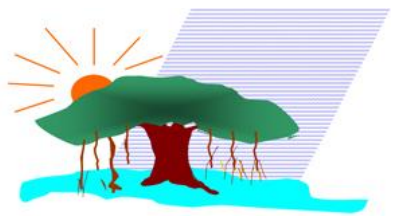
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6



Sandipani International Convention Centre

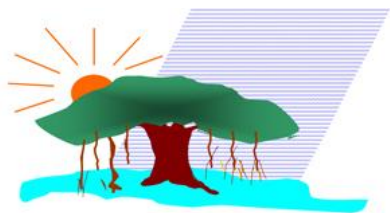




Polluted Ram Nadi



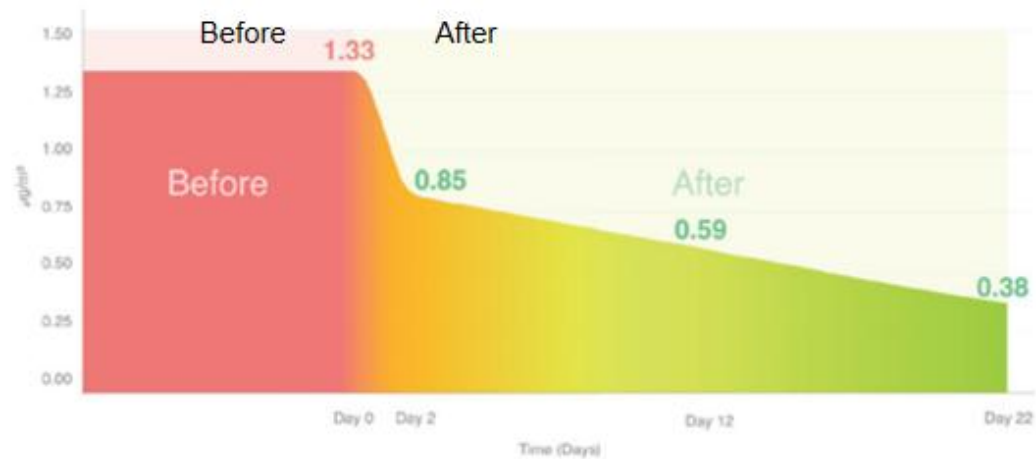
Introducing Kalki Bio-Culture



Location : Ramnadi, Pune, Maharar
Date : 16th

Hydrogen Sulphide (H_2S) ; IS 5182 (Part 7) 2021

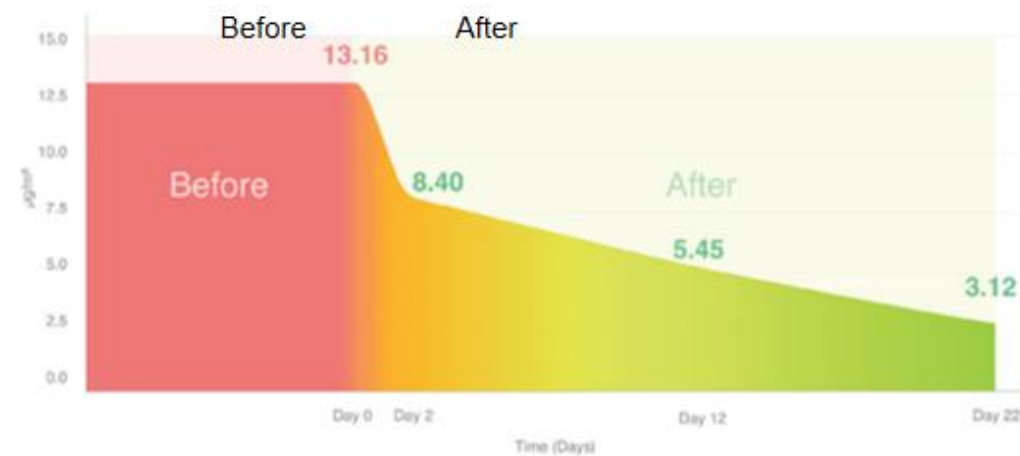
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective

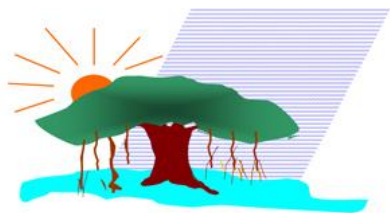


Location : Ramnadi, Pune, Maharar
Date : 16th

Ammonia (NH_3) ; IS 5182 (Part 25):2018

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

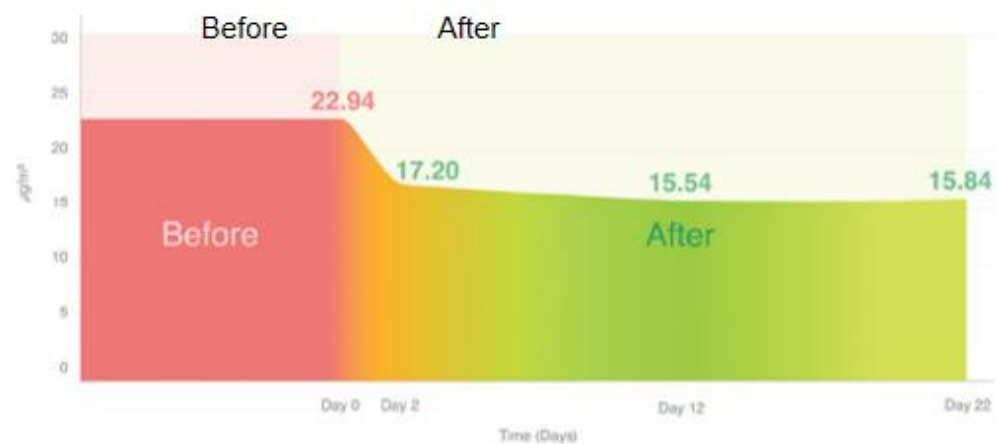




Location : Ramnadi, Pune, Mahara
Date : 16th

Nitrogen Dioxide (NO₂) ; IS 5182 (Part 6):2006 RA:2017

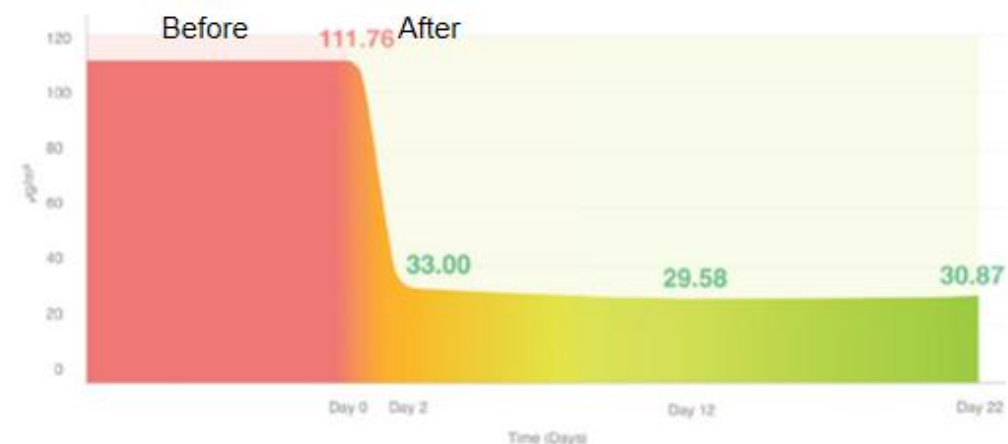
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective

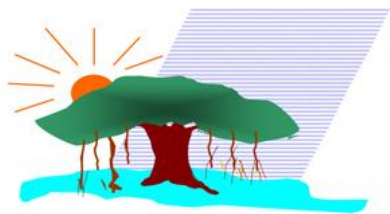


Location : Ramnadi, Pune, Mahara
Date : 16th

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

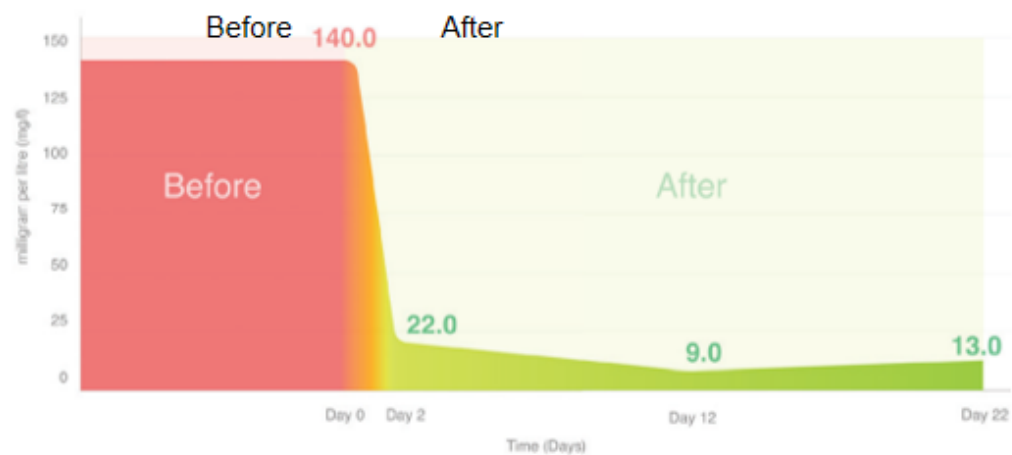




Location : Ramnadi, Pune, Maharar
Date : 18th

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

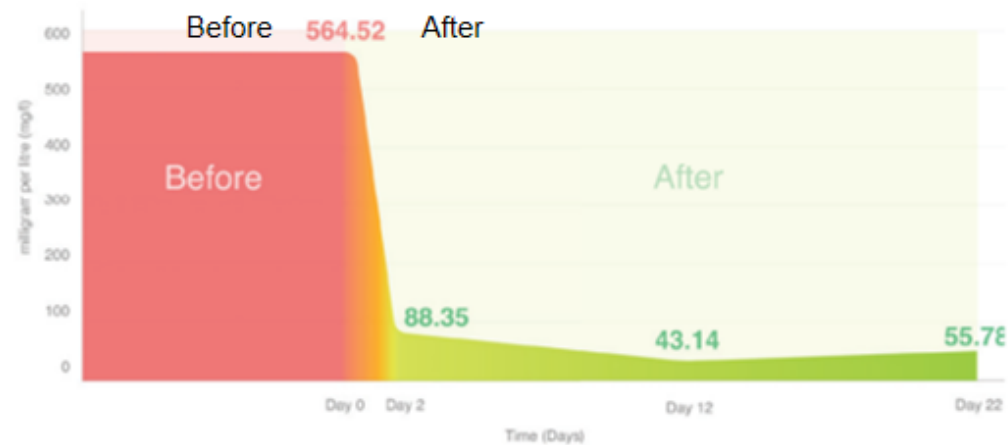
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective

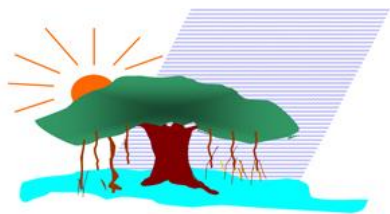


Location : Ramnadi, Pune, Maharar
Date : 18th

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, Maharar
Date : 16th

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

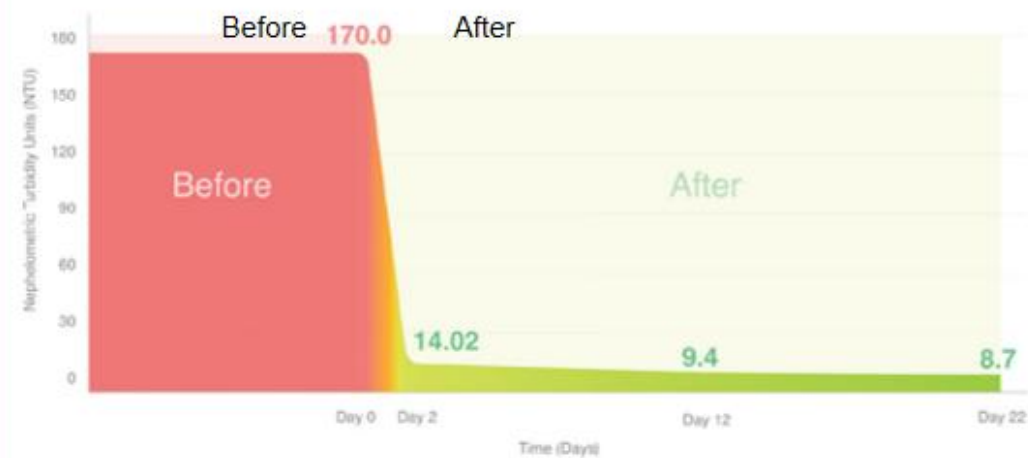
Application of 700 L, 10000 L & 10000 L of Audumbar Kalki on Day 0, Day 9 & Day 15 respective

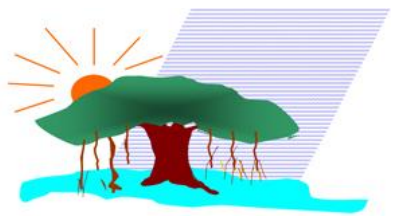


Location : Ramnadi, Pune, Maharar
Date : 16th

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



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

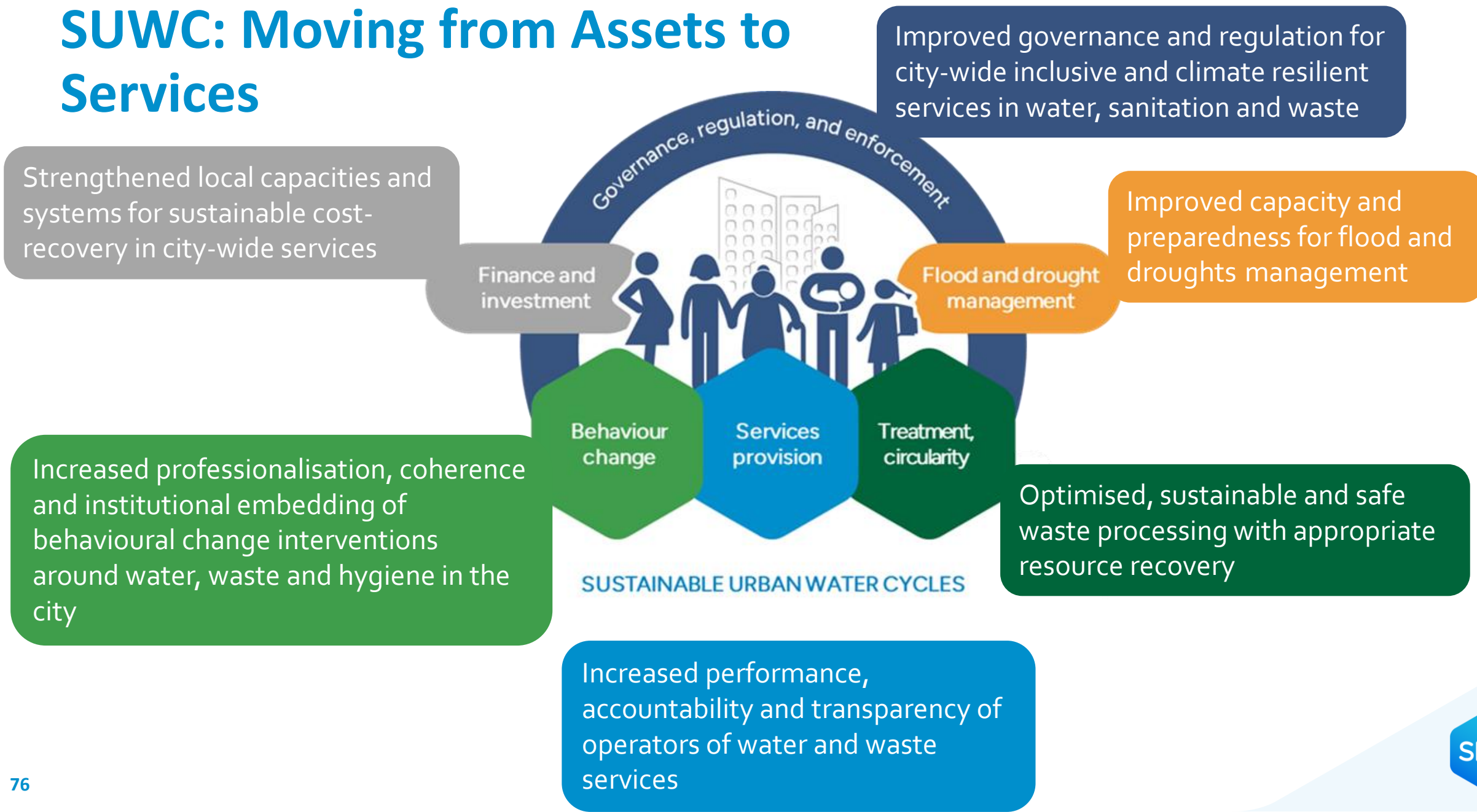
Political economy challenges

- 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



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 Agriculture



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



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

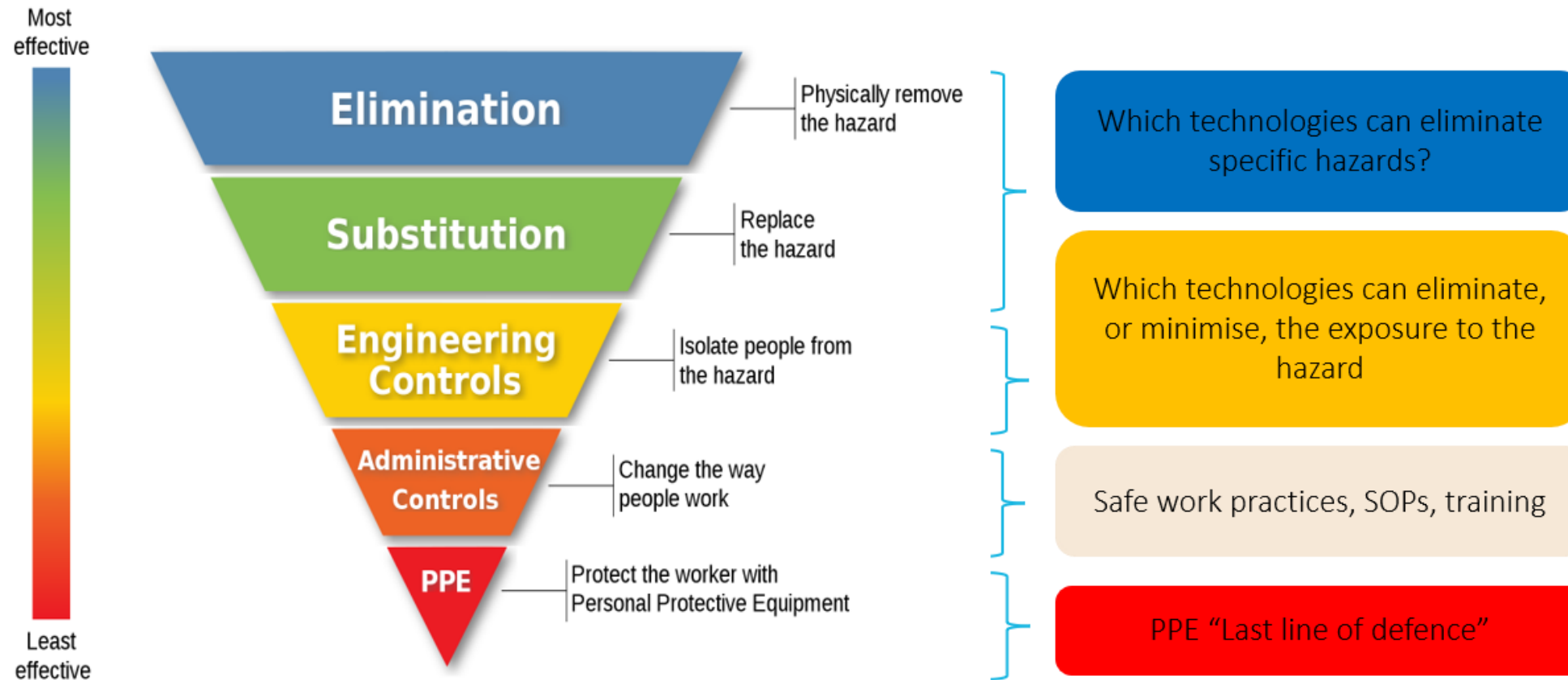
Progress

- Mechanisation
- Occupational safety discussions
- National FSM programmes

Gaps

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

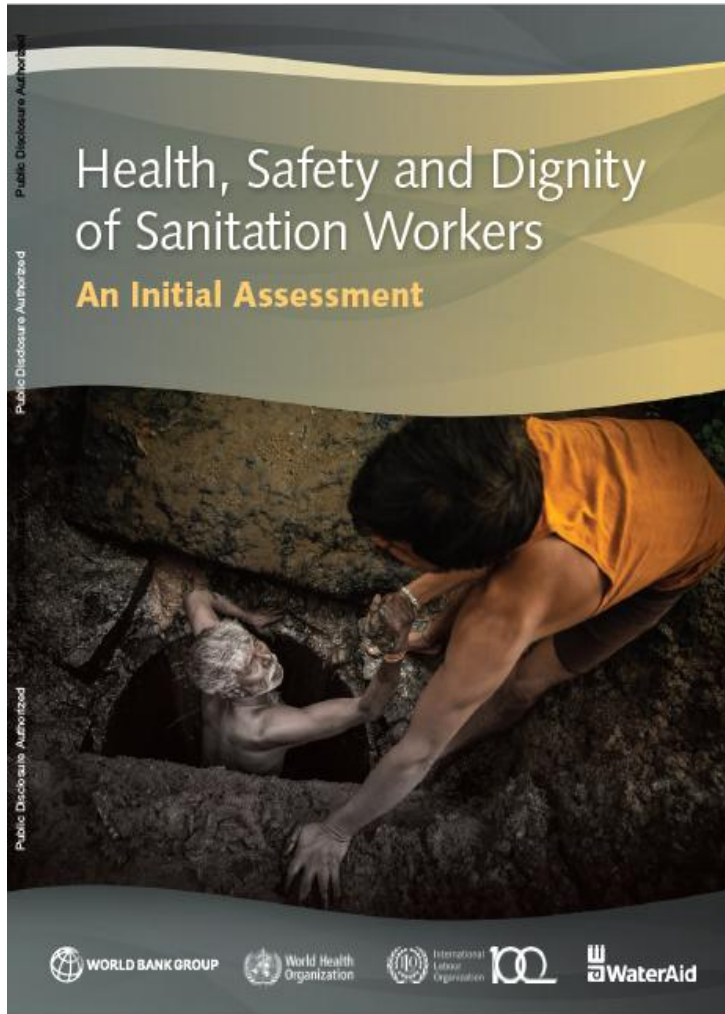
From Worker to Professional



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



Impact
that matters



PLANT TO PAD HUB

**How do we make
biodegradable
menstrual pads work at
scale?**



N I D I S I

Humanity can do better





Sparśa Production Process: From banana trunk to fibre paper

Fibre factory in Susta



01 Collect banana trunks



02 Cut trunks in half



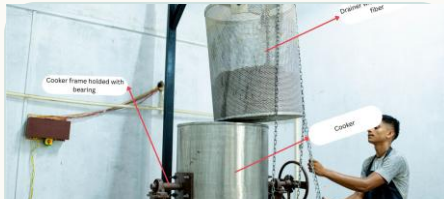
03 Extract the fibre



04 Dry the fibre



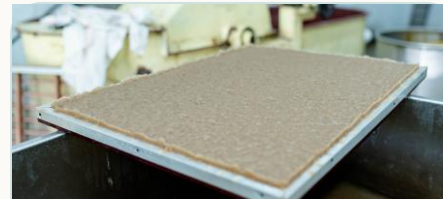
05 Cut the fibre



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: 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



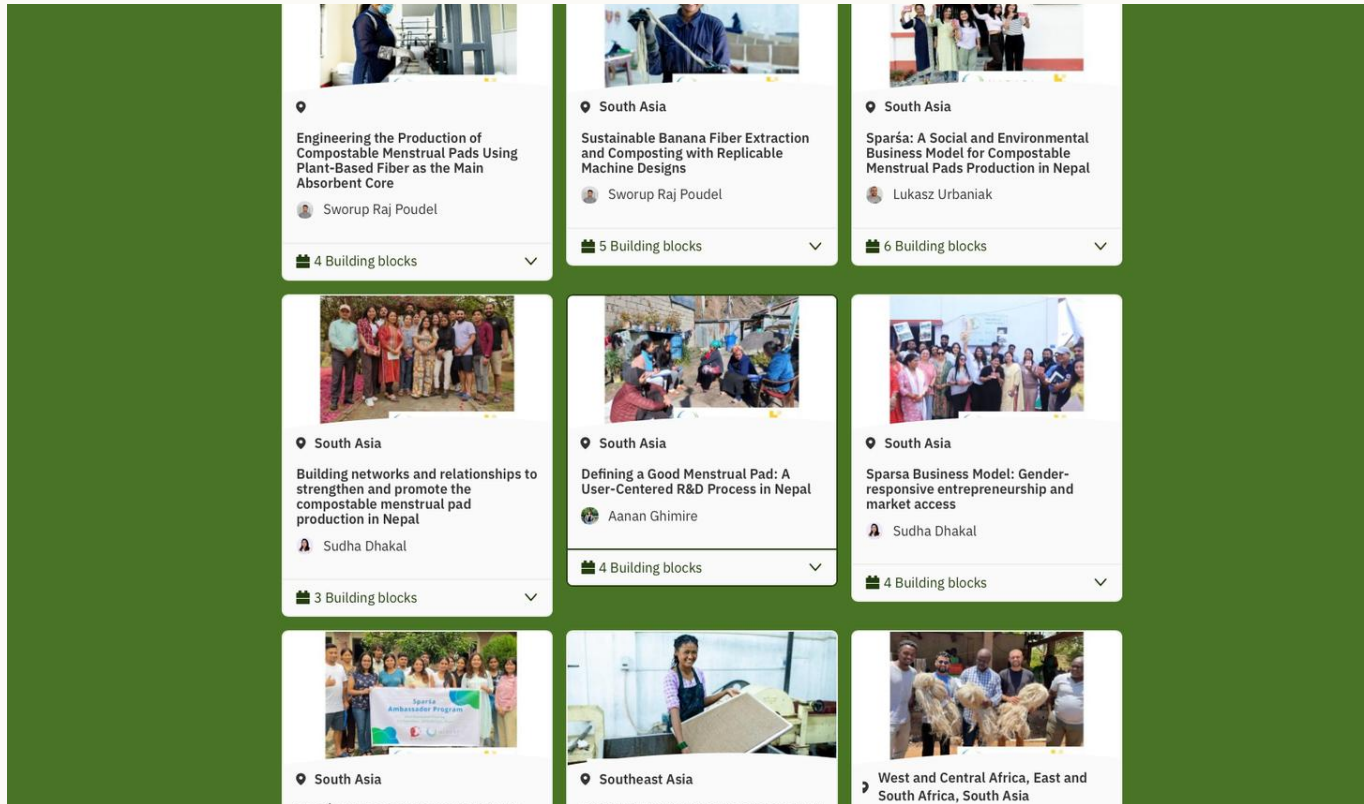
09 Emboss and seal the pad



10 Inspect the pad for packaging



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

SuSanA
sustainable
sanitation
alliance



From Circular Economy to Ecological Sanitation

From Sanitation to Soil: Closing the Nutrient Loop

Connecting Research, Practice and Regional Knowledge Exchange

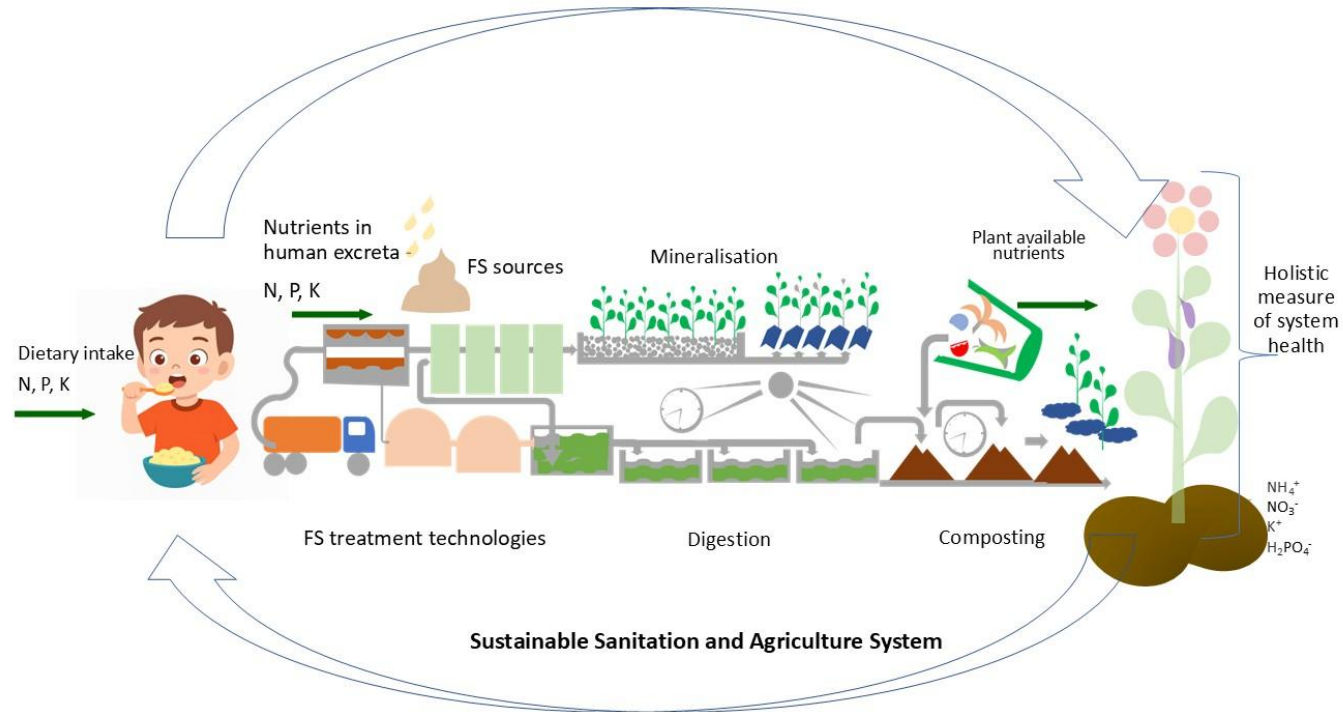


Image source: Ramakrishna G., et al., 2026

Girija Ramakrishna, PhD

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

Why Circular Sanitation?

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

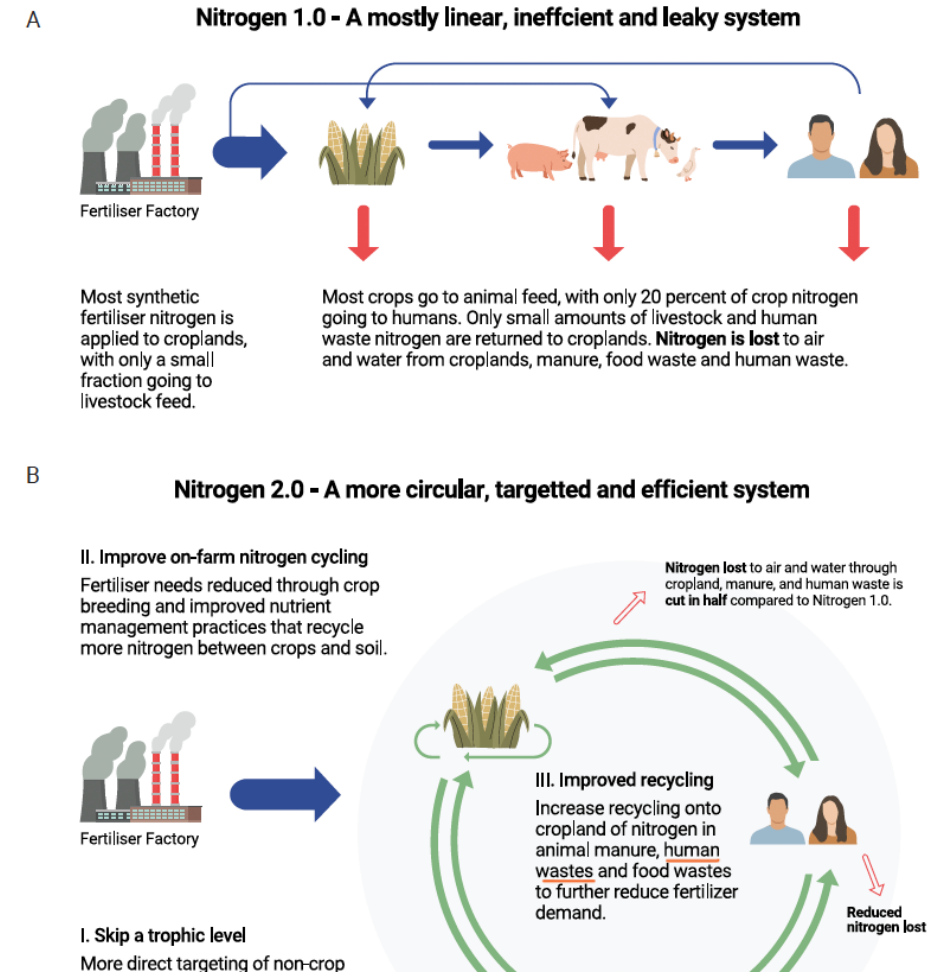
Faecal sludge (FS) rich in plant nutrients, particularly N, P, K (Allen et al., 2023; Odirile et al., 2024). They improve **soil fertility, nutrient availability, and crop yields**, especially in resource-constrained settings (Nikiema et al., 2020; Allen et al., 2023).

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 N₂O 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

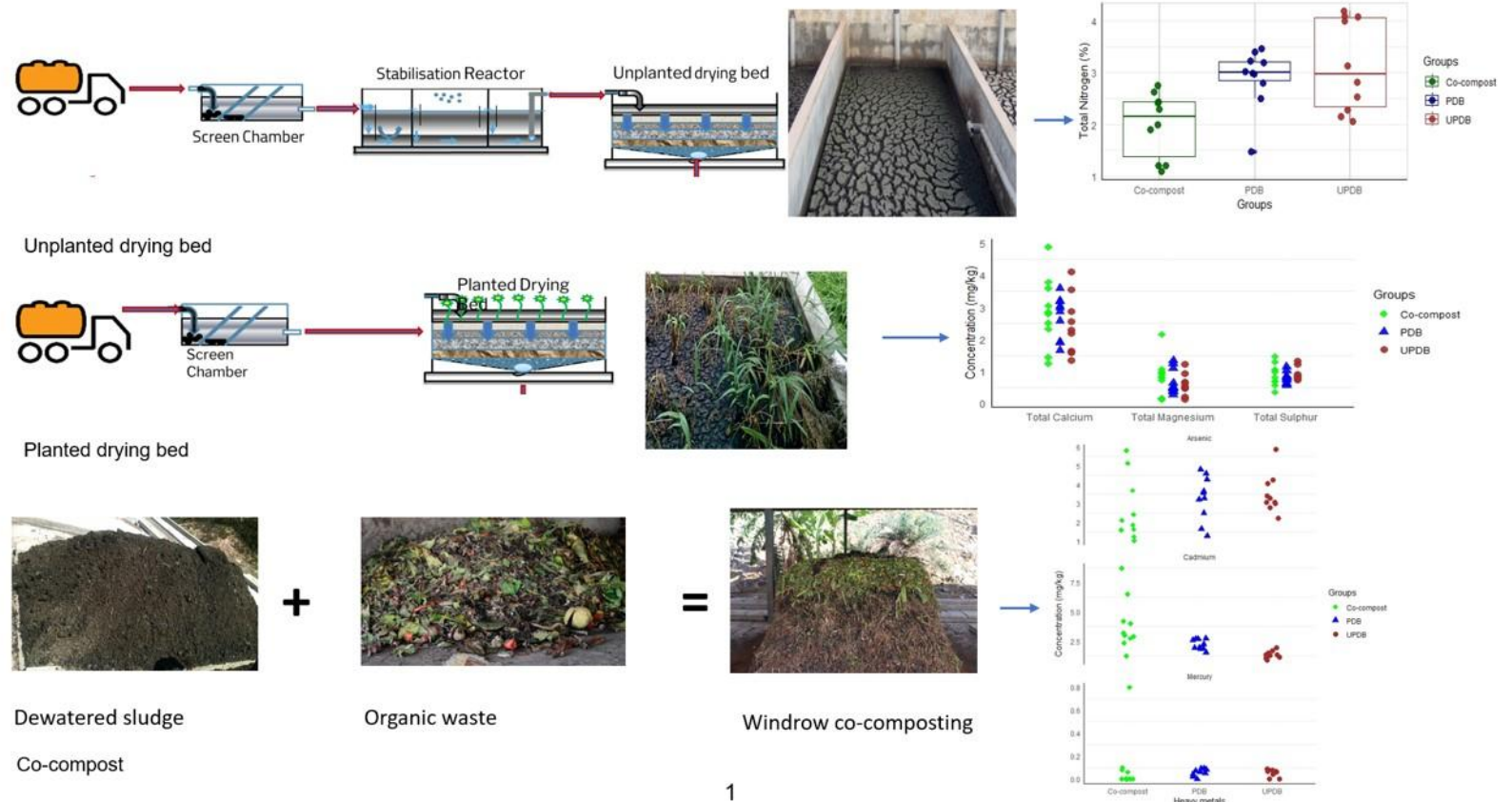
Girija, R., Shettigar, N. A., Parama, V. R. R., & Gagana, S. (2019). Evaluation of co-composted faecal sludge application in agriculture. WIT Transactions on Ecology and the Environment, 238, 701-711.

What does “safe and beneficial reuse” require?

FIT FOR PURPOSE:

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

To characterise faecal sludge (FS) from different treatment systems to assess the suitability for agricultural applications.



From Research to Field Evidence

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>

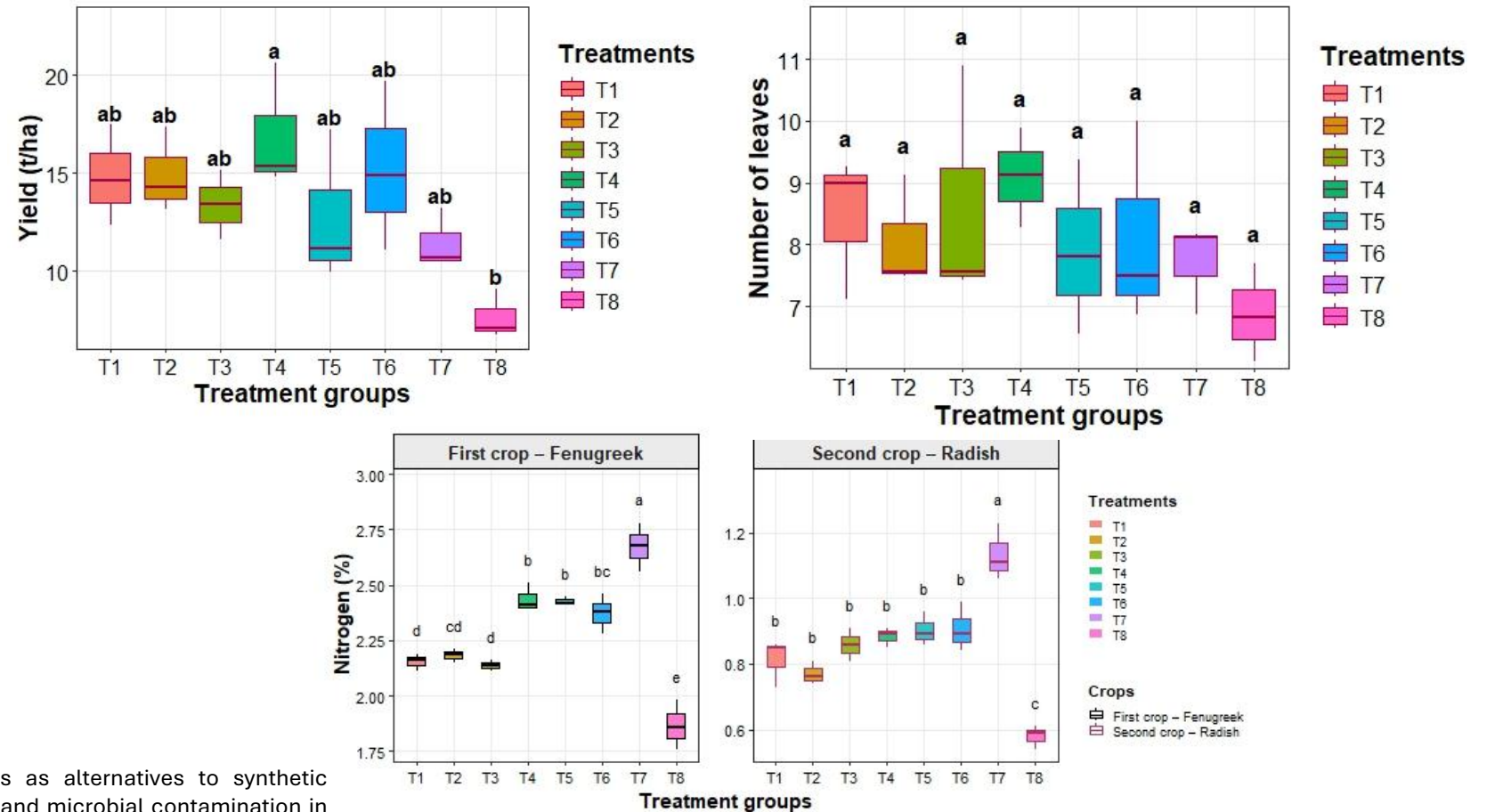
What does “safe and beneficial reuse” require?

EVALUATE: AGRONOMIC POTENTIAL

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

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).



Agronomic potential of FS-based inputs

What does “safe and beneficial reuse” require?

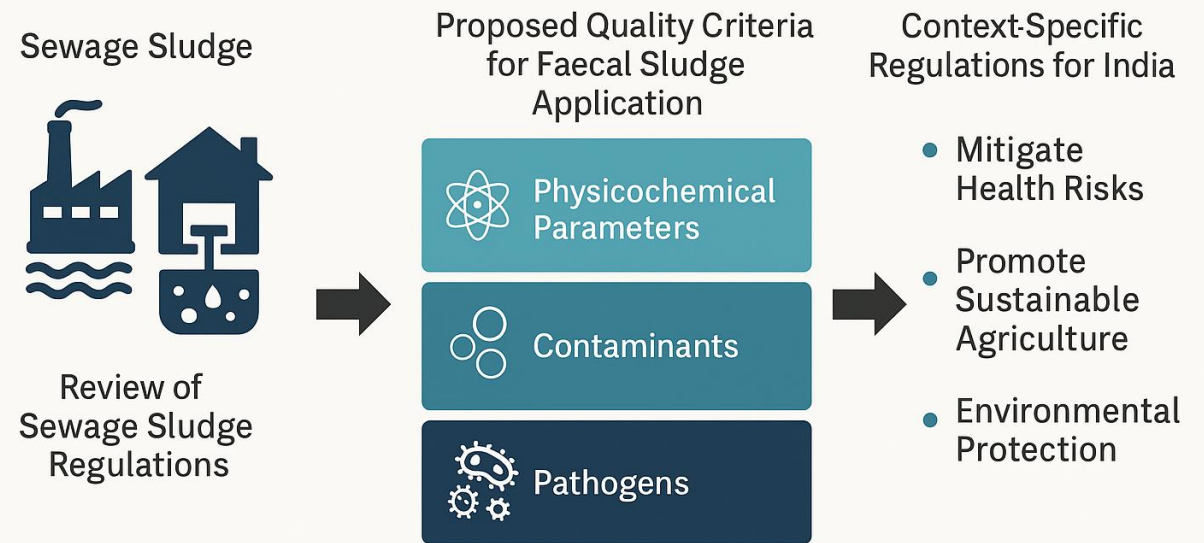
QUALITY FRAMEWORKS

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

From Research to Policy

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).

Comprehensive Review of Worldwide Regulations Guidelines for Sludge-Based Inputs: Closing Regulatory Gaps in India



Ampræac; Sewage Sludge; Faecal Sludge; Regulations, Quality criteria Agricultural use

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

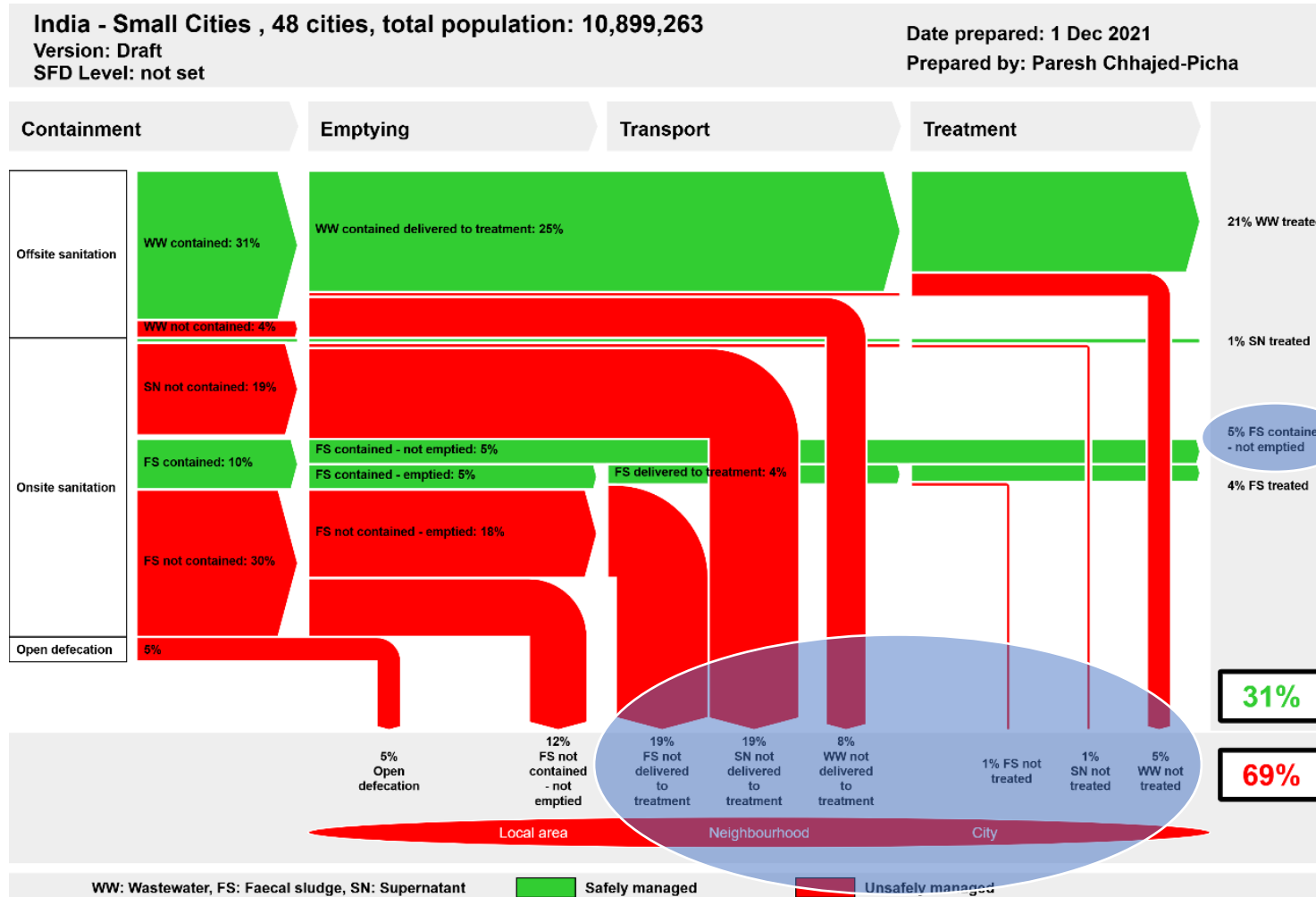
Closing the loop requires evidence, institutions and networks that connect sanitation, water, agriculture and people.

Thank you

From Scaling Innovation to Sustainable Services: The Unfinished Business of FSM in India

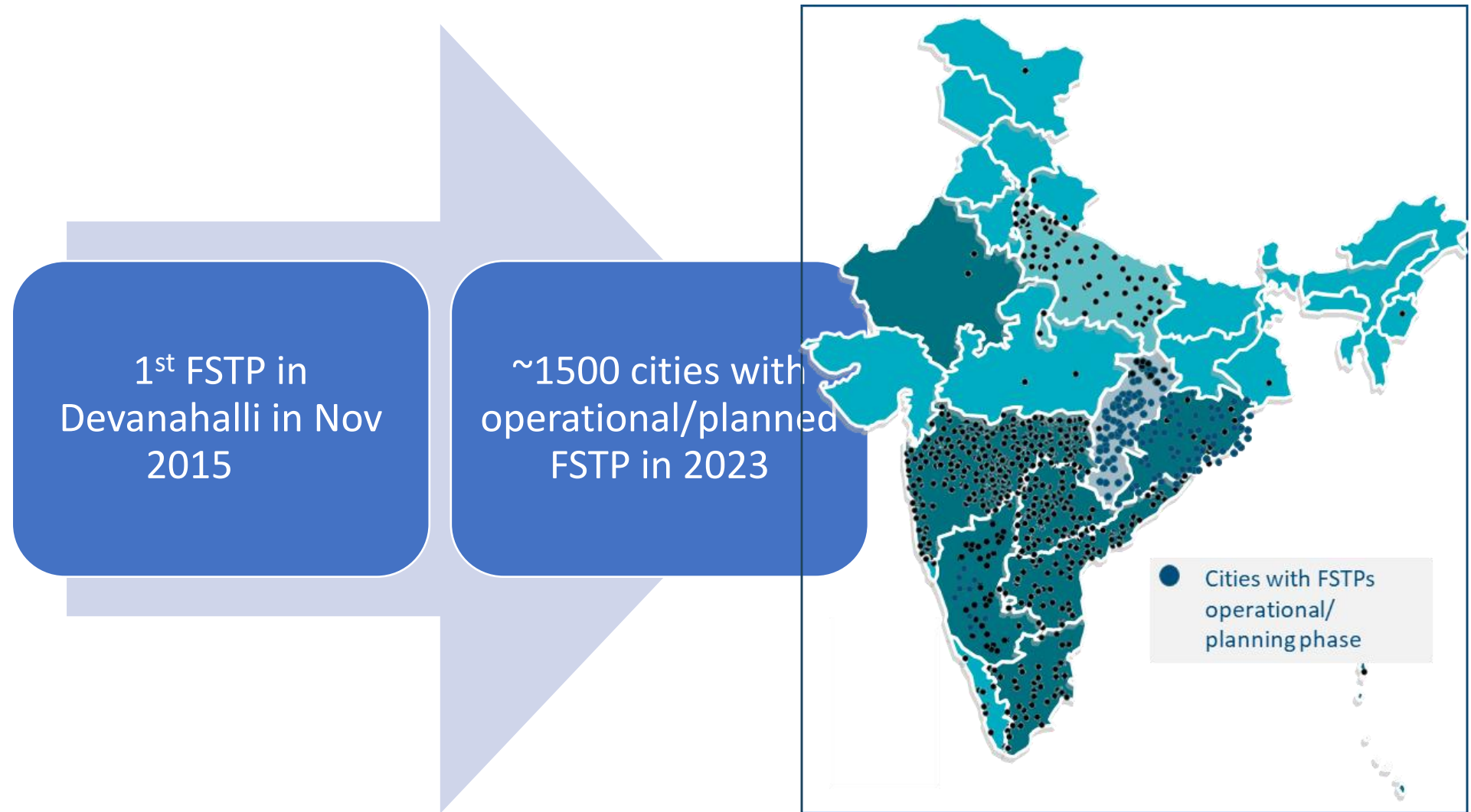
Paresh Chhajer-Picha
Independent Researcher and Consultant
Associate, Riva
SuSana Forum Moderator

FSM Service Chain in Small Cities

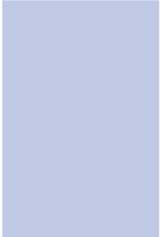


The SFD Promotion Initiative recommends preparation of a report on the city context the analysis carried out and data sources used to produce this graphic. Full details on how to create an SFD Report are available at sfd.susana.org

The Rapid Scaling



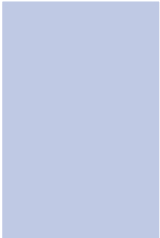
Supportive Union Government



National FSSM Policy
2017



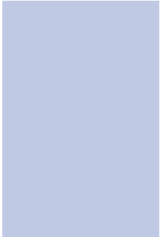
Finance – National
infrastructure financing
schemes



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



Thank you

Q&A Session and Summary

Paresh Chhajed-Picha & Girija Ramakrishna

Wrapping Up

Dhawal Patil

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