

# Daiki-Axis -Johkasou

Onsite Used water management concept and Technology from Japan  
and how it can contribute to Swachh Bharat

Treat Used water at site & Reuse at site

# Agenda

- ❖ **Johkasou Introduction**
- ❖ **Johkasou in India**
- ❖ **Case Studies**
- ❖ **Daiki Axis support model for SBM**
- ❖ **Top fitment case**
- ❖ **Talk to me.**

# Government activities

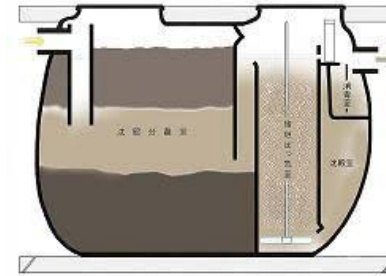
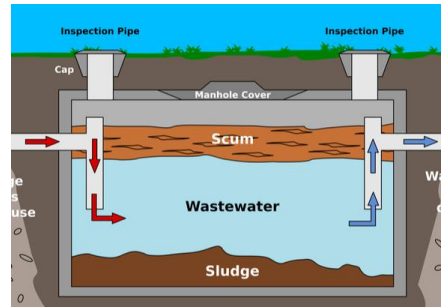
- Japan was most polluted countries in the world in 1960' to 1970'





# History of Onsite treatment in Japan

## ■ Japan and India Onsite treatment comparasion



Collection pit

Soak pit

Septic tank

Black Water  
Johkasou

Black & Gray  
Water  
Johkasou

~ 1 9 4 5

~ 1 9 5 5

~ 1 9 7 0

~ 1 9 8 0

N O W



Collection pit

Soak pit

Septic tank

N O W ? ?

Black & Gray  
Water  
Johkasou

~ ? ?

~ 2 0 0 0

~ 2 0 1 0

N O W ? ?

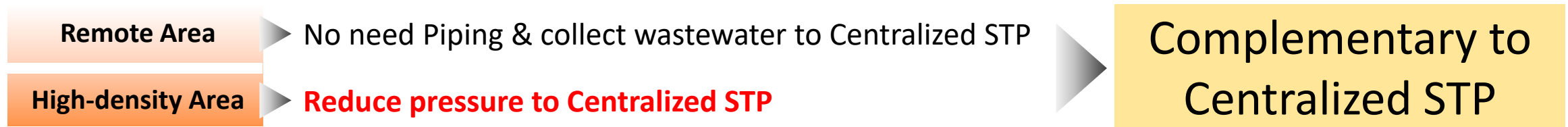
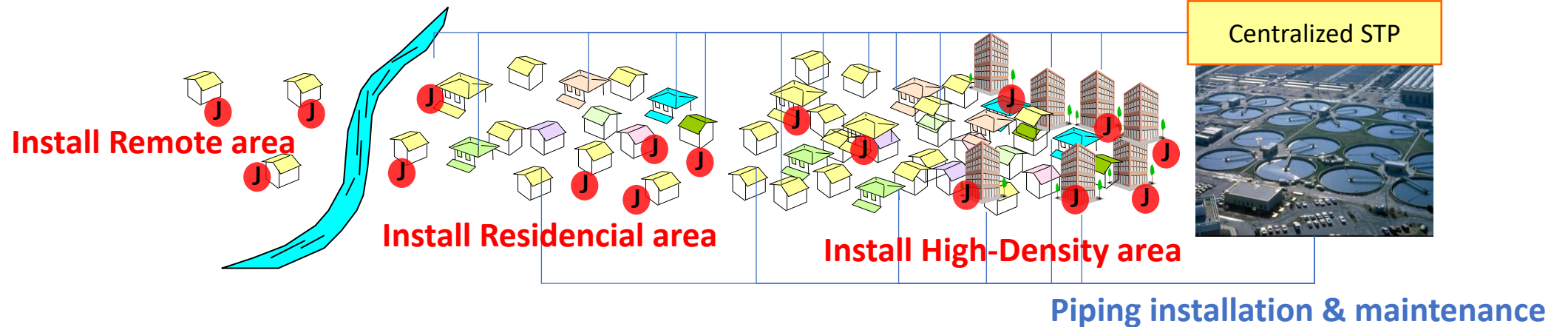
Future

# Basic concept\_ Onsite Treatment

- Johkasou Basic concept is 'Treat at Site, Reuse at Site'.

Even High-density area, Johkasou can treat usedwater at site and improve effectiveness of centralized STPs

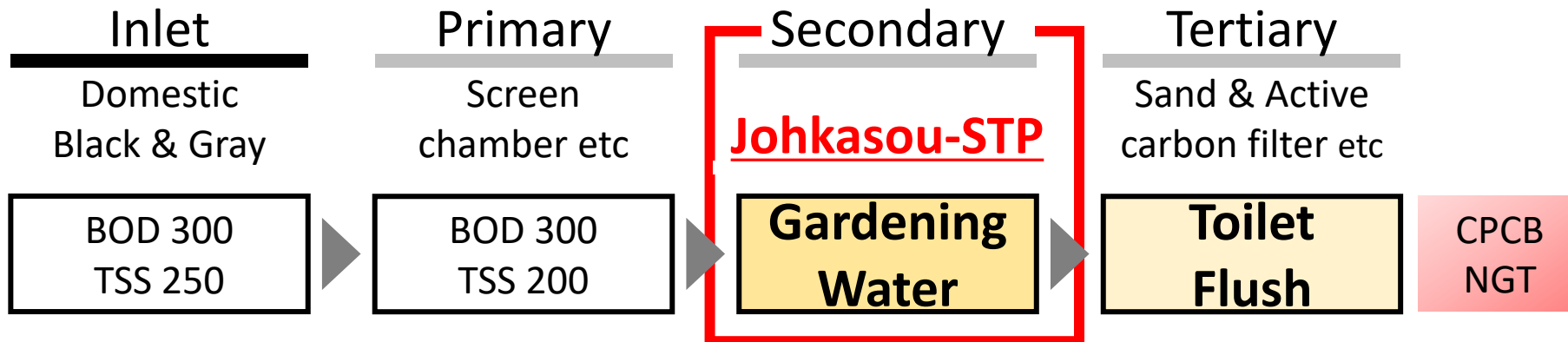
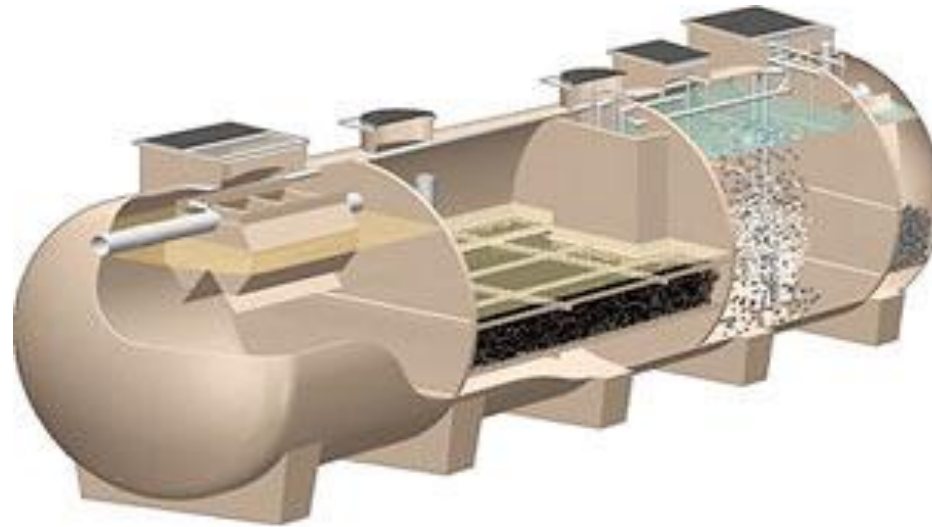
'Treat at site, reuse at site'



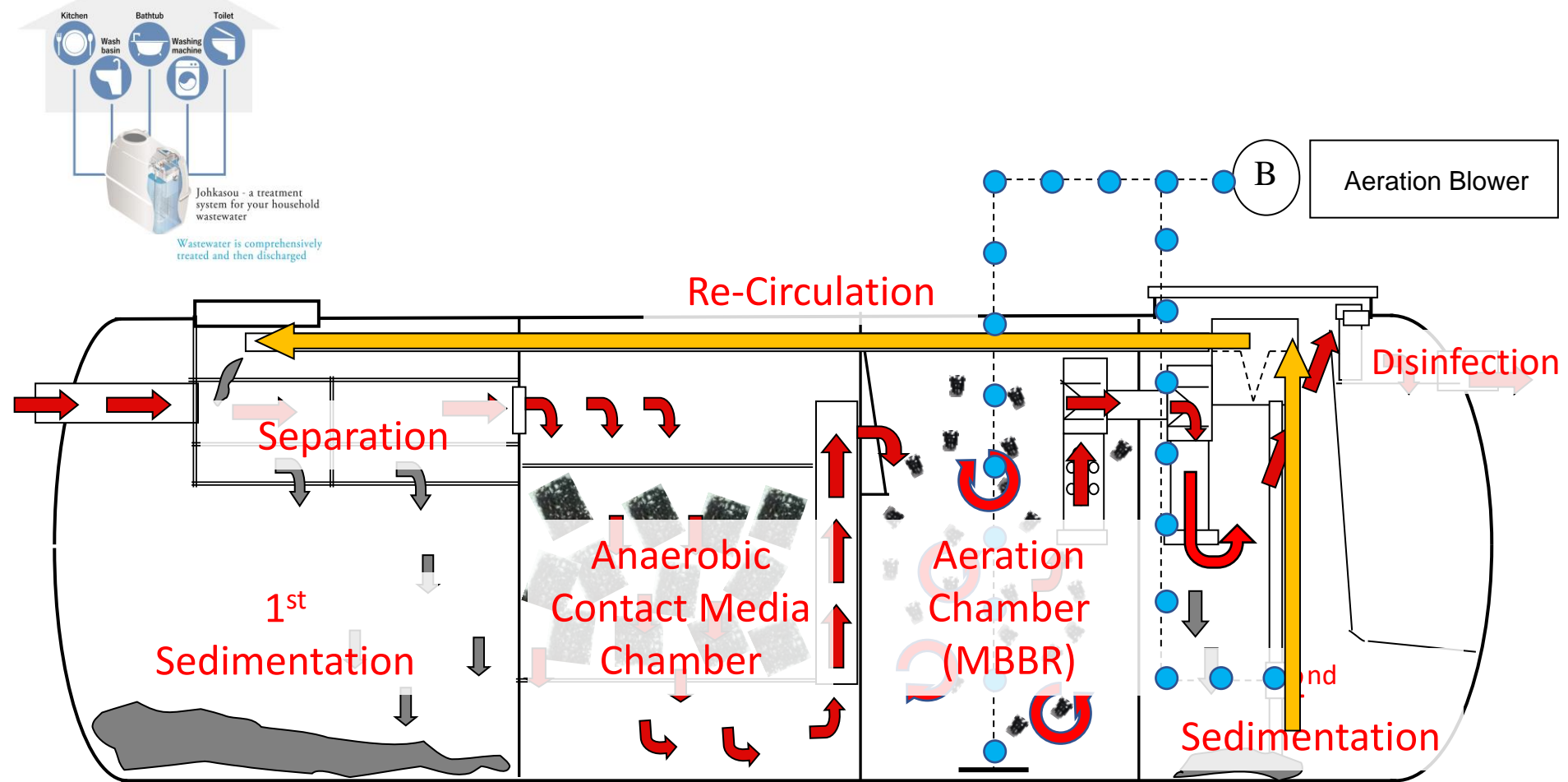
# JOHKASOU-STP from Japan –MADE IN INDIA for INDIA

Capsule Type: 1~25KLD

Cylinder Type:20~75KLD



# Explanation of Internal Treatment Process



Daiki Axis Johkasou process highlights:

- Gravity flow
- Internal capacity to manage peak and low flow
- Avoids need for Full time operators and daily sludge handling at site



# IIT R study of Johkasou and other LARGE SEWAGE TREATMENT PLANTS-LAST 12 YEARS

Pond Effluent



UASB Effluent



Advanced ASP Effluent

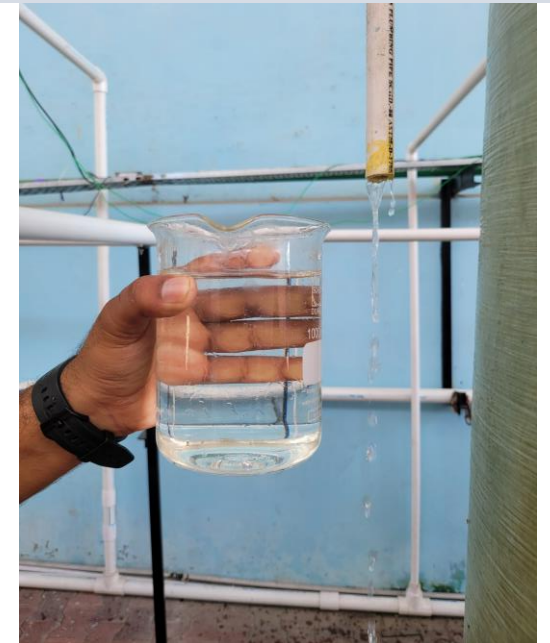


Anaerobic Package Plant Effluent



**NEXT ??? YEARS**

Johkasou Effluent



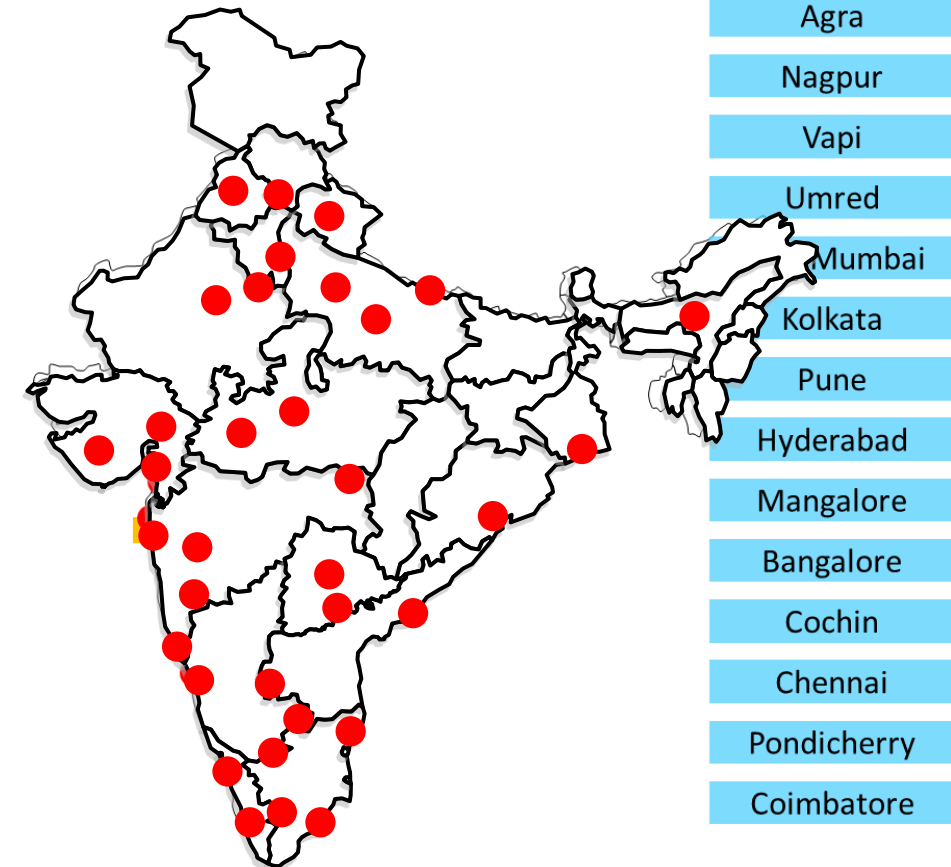


# Daiki Axis Johkasou Factory, Palwal, Haryana



# Progress made by Daiki Axis In India on Decentralized Wastewater Management..

- Daiki Axis India focuses purely on Johkasou business with Two 100% Local subsidiary companies working under MAKE IN INDIA
- Daiki Axis India is at the forefront in promoting of Decentralized Wastewater Management concept – Treat at Site , Reuse at Site - Extensive Offline, online and personal promotion to key stakeholders
- Close working with IIT, BIS, FICCI, CII, IPA , SVSU and industries for development of market
- Over 700 projects in India covering
  - Residential- Individual houses, villas, farm houses, communities, slum area
  - Schools& colleges, Hospitals
  - Offices, IT Parks
  - Hotels, restaurants, resorts
  - Public Parks, Drains dropping to river
- Customer coverage
  - Government, Industries, Commercial, Builders
- Geographical Coverage
  - J&K, Himanchal, UK, UP, Punjab, Haryana, Delhi, Rajasthan, MP, Gujarat, Maharashtra, Goa, Karnataka, Andhra, Telangana, Tamil Nadu, Kerala, West Bengal, Odisha, Jharkhand
- 26 Local partner companies supporting sales, construction and maintenance
- 2 Factories, 100+ employees and growing ..





# Daiki Axis Contributing to Swachh Bharat



MINISTRY OF JAL SHAKTI GOVT. OF INDIA AND THE MINISTRY OF ENVIRONMENT GOVT. OF JAPAN HAVE SIGNED A MEMORANDUM OF CO-OPERATION TO STRENGTHEN, FACILITATE AND DEVELOP THE CAPACITY OF JOHKASOU DECENTRALIZED DOMESTIC WASTEWATER MANAGEMENT IN INDIA.





# Foot Print and Power Requirements for different Models

			Tank 1 [m]				Tank 2 [m]			Electric Consumption	
Inflow Capacity		AI	W	L	H	W	L	H	[kWh]	[hp]	
1	m <sup>3</sup> /day	AI-1/C	1.06	1.89	1.63				0.041	0.05	
2	m <sup>3</sup> /day	AI-2/C	1.06	1.89	1.63				0.041	0.05	
5	m <sup>3</sup> /day	AI-5/C	1.06	3.48	1.63				0.082	0.11	
10	m <sup>3</sup> /day	AI-10/C	2.2	3.6	1.98				0.2	0.27	
15	m <sup>3</sup> /day	AI-15/C	2.2	4.85	2.28				0.163	0.22	
20	m <sup>3</sup> /day	AI-20/C	2.4	5.26	2.48				0.4	0.53	
25	m <sup>3</sup> /day	AI-25/C	2.4	5.26	2.48				0.4	0.53	
30	m <sup>3</sup> /day	AI-30/C2	2.2	4.85	2.28	2.2	4.85	2.28	0.6	0.8	
35	m <sup>3</sup> /day	AI-35/C2	2.2	4.85	2.28	2.2	4.85	2.28	0.6	0.8	
40	m <sup>3</sup> /day	AI-40/C2	2.4	5.26	2.48	2.4	5.26	2.48	0.8	1.07	
45	m <sup>3</sup> /day	AI-45/C2	2.4	5.26	2.48	2.4	5.26	2.48	0.8	1.07	
50	m <sup>3</sup> /day	AI-50/C2	2.4	5.26	2.48	2.4	5.26	2.48	0.8	1.07	

**Cost of 1 KLD(One to 2 family system):**

- Product Price** - INR 1,60,000/-
- Capex estimate** - INR 1,95,000/-
- Operation cost per year** - INR 7,624/-

**Outcomes**

- **Complete Grey& Black water onsite treatment, Reuse of treated used water**
- **No need for common FSTP, Grey Water Treatment projects**

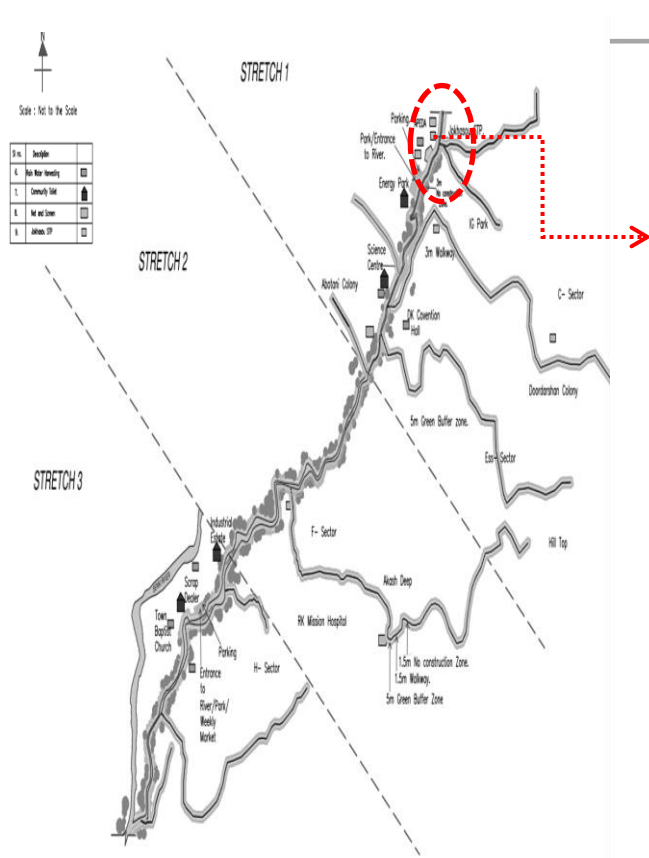
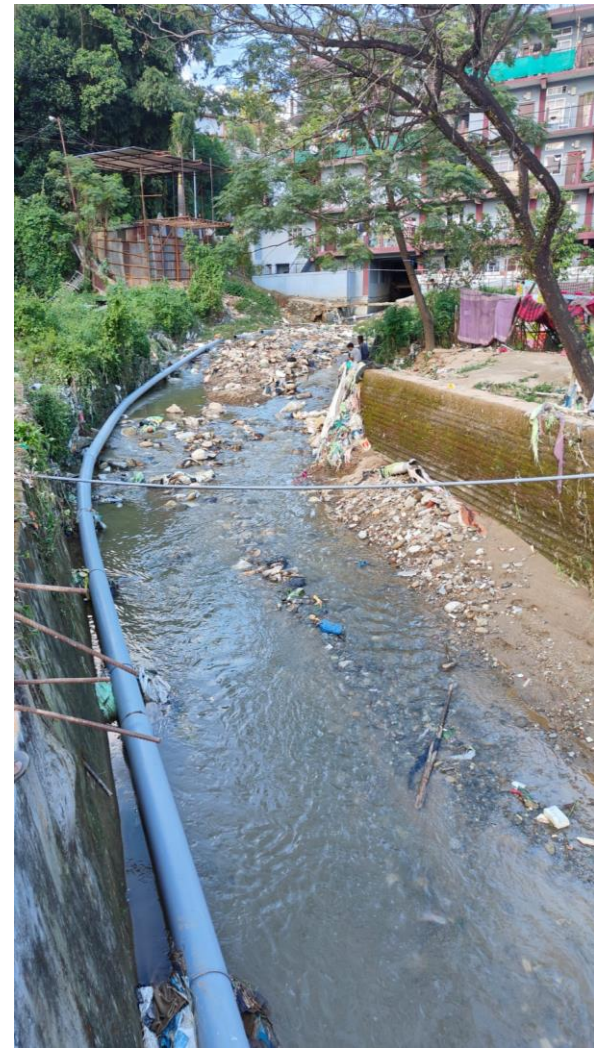
**Expected working Life – 30 Years**

\*\*Space can be utilised as car parking or green cover in case of under ground installations.

# Few Case Studies from India for Grey & Black Water treatment, FSTPs



# Yagamso River, Smart City Itanagar Project



Map showing the location of Johkasou STP



**WATER ANALYSIS REPORT**

Laboratory reference No. : SW/TL/WD/4/2023/56-57  
Name and address of Sender : M/s. Jyoti Shikam, IWS, Itanagar Smart City  
Sample source and location : Yagamso Stream, Itanagar  
Date and time of collection of sample : 03/07/2023  
Date and Time of Completion of Test : 09/07/2023

Sl. No.	Parameter (Unit)	Acceptable Limit (BS)	Permissible Limit (BS)	Yagamso (Water Science Centre)	
				Mean APISDA	Best Science Centre
1	Temperature (°C)	-	24.8	24.6	24.6
2	Turbidity (NTU)	5	12.42	10.83	10.83
3	pH	6.5-8.5	No Relaxation	7.59	7.25
4	Total Dissolved Solid (mg/L)	500	2000	71.3	74.1
5	Electrical Conductivity (µS/cm)	200	600	62.92	292.23
6	Total Hardness as CaCO <sub>3</sub> (mg/L)	200	600	59	62
7	Total Sulphate (mg/L)	200	600	38	48
8	Chloride (mg/L)	250	1000	3.40	3.44
9	Sulphate (mg/L)	200	400	1.26	1.35
10	Fluoride (mg/L)	1.0	1.5	0.03	0.03
11	Nitrate (mg/L)	45	No Relaxation	0.79	0.86
12	Dissolved Oxygen (mg/L)	256	3.50	8.50	8.40
13	Calcium (mg/L)	75	200	7.65	7.30
14	Magnesium (mg/L)	30	100	3.64	3.92
15	Iron (mg/L)	1.0	No Relaxation	0.02	0.04
16	Arsenic (mg/L)	0.05	No Relaxation	Nil	Nil
17	Copper (mg/L)	0.05	No Relaxation	Nil	Nil
18	Lead (mg/L)	0.01	No Relaxation	Nil	Nil
19	Manganese (mg/L)	0.05	No Relaxation	Nil	Nil
20	Zinc (mg/L)	5	15	Nil	Nil
21	Cadmium	0.001	No Relaxation	Nil	Nil
22	Total Coliform Bacteria (per 100 ml)	0	No Relaxation	Absent	Absent
23	Faecal Coliform Bacteria (per 100 ml)	0	No Relaxation	Absent	Absent

Remarks: Both the water samples are found to have turbidity above permissible limit. Rest of the tested parameters are within BS permissible limit.

(Dr. Binod Pokhrel)  
Chief Chemist cum- Consultant State Level WL  
State Water Quality Testing Lab  
PH & WS Dept Itanagar.



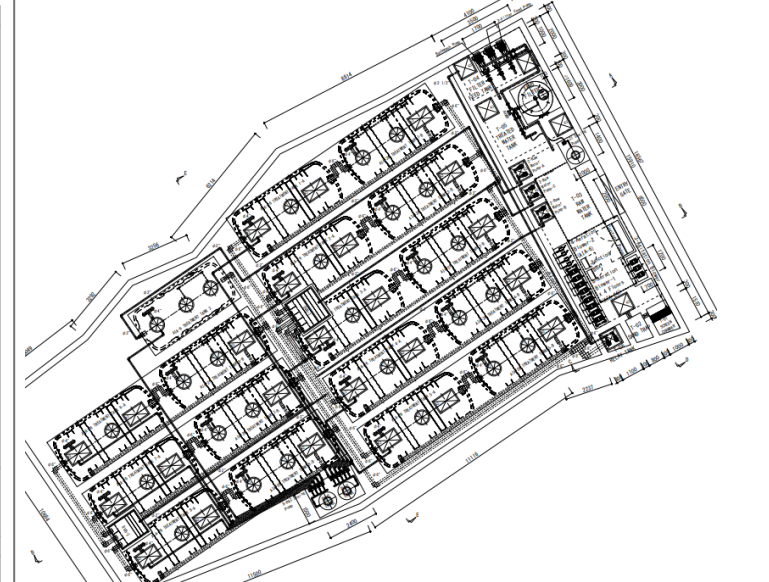
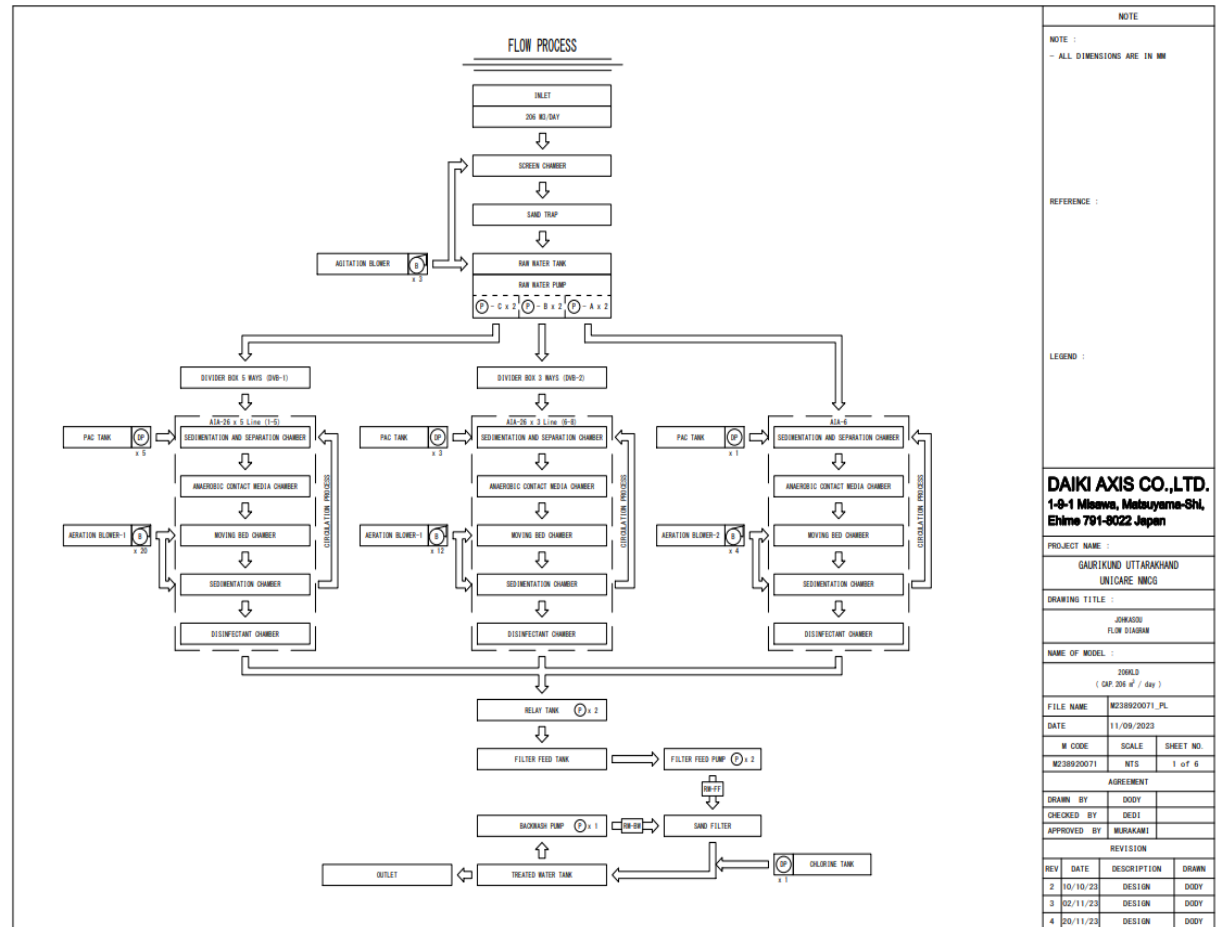
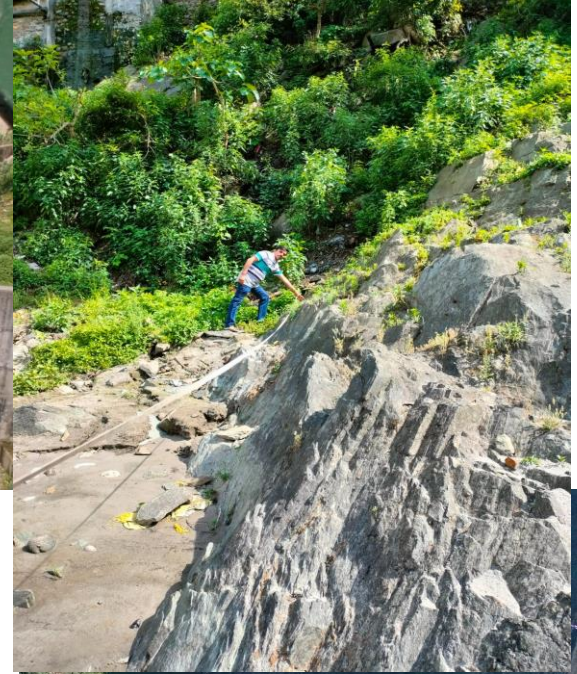
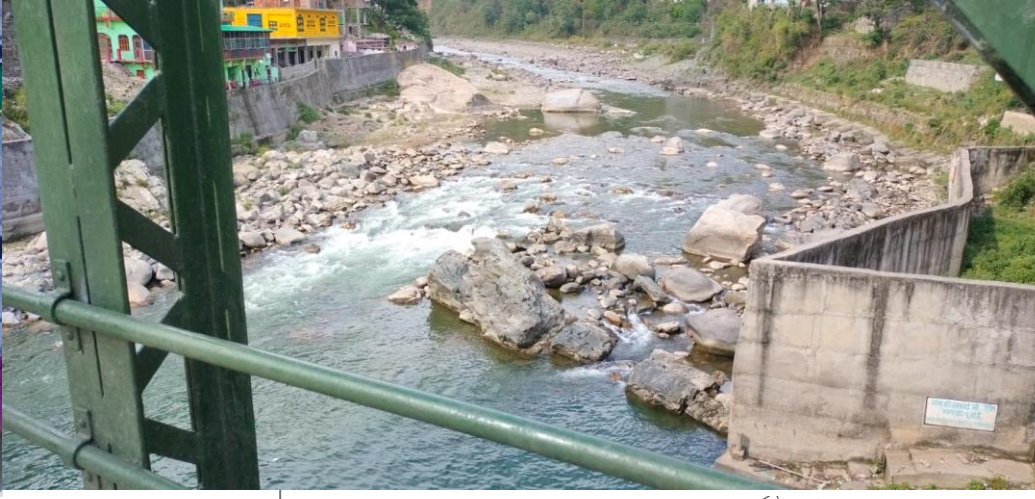


# NMCG UDHAM SINGH NAGAR 1300(500,300,500) KLD VILLAGE SANITATION RIVER CLEANING PROJECTS , UTTARAKHAND





# Gauri Kund, Uttarakhand





# Namsai, Arunchal Pradesh FSTP (Collection ~ Product Usage)



Sludge Collection Vehicle



Bar Screen Channel



Sludge Collection Tank



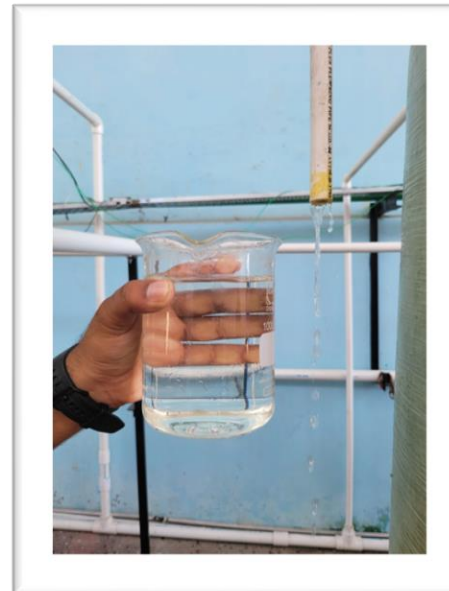
Johkasou

Territiary Treatment Plant

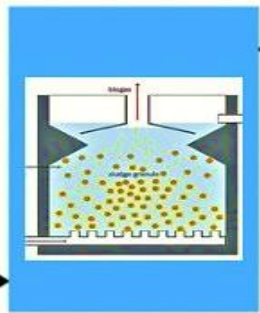


CLEAN WATER

DRY MANUARE



FFED PUMP

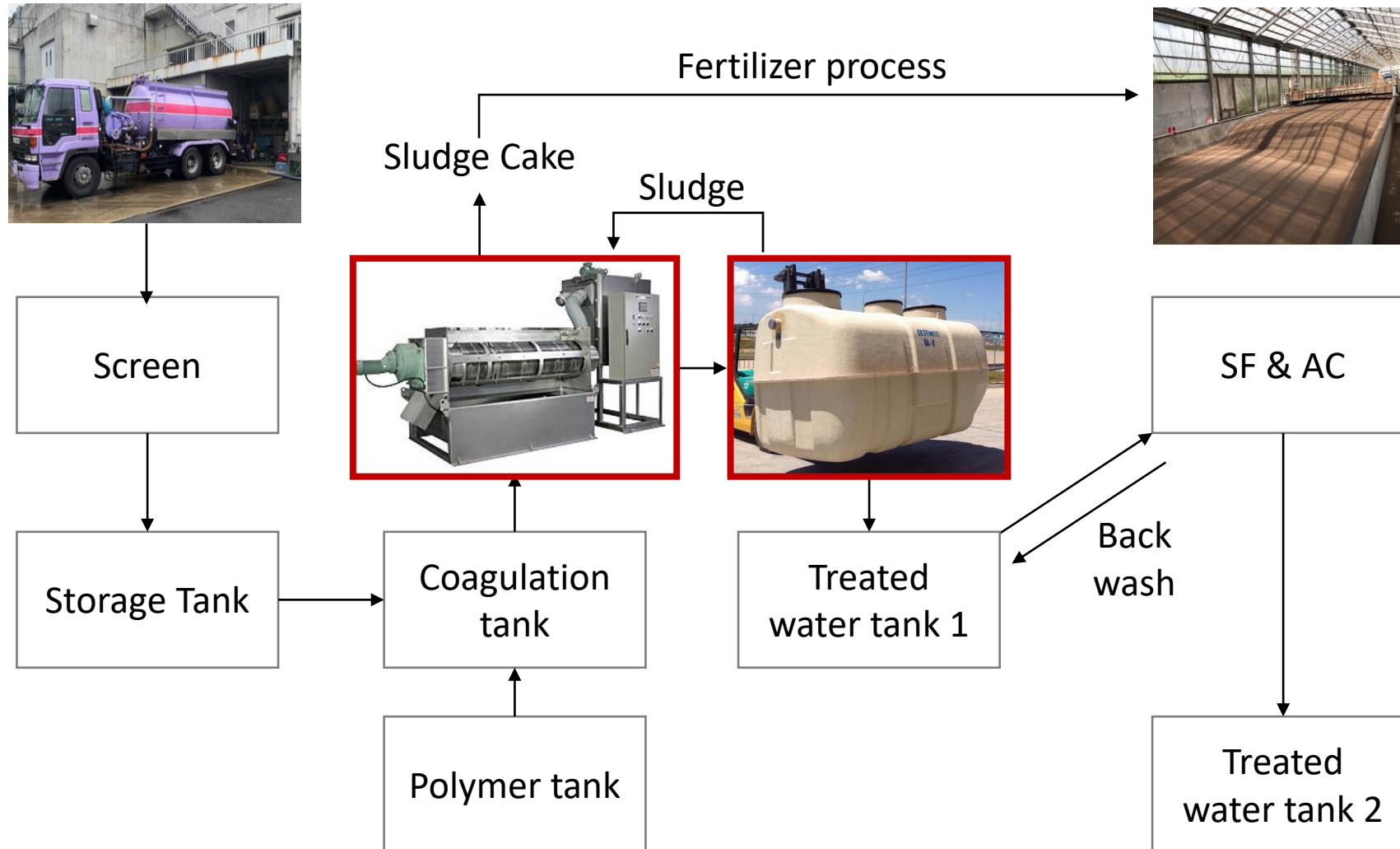


Screw Deydrator

Insulated Drying Chamber with Heat Pump



# Flow Diagram of NAMSAI FSTP



## Top Fit Cases for Johkasou

**1. Urban villages**

**2. Water stress villages**

**3. Villages on river banks**

**4. NGT Priority villages**

**5. Villages with Typical topography**

# Daiki Axis India has established model for Decentralized Used water solution

- De-centralized used water management in India is still under nascent stage hence DAI is working on multiple fronts to support the customers and improve the industry skill and quality level in India

**1. FIELD SURVEY, REQUIREMENT STUDY, DPR SUPPORT**



**2. TWO STAGE ENGINEERING SUPPORT FOR THE PROJECT**



**3. MANUFACTURING - MAKE IN INDIA AS PER JOHKASOU STANDARD & INDIAN REQUIREMENTS**



**4. CONSTRUCTION QUALITY AND SUPERVISION AS PER DAIKI STANDARD**



**5. O&M, USER TRAINING AND ASSET MANAGEMENT SUPPORT AS PER DAIKI STD.**

**Simultaneously work on Development of Indian Market for Awareness creation, product enhancement, cost reduction, standard formation, skill development**





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Thank you!