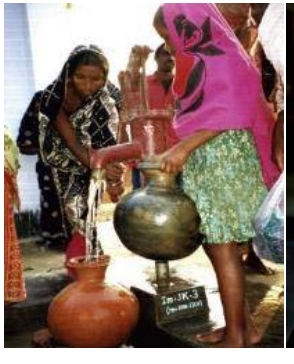
Japanese Water Technology Transferring to Bangladesh

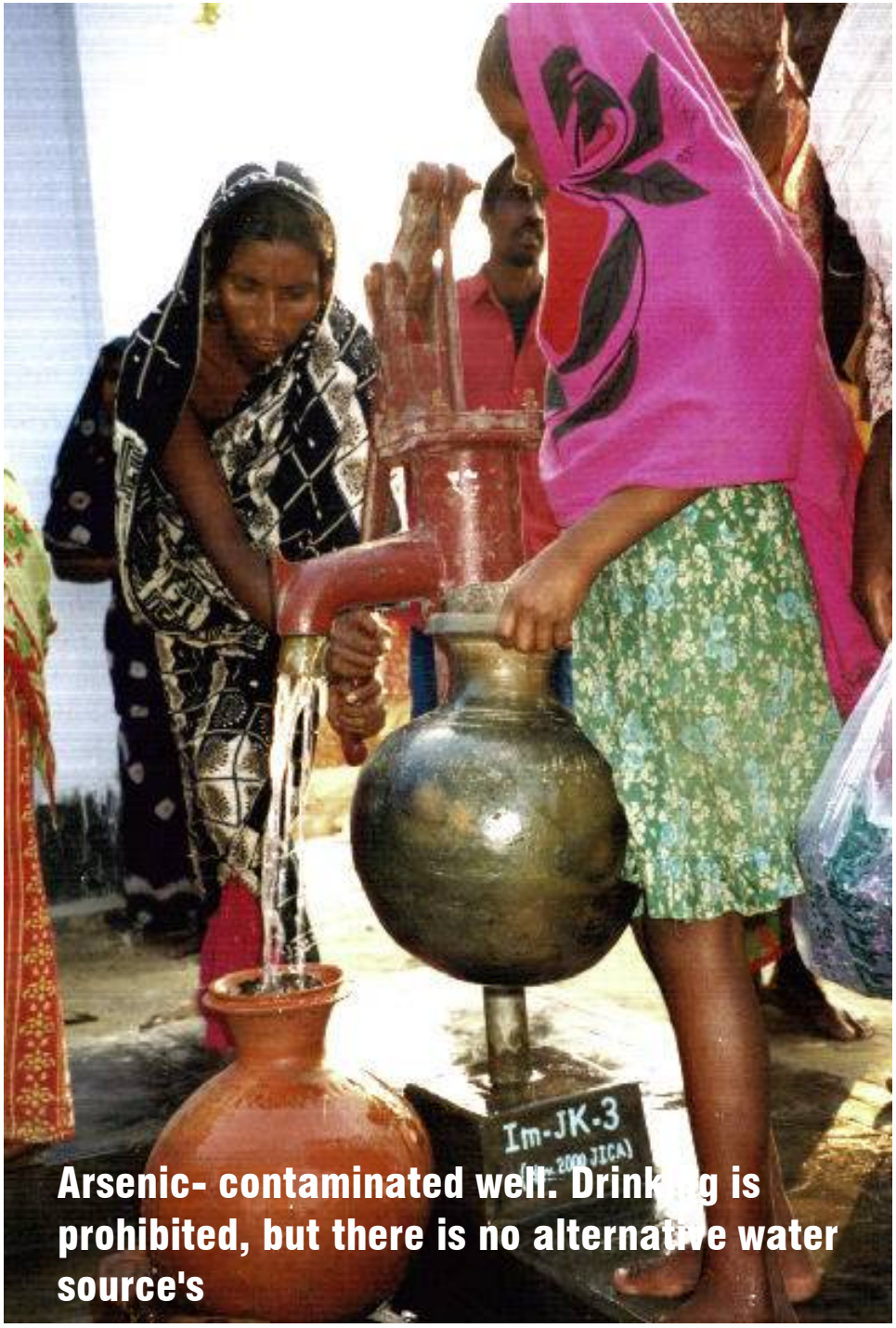
WTA Inc.

Proposal of the project to supply safe water to Bangladeshi southern region.

Arsenic and saltwater removal of water supply by resident cooperation project


Drinking water and irrigation water of arsenic and saltwater containing

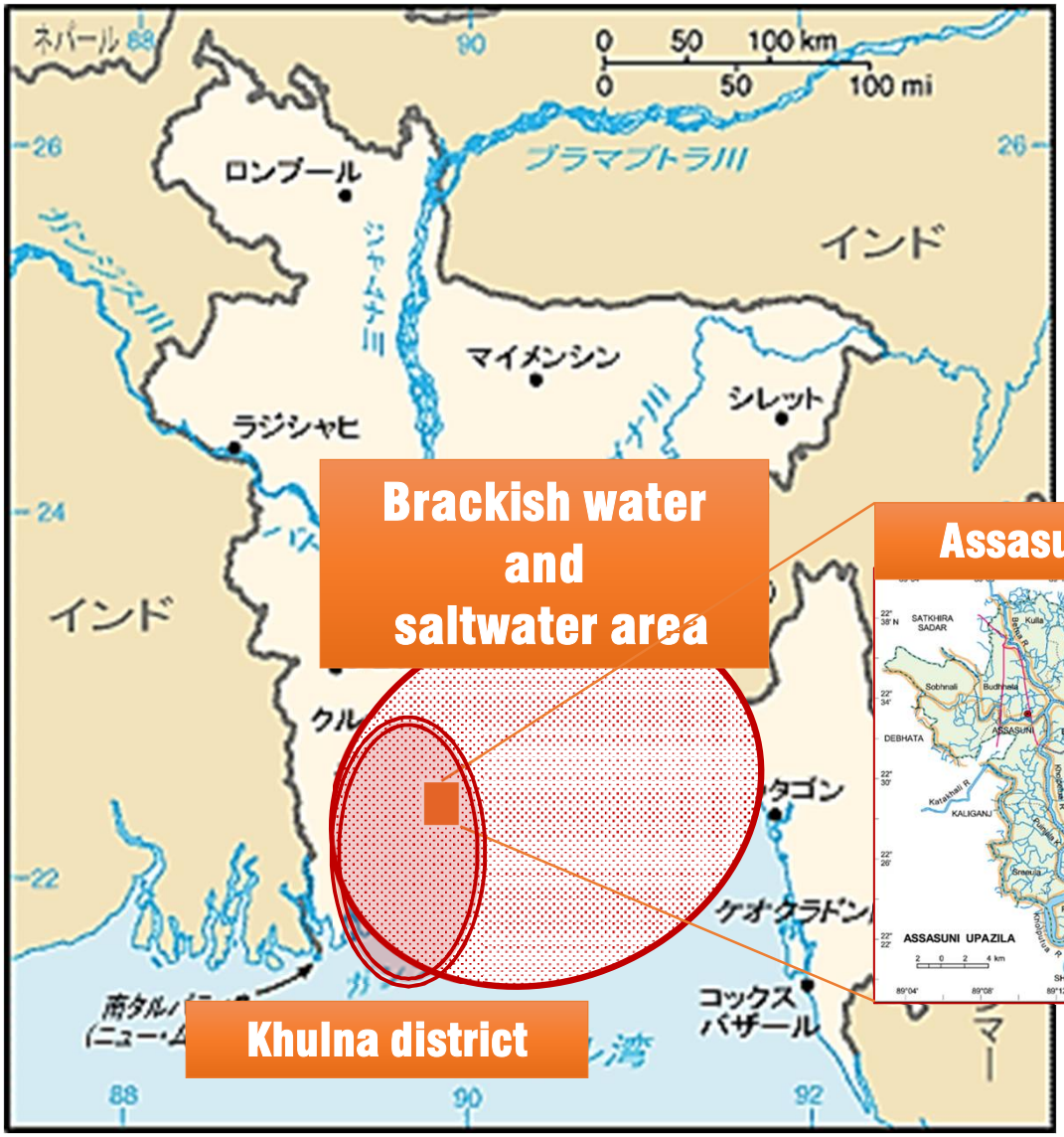


Arsenic- contaminated well. Drinking is prohibited, but there is no alternative water source's

Agricultural irrigation water is also contaminated with arsenic.

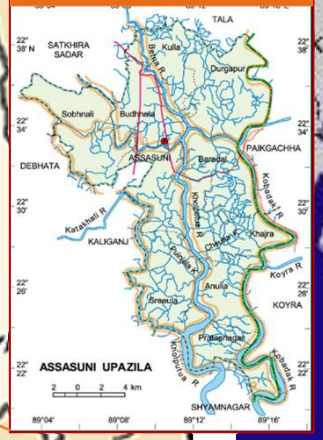
Water problem in a selected area (Assasuni Upazila)

A project site is brackish water, a seawater area and an arsenic polluted area in southern of Bangladesh. Water supply area is about 5000 people to one cluster because a southern region is divided at a river of big and small.



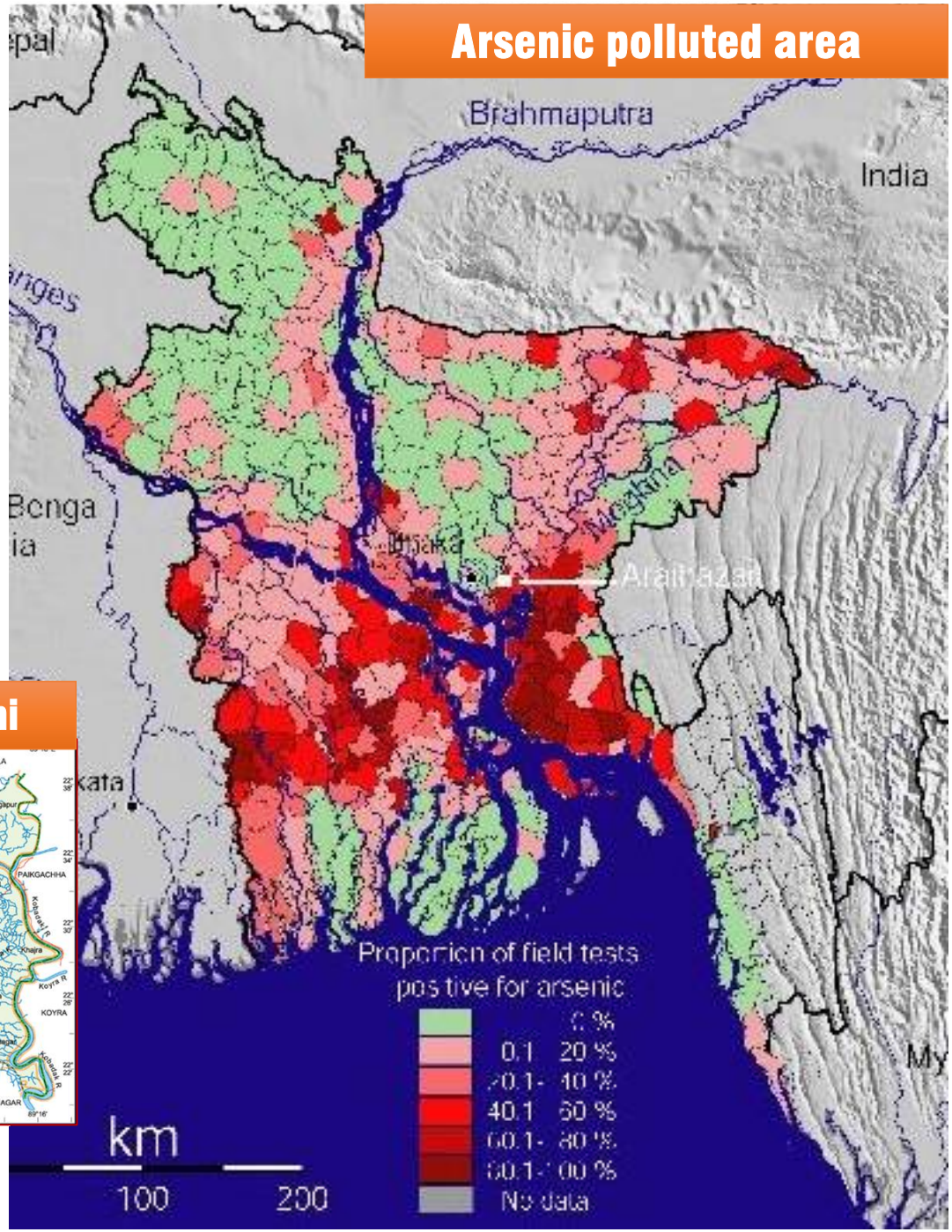
Brackish water and saltwater area

Assasuni

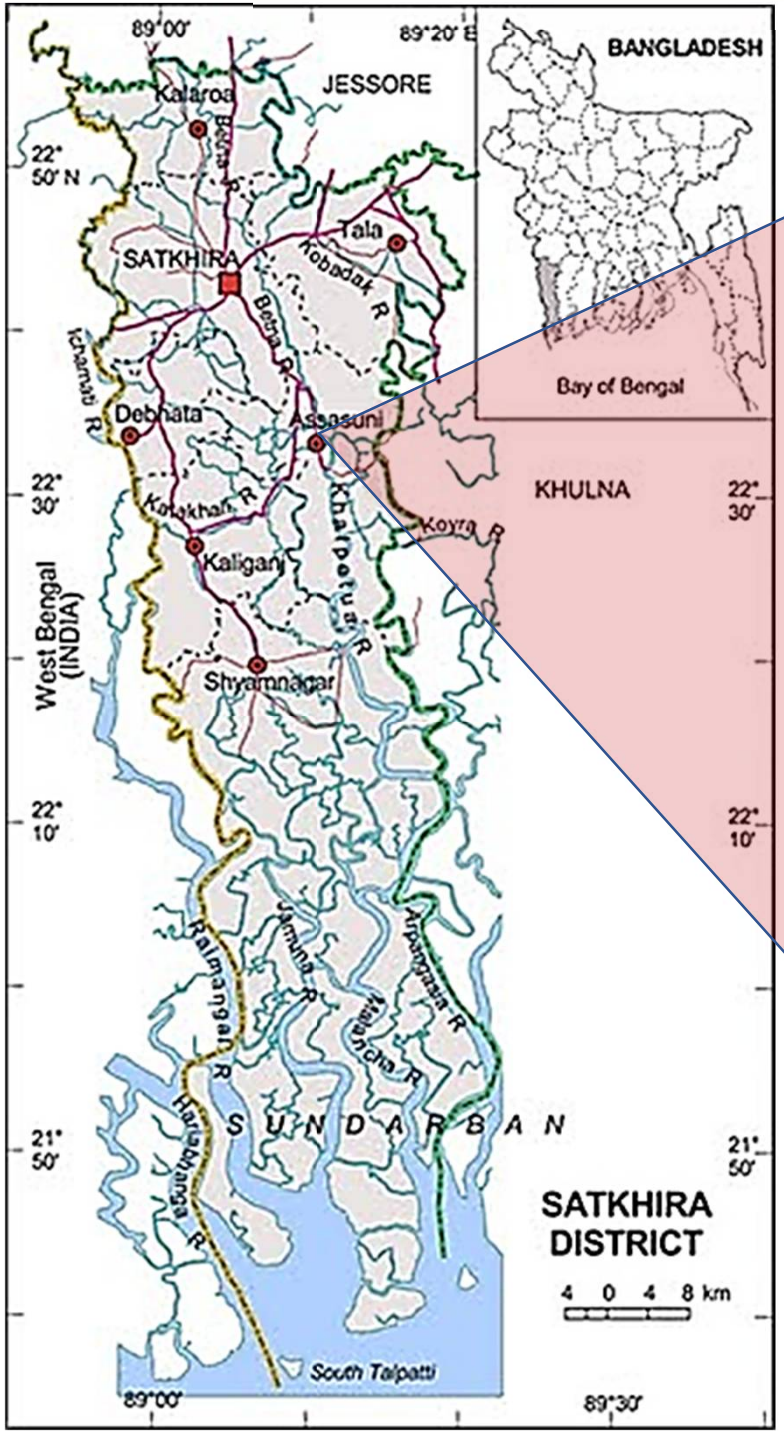


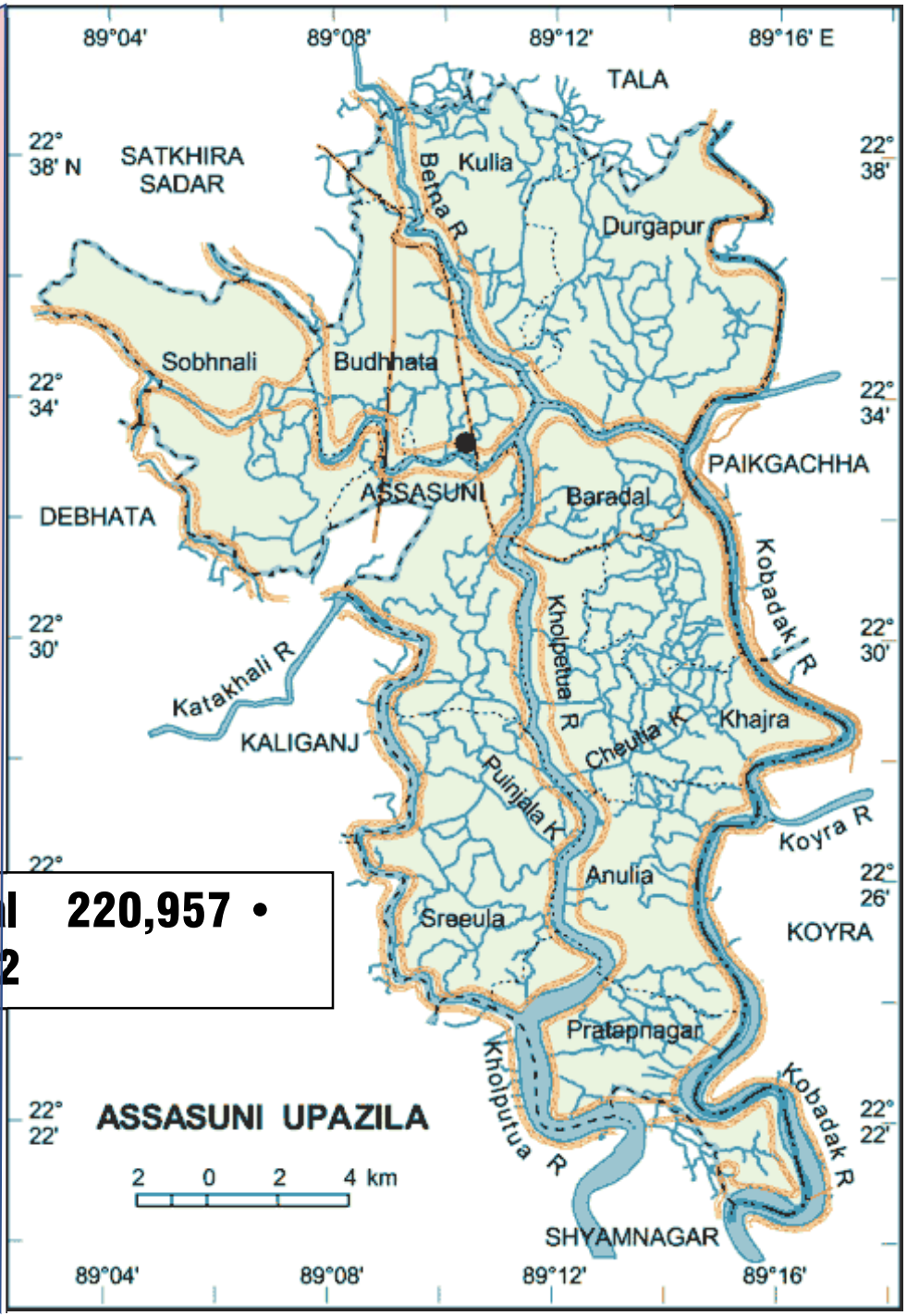
Khulna district

Arsenic polluted area



First project implementation area (Assasuni Upazila)





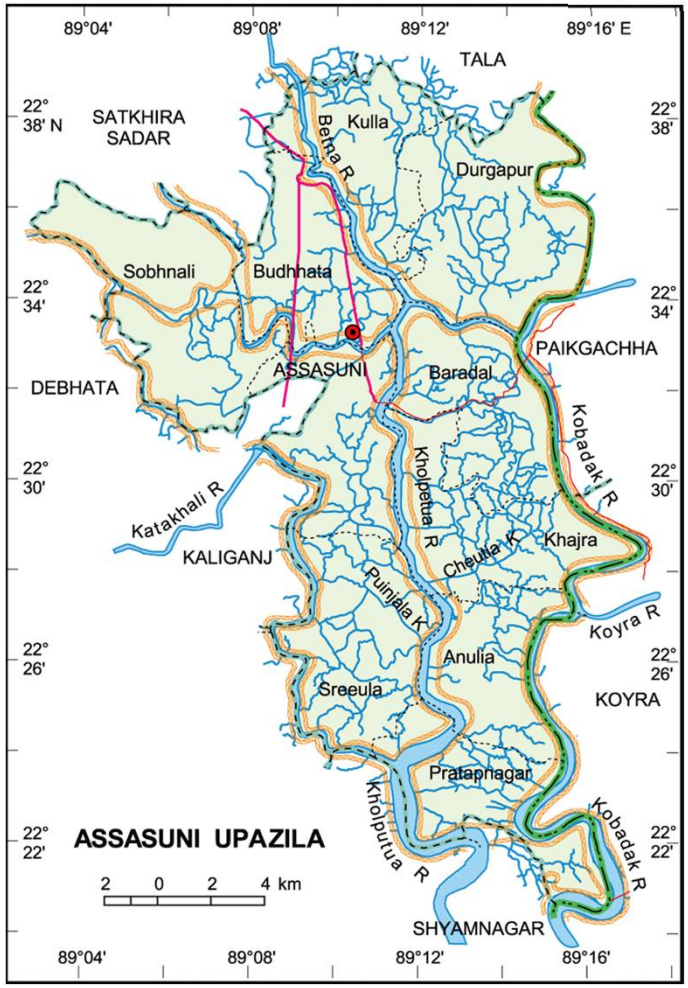
Population • Total 220,957 • Density 549/km2

Project site (Assasuni in Satkhira District)


Rainwater storing system


Water intake at a well

A watering supply project target area is selected Assasuni (220,000 people) in Khulna district. This area needs a solution by desalination water technology.



small fish is good fish meal in Fresh water and brackish water region are.

The fishing ground where brackish water and a seawater area are tiger shrimp and lobster

Problem of arsenic & salinity drinking water in southern area

southern region is brackish water and a saltwater area because there is a in the great river downstream.(Seaside is being carried by ship from the well where it's more than 5 km away from a flesh water well.)

The well the salinity included is rust, and there is a strong smell of the iron. There are also a lot of wells arsenic contains. It's work for the women and the child to carry water to from a well to a house.

Voluntary water supply management system by Resident Committee

4ton/D

Village water tank

Water supply to 1,000 people

Transport by water tanker to the village

Resident Committee

Rikisha transportation to home

4ton/D

Village water tank

Purification system 20ton/D

Population benefiting from water supply

4ton/D

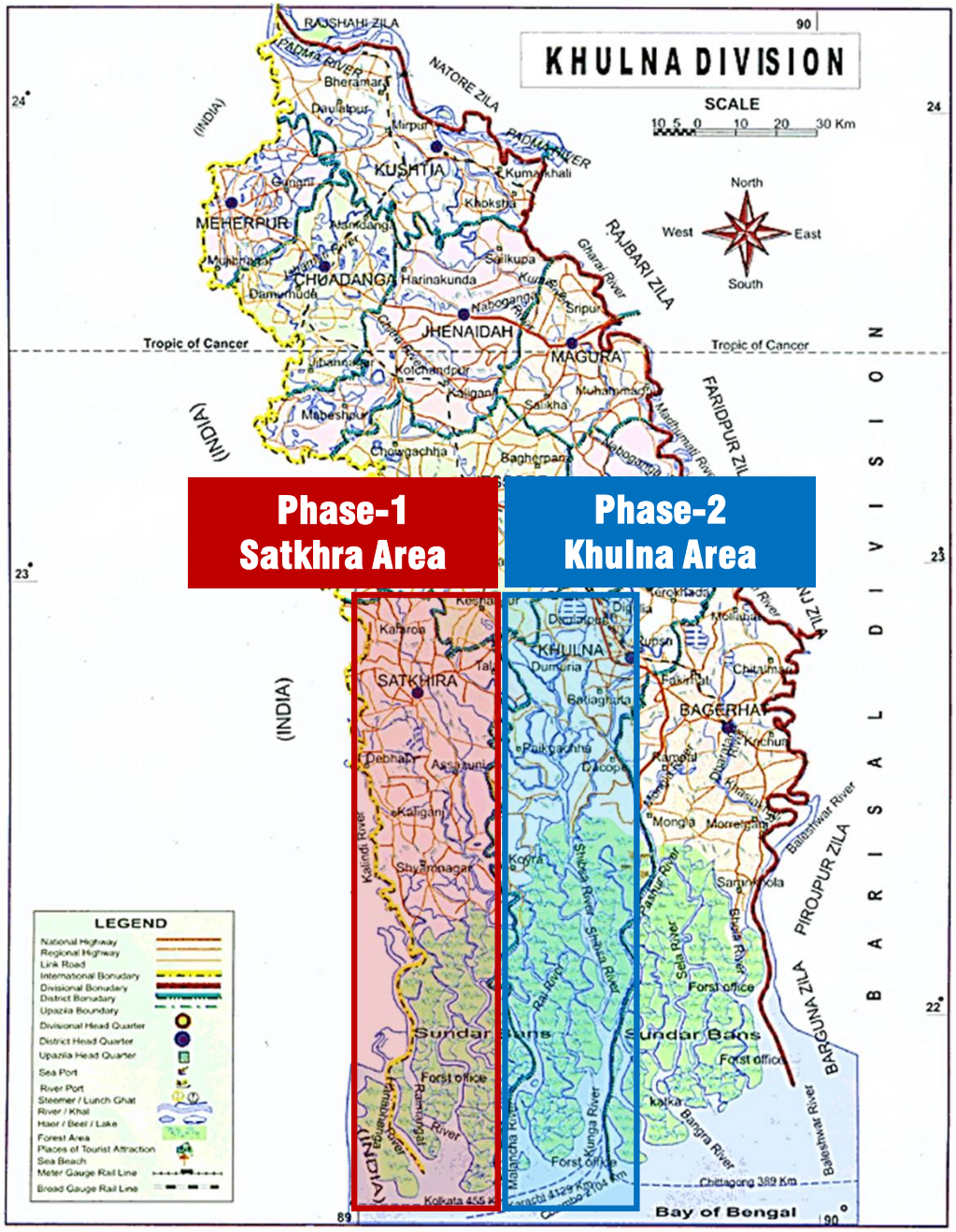
Village water tank

4ton/D

Village water tank

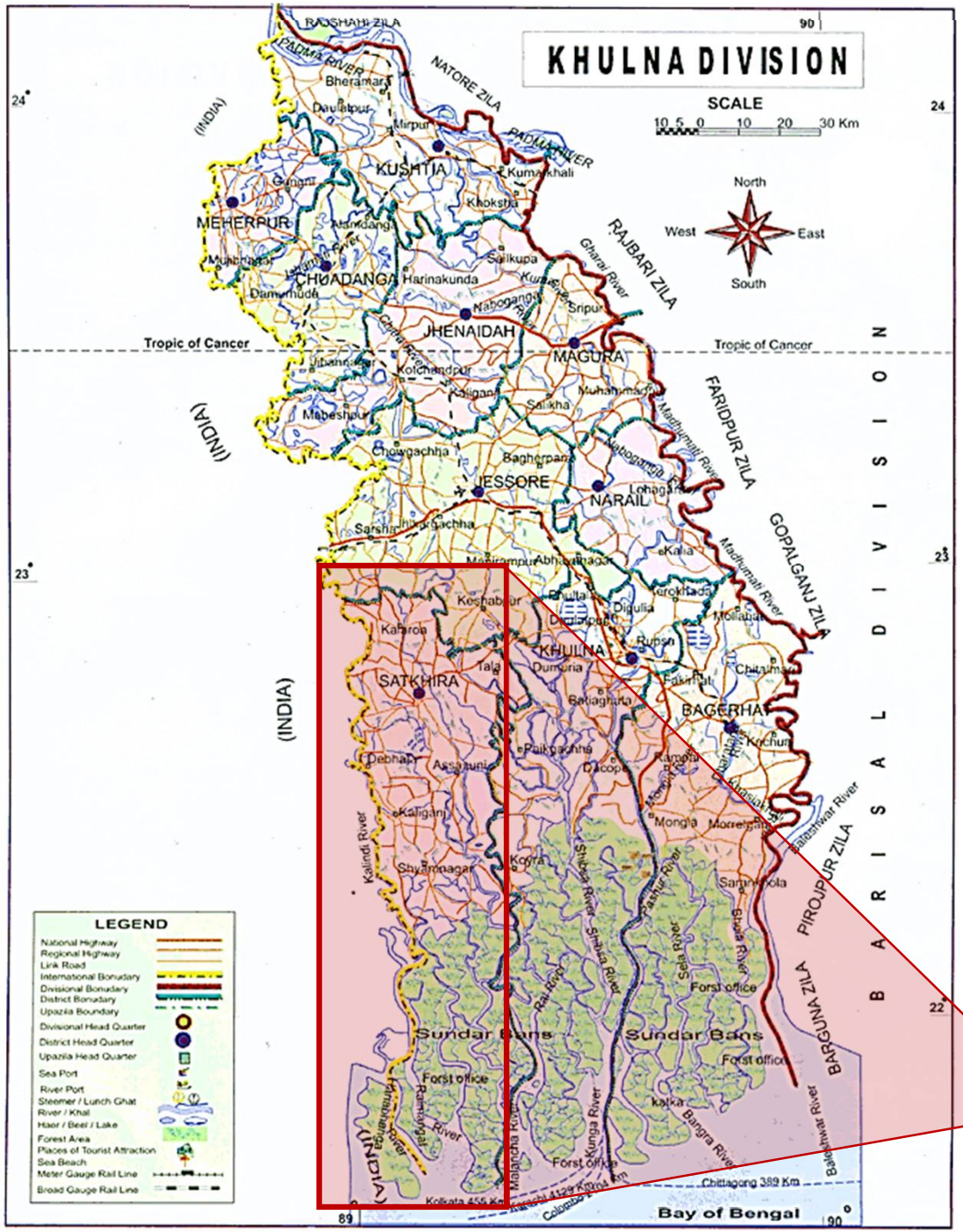
Project area Arsenic and Brackish water area

Well water in southern Bangladesh is contaminated with Arsenic and Brackish water



Area	Administrative centre	Area(㎢)	Population (2011)
Bagerhat District	Bagerhat	3,959.11	1,476,090
Chuadanga District	Chuadanga	1,174.10	1,129015
Jessore District	Jessore	2,606.94	2,764,547
Jhenaidah District	Jhenaidah	1,964.77	1,771,304
Khulna District	Khulna	4,394.45	2,318,527
Kushtia District	Kushtia	1,608.80	1,946,838
Magura District	Magura	1,039.10	918,419
Meherpur District	Meherpur	751.62	655,392
Narail District	Narail	967.99	721,668
Satkhira District	Satkhira	3,817.29	1,985,959
Total	10	22,284.22	15,687,759

Project implementation area (Phase-1 Satkhira District)



District	Administrative centre	Area in km².	Population (2011)
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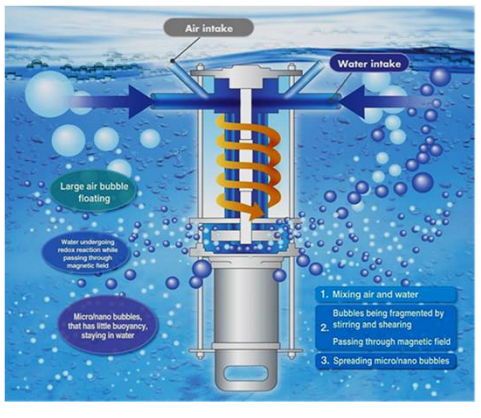
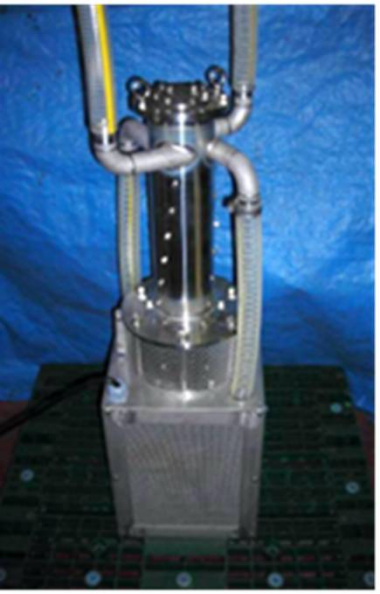
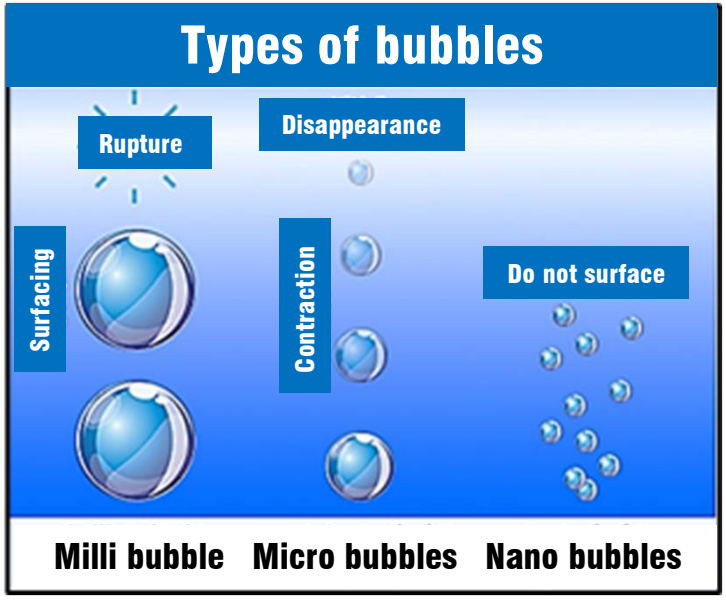
Proposal for the dramatic development of the aquaculture industry in Bangladesh

To solve water quality problems in shrinp ponds in southern Bangladesh

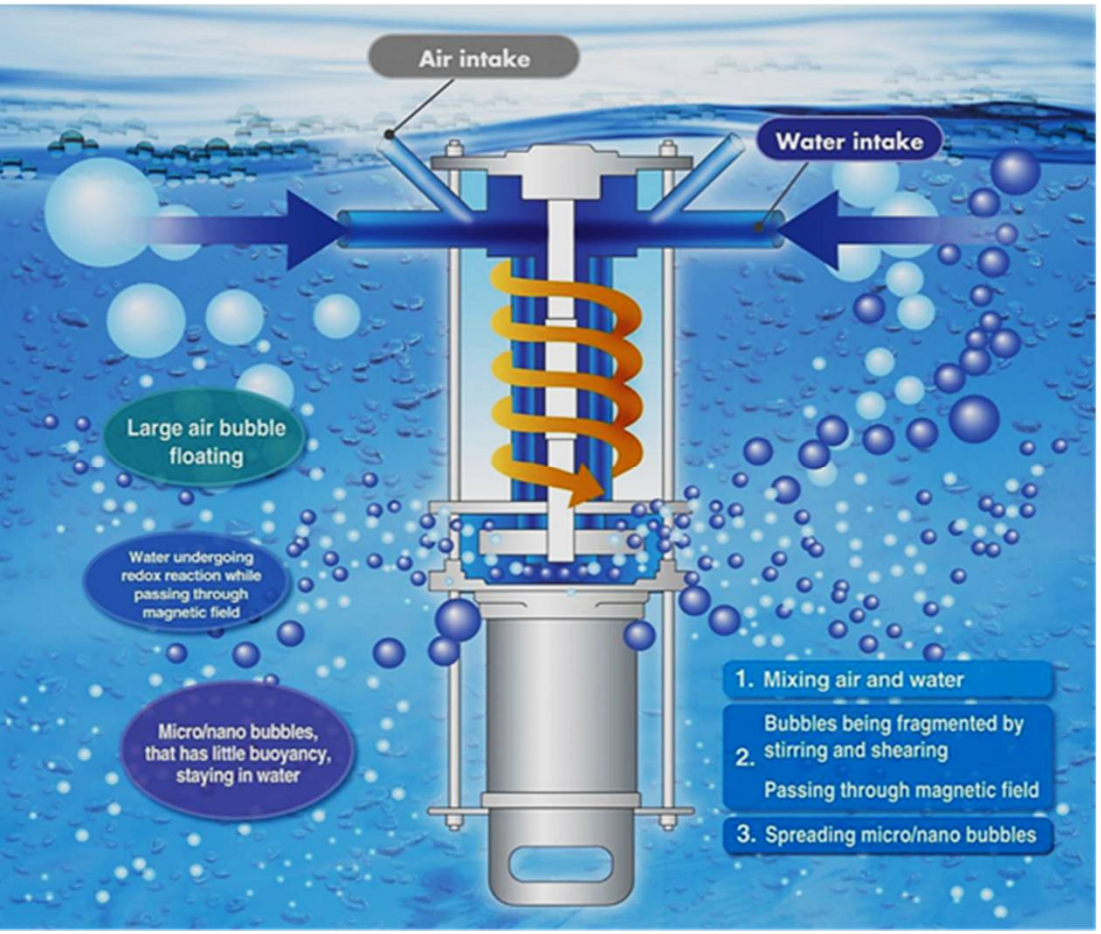


Nanobubble technology revolutionized aquaculture





The nano bubble generator「Nano-1」has been widely adopted in aquaculture in Japan and overseas and has been successful. The bubble generated are as small as 30 nanometers. Nanobubble are transparent and will not disappear for several hours.



Data of Tilapia aquaculture pond

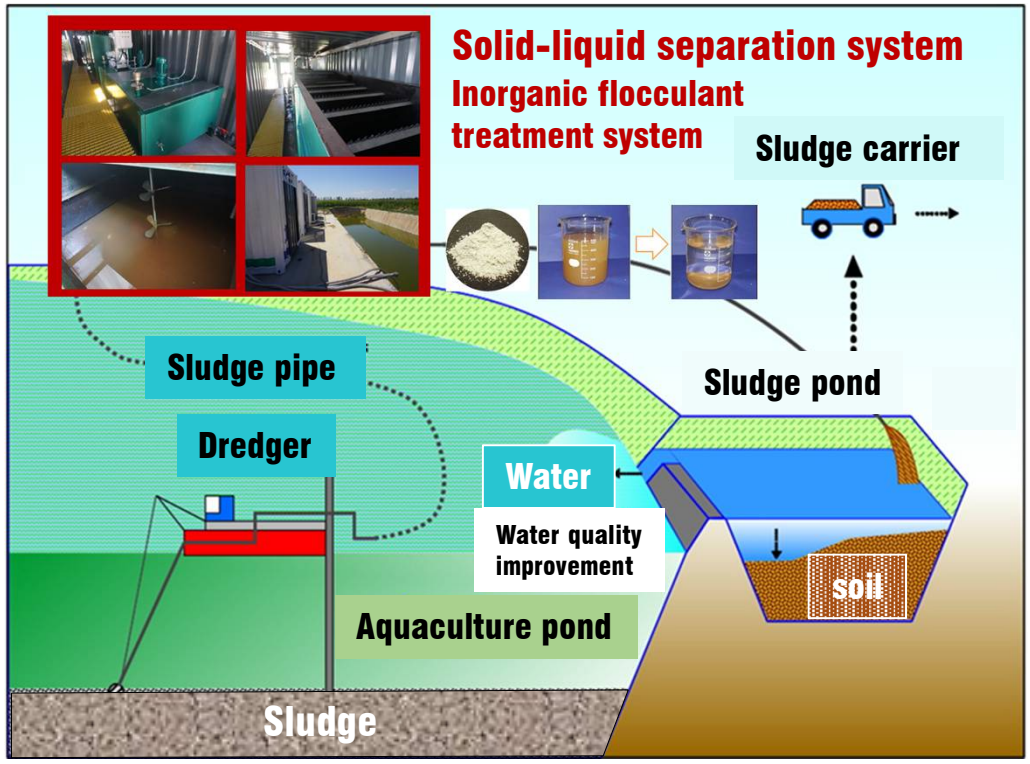
評価項目	Pond A Nano1 System Installed	Pond B Nano1 System Not installed	Ratio Pond A / Pond B
Start Date	2007/4/20	2007/4/19	
End Date	2007/5/28	2007/5/28	
Duration	38 Days	39 Days	
DO (Dissolved Oxygen)	6.07	6.09	
Quantity (# of fishes)	7,000	5,500	1.27
Total weight at the start (Kg)	273	220	1.24
Total weight at the end (Kg)	812.8	570	1.43
Gained weight (Kg)	540	350	1.54
Feed dosage (Kg)	721	518	1.39
Average weight at the start(G)	39	40	0.98
Average weight at the end (G)	127	114	1.11
Average gained weight (g)	88	74	1.19
Feed dosage efficiency = [Feed dosage / weight gained]	1.34	1.48	

Shrimp farming and sludge dredging method using inorganic flocculant

Aquaculture pond and NANO BUBBLE System

NANO BUBBLE aeration

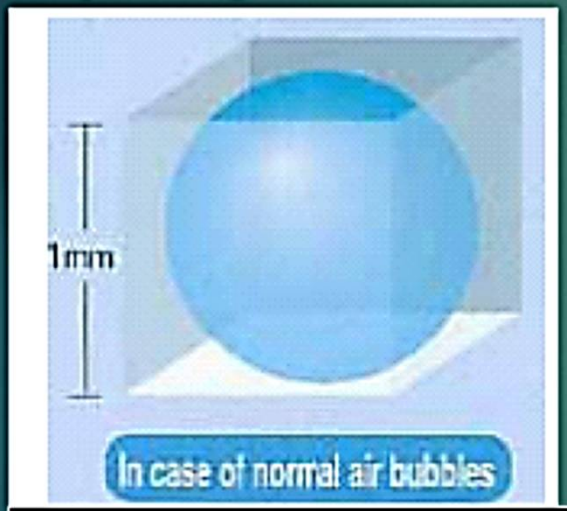
Water purification effect by NANO BUBBLE system



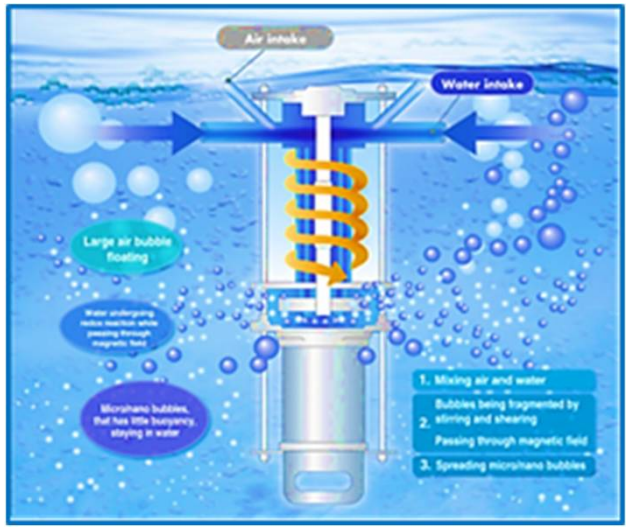
Amazing water treatment effect of Japanese developed tech. "NANO Bubbles"

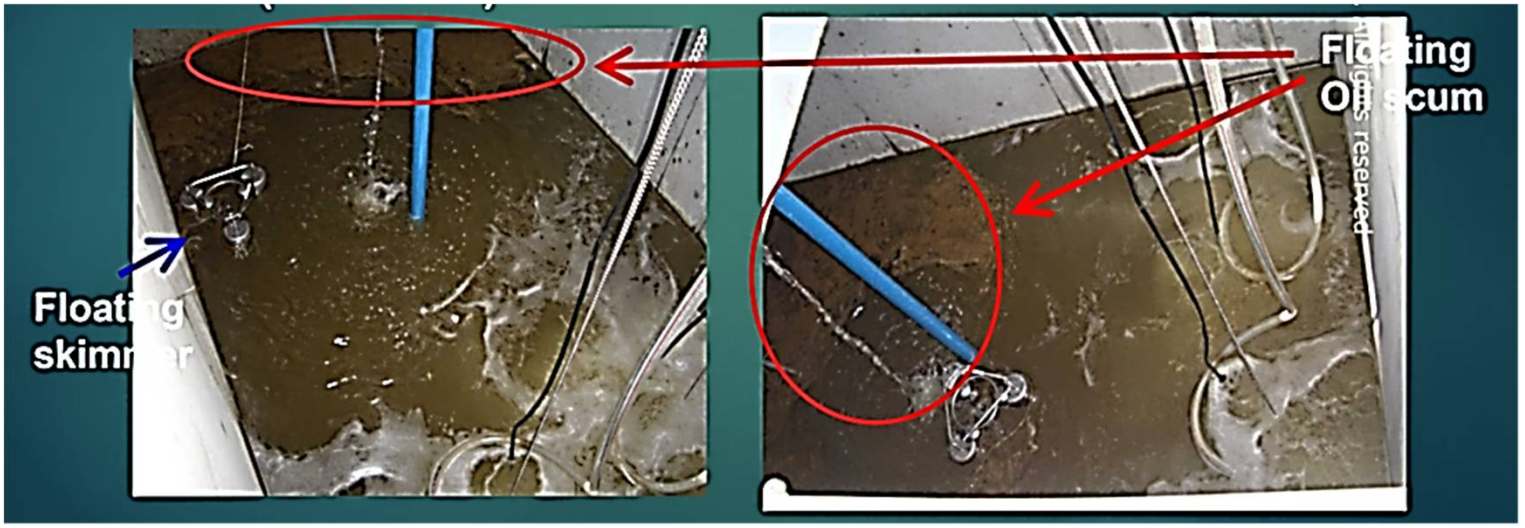
Greater Surface Area:

Promotes improved oxygenation efficiency for higher COD and BOD reduction
And always killing anaerobic bacteria and also coexist with aerobic bacteria



1 cumm volume of “NANO Bubbles“ has 10,000 times greater !
surface area than 1 cumm of normal air bubbles

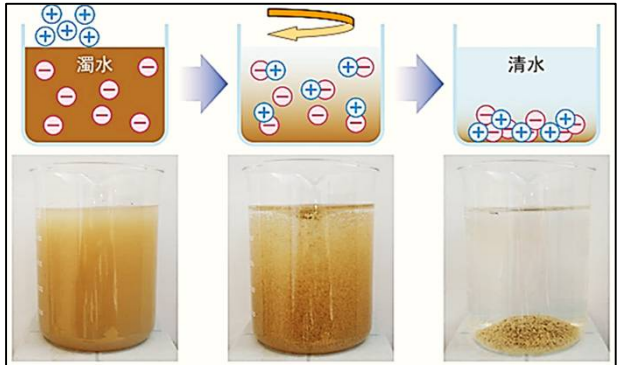




Bangladesh

Proposal of the Water & Sewage treatment technology by chemical material.

Utilization of Inorganic coagulant and Soil solidifying agent



Water and Sewage treatment technology

Inorganic coagulant「JES CLEAN」(Transfer of manufacturing rights)

Transfer patented Inorganic coagulant manufacturing technology. At the same time, we will design the factory, select manufacturing equipment, and conduct operation training. 90% of raw materials can be procured locally, 10% of additives will be exported from Japan.

Soil solidifying agent「JES COAT」(Transfer of manufacturing rights)

Transfer patented Soil solidifying manufacturing technology. At the same time, we will design the factory, select manufacturing equipment, and conduct operation training. 90% of raw materials can be procured locally, 10% of additives will be exported from Japan.

Consulting, utilization method (Transfer of know-how)

We will transfer know-how on water treatment, sewage treatment using Inorganic coagulant, and soil solidification method.
Regarding various processing business, we will undertake processing plan and desigh consulting that matches local condition.

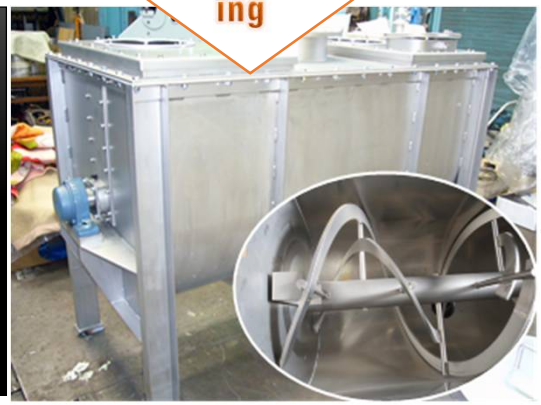
Manufacturing factory concept

The factory will be built in the following step.

Raw material hopper

Mix ing

Mixer



Mass production

1t Bagging

20kgBagging

Large bag sealing

1t bagging

Small bag sealing

20kg bagging

Small production

With a 20kg bag, it can be manufactured with a small mixer

Warehouse

Utilization stage

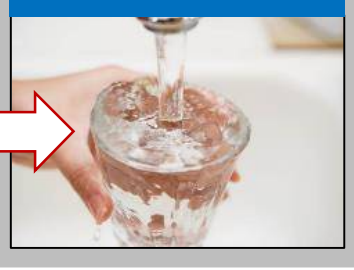
JAS-CLEAN JAS-COAT

Village supply

Raw water → JAS-CLEAN → Active carbon → HOllow fiber → Sterilizattion → Safe water



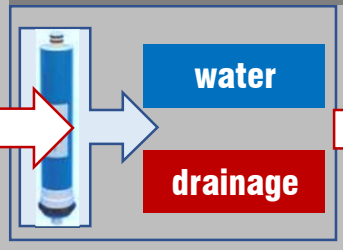




Contamination

Raw water → Active carbon → RO membrane → Drainage → JAS-CLEAN → Separation







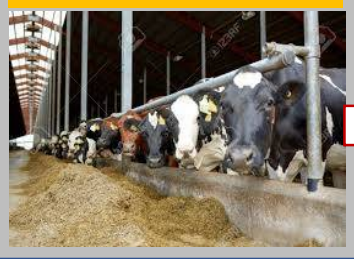
Sewage sludge

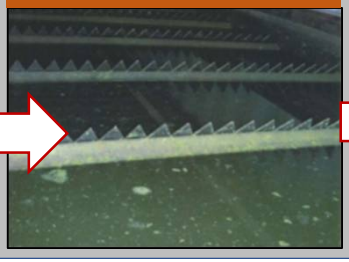
Sewage → Sludge (80%) → JAS-COAT → Sludge (60%) → Fertilizer → Field




Livestock

Barn → Sewage → Biological → JAS-CLEAN → Separation → fertilizer



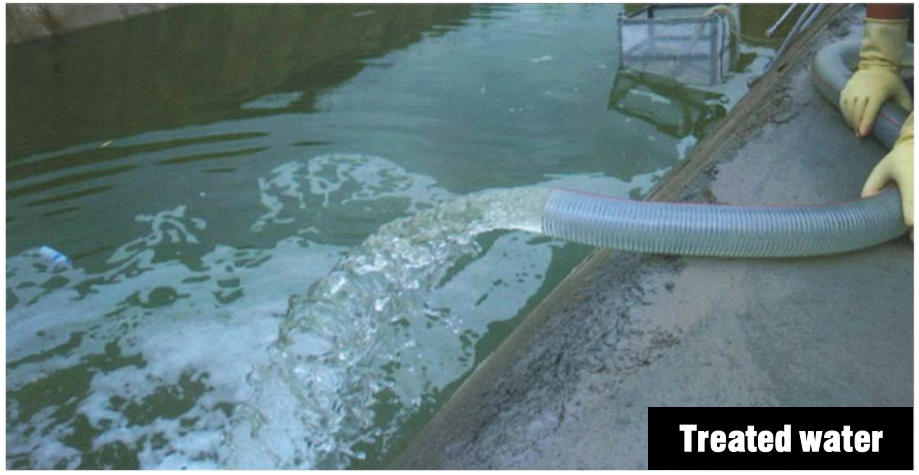



Equipment of JAS CLEAN & JAS CORT

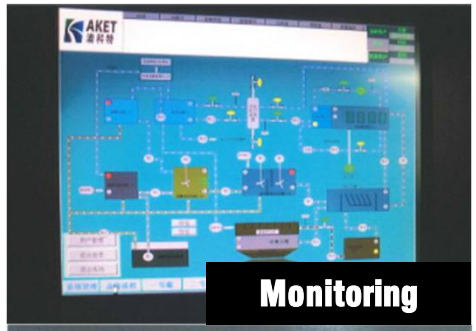
Livestock manure treatment using by JAS-CLEAN

Appearance


Raw water pond


Treated water

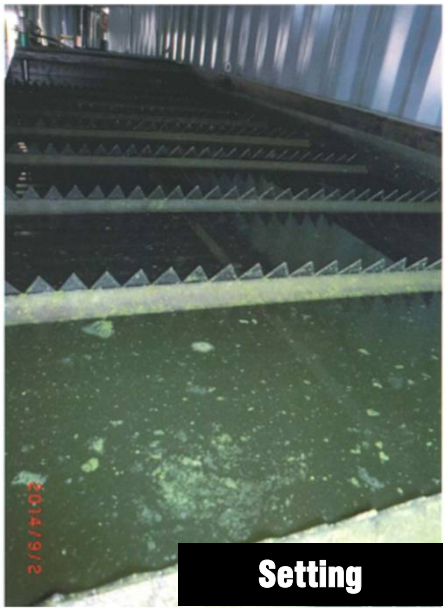

Dehydrator



Monitoring


Operation board


Mixer



Setting

Active carbon

Factory wastewater treatment system

Raw water → Raw water tank → Chemical injection → Mixing → Separation → Reused water

Separation → Fertilizer 60%

Pollution problems in Bangladesh by textiles and leather factories


Narayanganj


Hazaribagh


Hazaribagh

Due to the acceleration of industrialization, commercial activities by companies and the concentration of factories have become a factor of environment pollution in Bangladesh and it causes water pollution in the region.

Especially textiles coloration factories in Narayanganj and leather tanner factories(200 factories) in Hazaribagh of Dhaka city, prawn culture places in the coastal regions of Khulna district are known as a "Hot spot" of the water pollution.

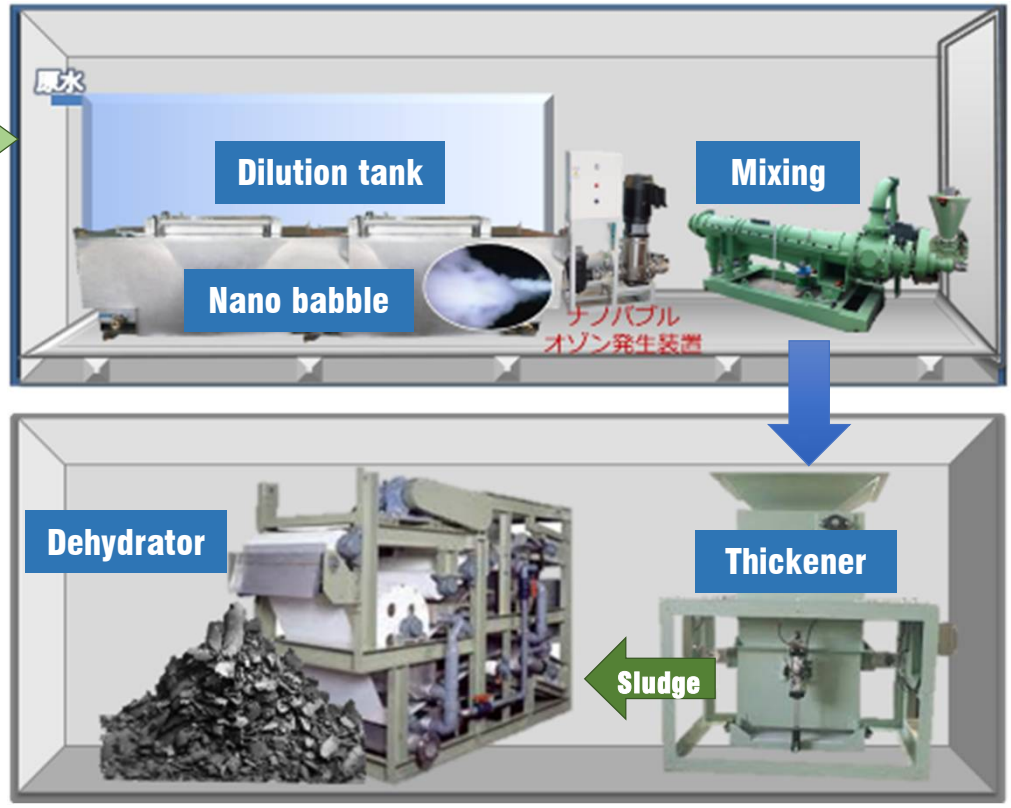
Furthermore, the drainage from those industrial zones flow into residential neighborhood. Because sewerage treatment facilities are not spread very much in Bangladesh, most of the sewage are just discharged into the river of the neighborhood.


Textiles coloration factory

- **Untreated fiber factories(Narayanganj):311**
- **Number of leather factories(Hazaribagh):173**
- **River discharge volume:25,000～40,000m3/D**
- **Chemical usage fee:50t/D**
- **Buriganga riverbed dredging goal:1000t/D**


Leather factory

The example of installation of the small wastewater treatment equipment for factory effluent



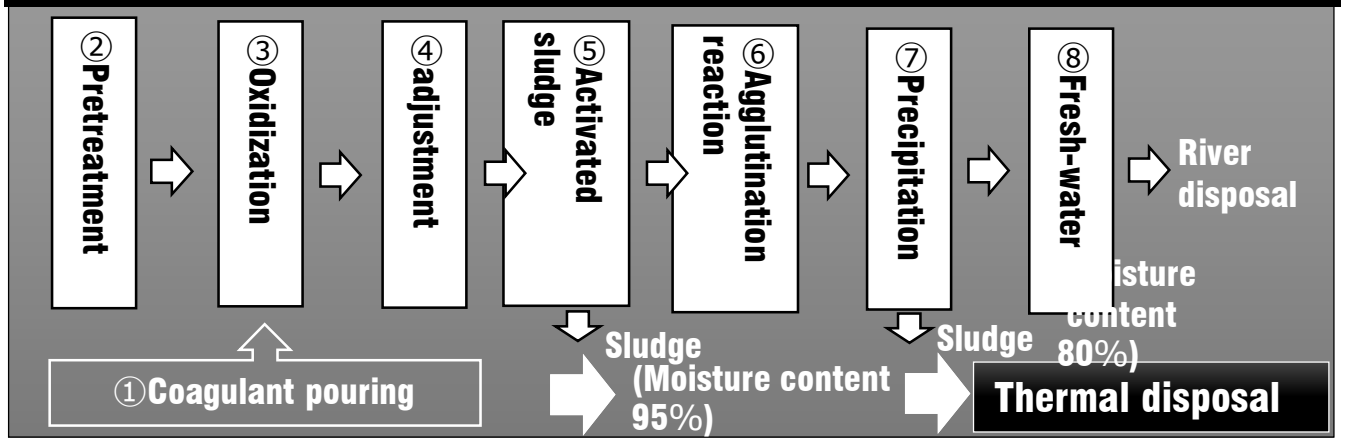
Factory effluent → Biological treatment → Dilution processing → Mixing → Precipitation processing → Sludge dewatering

The effluent treatment system of a leather factory or dye works

If the effluent treatment of a textile and a leather factory is also a JEC method, it can respond.
The throughput of 300 cubic meters/H is demonstrated by two 40 foot containers.
If 2400 cubic meters works by operation for 8 hours, 7200-cubic meter 24 hours for effluent treatment can be performed.

JAS CLEAN is the revolution to the conventional wastewater handing.

The example of a general effluent treatment system



The condensation and dries system by JAS CLEAN

JAS CLEAN

Condensation mixing equipment

Sludge-dewatering equipment

Sludge after press drying

Moisture content 50%

Reuse is possible in farmland

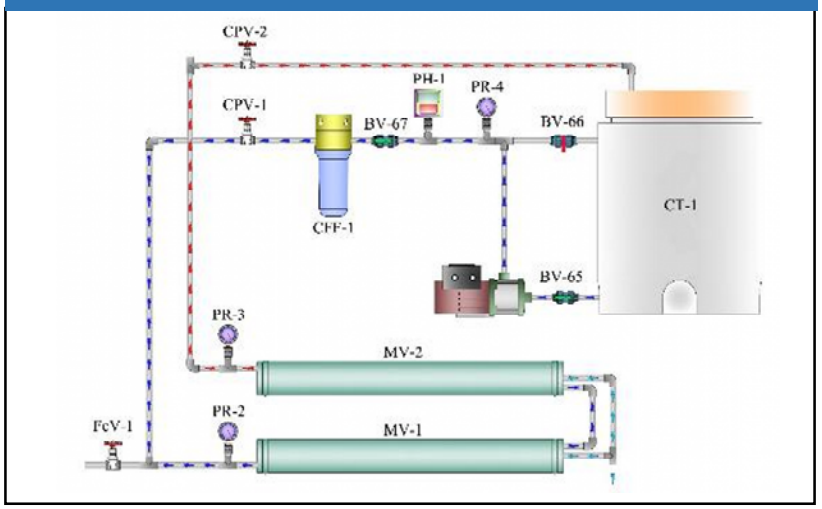
Treated water is river disposal

JAS CREAN method

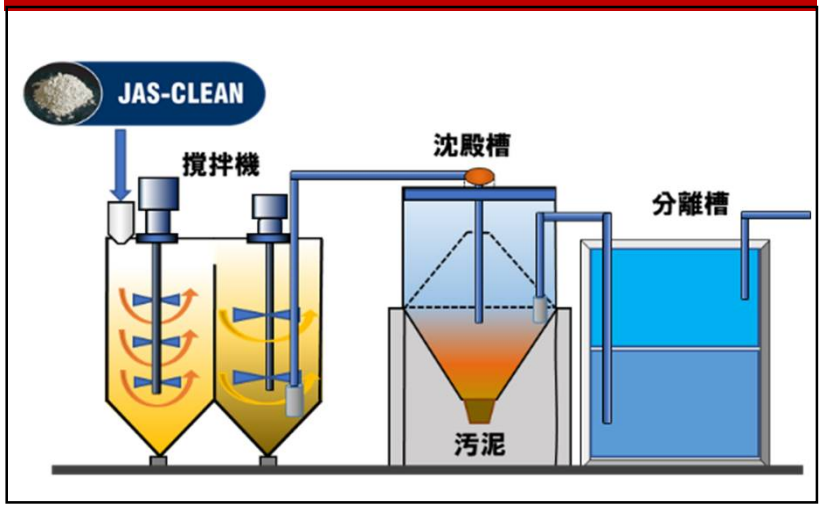
In the conventional sewage disposal system, about 80% of the moisture content of the sludge after sewage disposal was a limit. In down stream processing by JASCREAN, needlessness and the big precipitation tank of PH adjustment are also unnecessary.
Drying efficiency can be high and it can make it dry till around 50% of moisture content with a press dehydrator.

Removal of arsenic & heavy metal and detoxification of wastewater

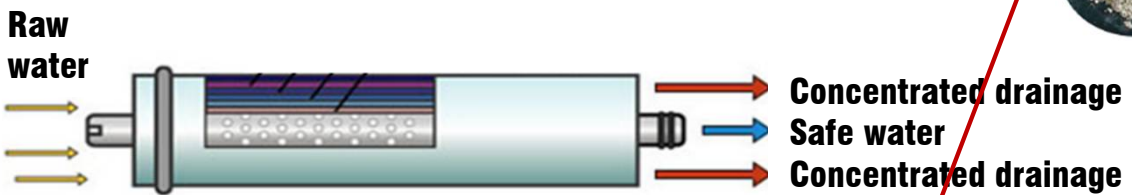
Removal of arsenic & heavy metal

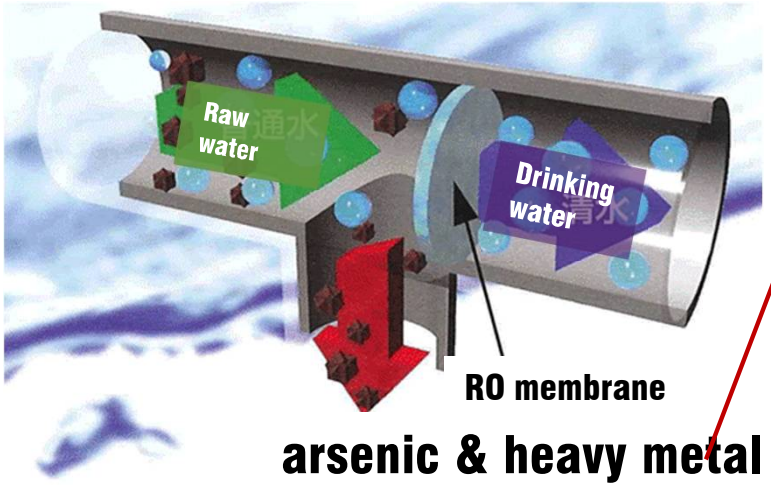


Detoxification wastewater system

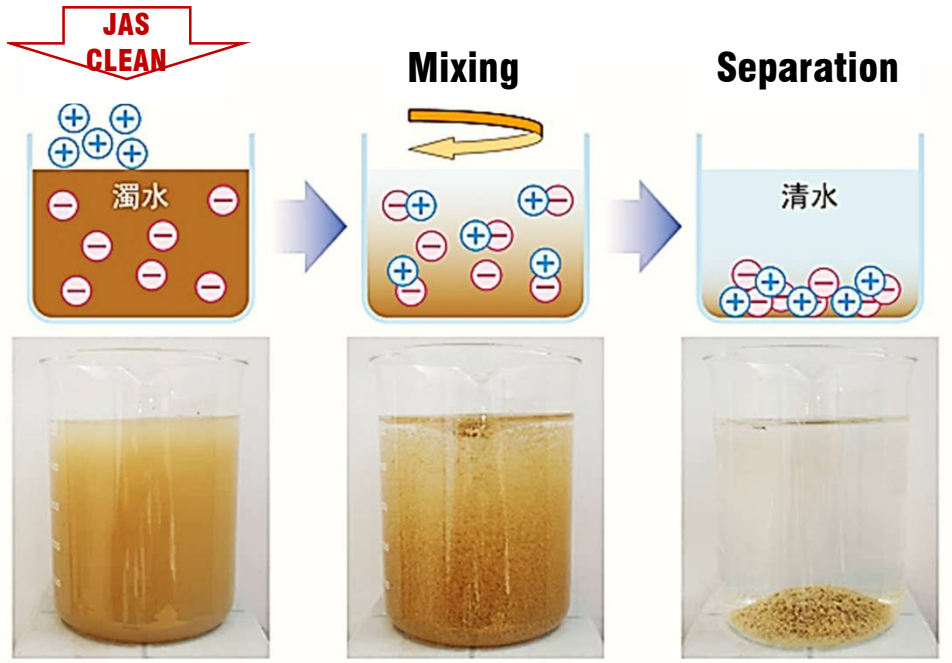


Removal by RO membrane

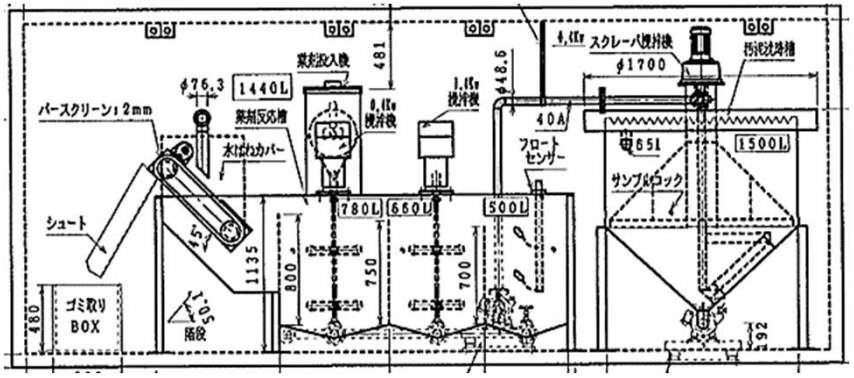




arsenic & heavy metal



JAS CLEAN Mobile river & pond water purification system



Purified water is discharged into the pond

Sludge

Fertilizer

Purify water in reservoir to make safe drinking water by JAS CLEAN

Safe water