



*Pictured: Arsenic Removal System in Nalbari, Assam launched in June 2017 providing safe water to over 300 households*



## Table of Contents

About Drinkwell	3
India & Bangladesh’s Water Crisis	4
Drinkwell’s Solution	5
Drinkwell’s Technology	6
Drinkwell’s Footprint	7
Impact Monitoring via Water ATMs	8
Customer Case Studies	9
How to Partner	14
Frequently Asked Questions	15
Contact	16



## About Drinkwell

Drinkwell is a technology-driven company providing turnkey water solutions for rural, urban, and industrial customers. We focus on 3 areas:

1. manufacturing water purification technology
2. system design, implementation, and after-sales servicing of community water systems
3. effluent treatment solutions for industrial water systems



## Our Mission

Provide safe drinking water to **5,000+** villages and urban areas impacting **5 million** people by 2025 while fulfilling UN Sustainable Development Goals:



Good Health and Well-Being by reducing exposure to water-related diseases



Clean Water and Sanitation through community drinking water and sanitation facilities



Innovation and Infrastructure through inclusive delivery systems ensuring equitable access to safe water across urban and rural areas

## Key Offerings

CSIR-approved patented resins for arsenic/fluoride removal with 99% water recovery vs. 40 - 50% for Reverse Osmosis



Turnkey water purification system implementation and servicing with real-time monitoring via Water ATMs



Industrial & Wastewater Solutions

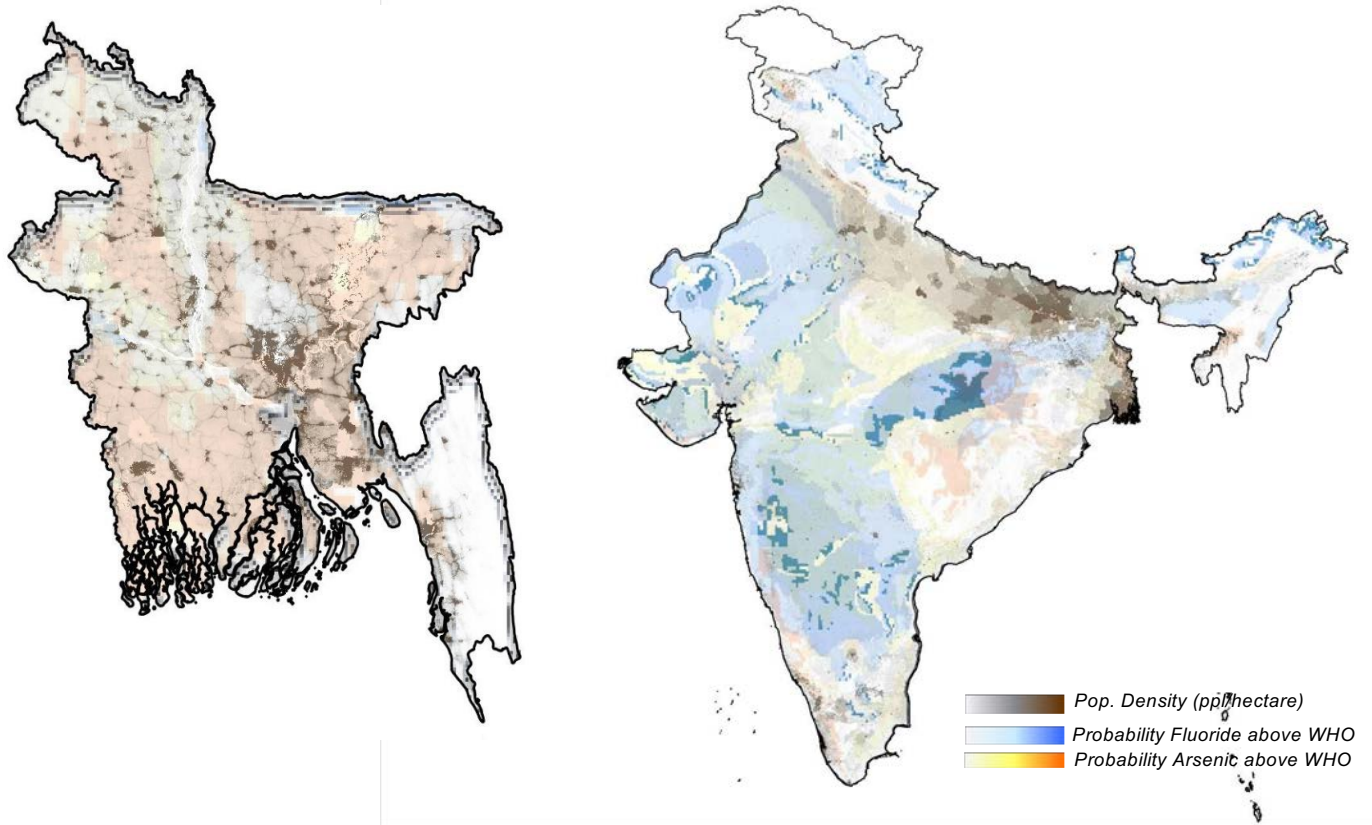


## Scale

- Smallest system has capacity of **700** liters per hour
- Largest system has capacity of **193,000** liters per hour
- Fluoride reduction from **22** mg/L to below **0.4** mg/L (World Health Limit is 1.5 mg/L)
- Arsenic reduction from **240** ppb to below **1** ppb (World Health Limit is 10 ppb)



## India & Bangladesh's Water Crisis



### Bangladesh

- 1 in 5 deaths occur due to arsenic in highly-affected areas
- Arsenic, Iron, Calcium, Salinity & Manganese are top 5 contaminants
- 24 million Bangladeshis live in rural and urban areas of poor water quality
- 4 million Bangladeshis in urban dhaka live without access to legal safe water
- 43,000 annual deaths due to arsenic-related illnesses
- 2,000 children under 5 die each year due to diarrhoea

### India

- 90% of rural households drink untreated water
- Arsenic, Fluoride, Nitrate, Salinity & Iron are top 5 contaminants
- 100 million Indians live in areas of poor water quality
- 66 million people at risk of waterborne diseases
- 37.7 million people suffer from waterborne diseases
- 1,04,437 hamlets affected by heavy metal contamination

# Drinkwell's Solution

Drinkwell offers scalable water solutions that remove arsenic, fluoride, iron, bacteria and other impurities while reducing TDS from drinking water through the use of reusable hybrid ion exchange nanotechnology known as "HIX Nano". This Patented technology was developed by Dr. Arup Sengupta of Lehigh University, Pennsylvania, USA.



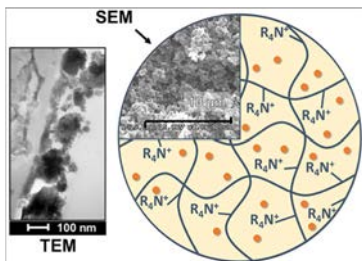
6,000  
Liters Per Day



50,000 - 75,000  
Liters Per Day



1,000,000+  
Liters Per Day



Drinkwell's HIX-Nano resins are manufactured in a dedicated in-house facility in Kolkata, West Bengal with strong quality control mechanisms.



Resins are loaded into columns that process raw water for systems that range from 1,000 (pictured above) – 190,000+ liters per hour.



Households collect safe drinking water from either Water ATM-powered taps, subscribe to delivery service, or receive water via piped water schemes

\* For a 1,000 Liter Per Hour System in instances where TDS is below 1,200 ppm

# Drinkwell's Technology

HIX (Hybrid Ion Exchange) Nano is the world's first commercial hybrid adsorbent using zirconium nano-particles, a material that has a high affinity for arsenic and fluoride removal providing the following advantages:



**5 - 10 year**

lifetime\*, via periodic regeneration every 6 months to 1 yr, vs. only 1 yr for competing one time use resins



**99%**

water recovery vs. 40-50% for reverse osmosis



**6x**

6x lower energy costs vs. Reverse Osmosis translating to high reliability in rural areas with power outages

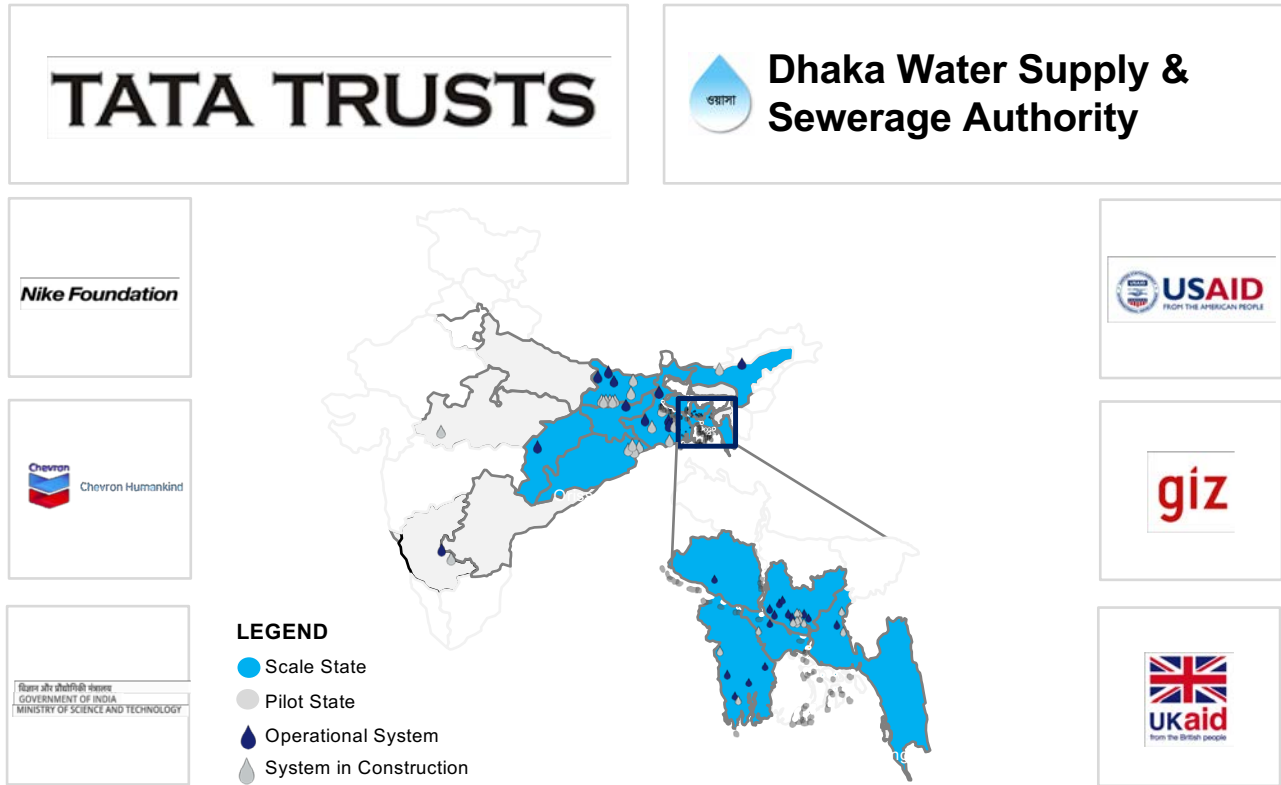
HIX-Nano is recommended for use by the Government of India's RA Mashelkar Committee on Water, CSIR-Bubaneswar, West Bengal Arsenic & Fluoride Task Forces, and has been successfully deployed by the Bihar, West Bengal, Andhra Pradesh, and Maharashtra Public Health Engineering Departments.

S. No.	Title	Current Stage of the Technology	Patent Information	Cost Information	Video	Other Information	Download PDF
	HAIIX: Hybrid Anion Exchange Media based on Fe/Zr nano particles for removal of Arsenic & fluoride from ground water	Technology Ready	Patent filed : No Patent granted : Patent Number US 2013/0274357 A1	Water Cost : 5.00	--	<a href="#">Click here</a>	PDF

Recommended by Government of India

# Drinkwell's Footprint

Drinkwell's technology has seen over 400 deployments across Eastern India (e.g., West Bengal, Bihar, Assam) and Bangladesh (Dhaka, Khulna, Khustia) with leading government (Dhaka WASA, Chattogram WASA, Bangladesh Department of Public Health Engineering), CSR (Unilever), private (Tata Teas), and non-profit (Clinton Health Access Initiative) partners providing over 330,000 people with safe drinking water.



# of Systems Deployed	402
# of Partners	41
People Impacted	330,000+

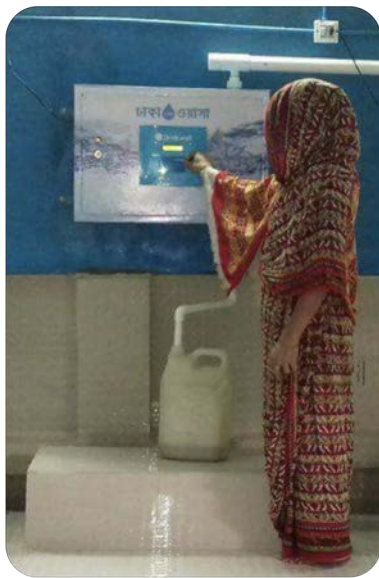
*“The Drinkwell System in West Bengal is by a long way the best of its kind I have seen. The ‘secret’ is that it embodies a holistic approach: sound technology, community organization and involvement, financial planning and management, technical support, maintenance, monitoring, and education.”*

– Peter Ravenscroft, Author of Arsenic Pollution: A Global Synthesis / Former UNICEF Water & Sanitation Specialist

## Impact Monitoring via Water ATMs

Drinkwell Water ATMs simplify complex water system management through **mechanical, digital, and cloud-based automation** thereby **reducing cash leakage, water loss,** and human dependency required to operate a community-based water system.

### How it works



1. Consumers load credit onto a Drinkwell Card via either onsite payment with a local caretaker or via remote recharge facility through mobile money or dealer network.
2. Consumers arrive at water system site and place Drinkwell Card on sensor once to view credit balance and a second time to begin dispensing of water (batch dispensing or continuous dispensing modes available).
3. If continuous mode, consumer removes Drinkwell Card from sensor to stop water dispensing. Remaining balance appears on ATM display.
4. Liters dispensed data transmitted from Water ATM to cloud-based IT backend via GSM connectivity viewable remotely on smartphone/laptop through Drinkwell Portal.

### Key Benefits

Automated water dispensing through either pre-determined batch quantity of 1- 20 Ls per dispensing or continuous mode reduces water loss



Customizable RFID-enabled cards maintain customer balance rechargeable via smartphone app ensuring realtime revenue & account management



Cloud-based Water ATM portal enables realtime view of system utilization, Ls dispensed, revenue, and customer demographic data.



### Contact

Contact your local Drinkwell Sales Representative via email at [contact@drinkwellsystems.com](mailto:contact@drinkwellsystems.com) or phone (Bangladesh: +880 184 728 9600; India: +91 8961353991) to learn more about how you can improve the performance of your water system with our automated water solutions today!



# Corporate Social Responsibility Case Study

Drinkwell has partnered with Tata Trusts to provide safe drinking water across arsenic and fluoride-affected areas pan-India.

**Resin-based Nanotechnology**

**Awareness Campaign**

**Dedicated Caretaker**

**Delivery Service**

**Mobile Money-enabled Water ATM**

**Serves 200 – 800 Households**

**Dedicated Servicing Team**

**Remote Monitoring System**

*1,000 Liter Per Hour Arsenic Removal System in Nalbari, Assam financed by Tata Trusts*

## Drinkwell Arsenic Iron Removal System (Est. May 2017)

<b>Location</b>	Kothora Village, Nalbari District, Assam
<b>Capex Sponsor</b>	Tata Trusts
<b>Operating Partner</b>	Gram Vikash Mancha
<b>Households Served</b>	300
<b>Capacity</b>	1,000 Liters Per Hour
<b>Impurities</b>	Arsenic (Influent: 240 ppb > Effluent: 1 ppb) Iron (Influent: 2.10mg/L > Effluent: 0.24 mg/L)
<b>Daily Avg of Ls Sold</b>	4,650
<b>Operation &amp; Maintenance Capabilities</b>	<ul style="list-style-type: none"> <li>- Prepaid RFID-enabled ATM dispensing system</li> <li>- Online dashboard tracking Ls sold, RFID recharge activity</li> <li>- Smartphone-enabled after sales servicing request system</li> </ul>

## Selected System Sponsors



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## Entrepreneur Case Study

Drinkwell has partnered with Clinton Health Access Initiative to provide safe drinking water across fluoride-affected Indore, Madhya Pradesh.



Drinkwell Fluoride Removal System (Est. September 2018)	
Location	Patadi Village, Dhar District, Madhya Pradesh
Capex Sponsor	Clinton Health Access Initiative, Tata Trusts
Operating Partner	Private Entrepreneur
Households Served	200
Capacity	6,000 Liters Per Day
Impurities	Fluoride (Influent: 3.92 mg/L > Effluent: 0.47 mg/L) TDS (Influent: 282 mg/L>Effluent: 148 mg/L)
Daily Avg of Ls Sold	2,250
Operation & Maintenance Capabilities	<ul style="list-style-type: none"> <li>- Prepaid RFID-enabled ATM dispensing system</li> <li>- Online dashboard tracking Ls sold, RFID recharge activity</li> <li>- Smartphone-enabled after sales servicing request system</li> </ul>

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# Engineering, Procurement & Construction Firm Case Study

Drinkwell enabled Ritewater, a Nagpur-based Engineering, Procurement and Construction firm, expand into new regions in Eastern India (West Bengal, Bihar) and deepen its presence in existing regions (Maharashtra) by providing turnkey services inclusive of technology and system design, trial run, and caretaker training resulting in numerous government contracts to setup both community and piped water systems ranging from 1,000 – 193,000 liters per hour. Thanks to this partnership Ritewater has now pre-qualified for large-scale tenders across Eastern India.



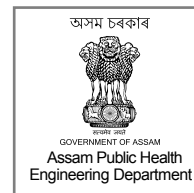
50,000 m3/hr Arsenic & Iron Removal System in Taranipur Village, Barasat, North 24 Parganas



91,500 m3/hr Arsenic & Iron Removal System in Bazitpur Village, Barasat, North 24 Parganas

Services	Drinkwell	Typical Resin Supplier
Tender Submission	✓	✗
System Design	✓	✗
Technology Supply	✓	✓
Trial Run/Commissioning	✓	✗
Caretaker Training	✓	✗
System Troubleshooting	✓	✗

## Selected Implementation Partners



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# Utility Case Study

Drinkwell is helping the Dhaka Water & Sewerage Authority (WASA) become the first megacity across Asia & Africa to provide 100% legal access to safe water for all citizens by 2020 by retrofitting 300 pumps with Drinkwell's technology.

## BEFORE DRINKWELL



## AFTER DRINKWELL



50 - 60%	<b>NON-REVENUE WATER (WASTE)</b>	1 - 2%
None	<b>MONITORING</b>	Real time monitoring of Ls Dispensed, Customer Usage Patterns
None	<b>QUALITY ASSURANCE</b>	Meets Bangladesh Water Quality Standards
Uncertain via musclemen w/ variable pricing	<b>ACCESS</b>	10a – 6p w/ fixed 40 paisa per liter
Cash	<b>PAYMENT METHOD</b>	Mobile money-enabled Via RFID cards

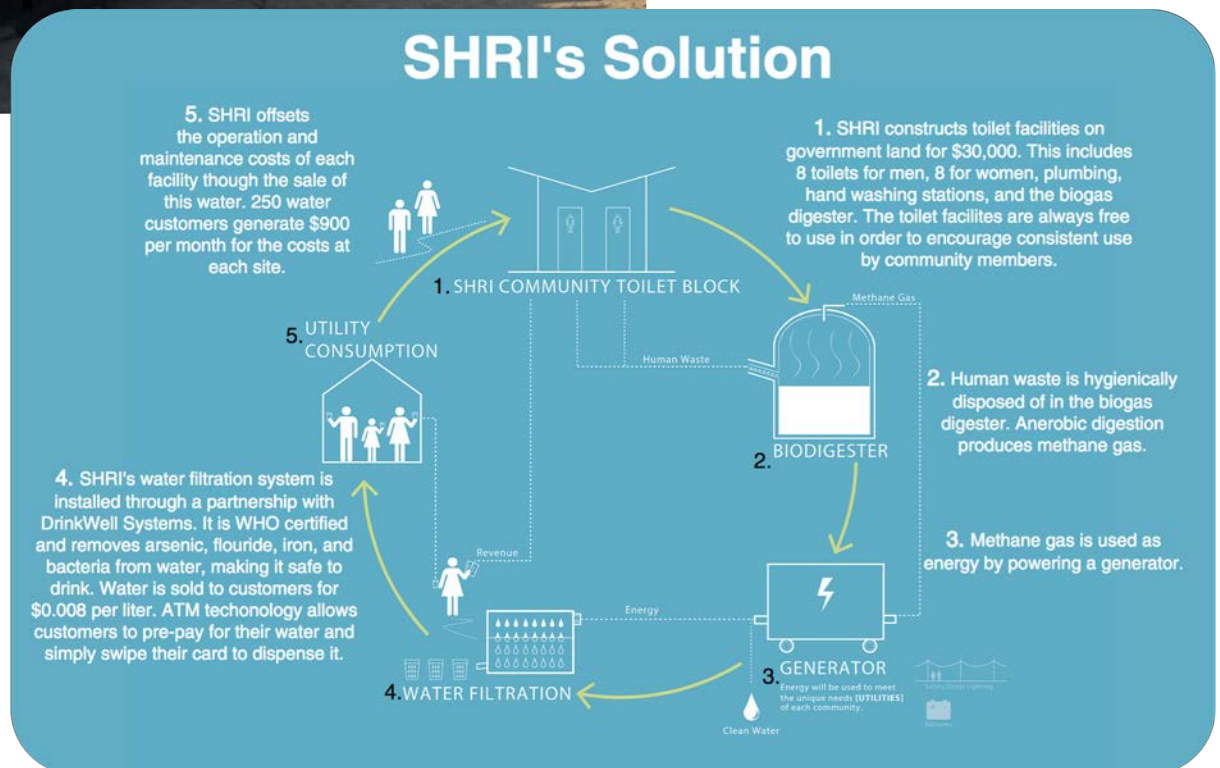
## Selected Awards and Accolades





## NGO Case Study

Drinkwell is enabling SHRI, a Bihar-based NGO, eradicate both open defecation and water access issues by building integrated water and sanitation infrastructure that uses human waste sourced from a community toilet block to power Drinkwell's water filtration system. Water sales finances maintenance of both the community toilet block and water filtration system creating an enduring, sustainable solution. The first system was launched in Supaul, Bihar in March '15 and serves over 200 households with 800 daily toilet users powering the Drinkwell System .



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# How to Partner

Drinkwell partners with Governments, NGOs, and Corporate Social Responsibility (CSR) programs to benefit stakeholders around an organization’s area of operation by providing safe drinking water while also creating jobs, catalyzing economic activity, and improving health.

## Sponsorship Operating Model

- Sponsors would finance the system capital cost and 5-year operation & maintenance costs
- From day one, end users of the system will pay for safe water at a price per liter to be determined by the system sponsor.
- Between years 1 and 5, end user water sales would grow to the point where revenues can finance monthly operation and maintenance costs without the need for subsidies from the CSR Sponsor.

## Site Selection Criteria

Prospective sites should meet 5 criteria:

1. **Land** – Must own a minimum 25 cubic meter space of land that has access to electricity, and with 1,500 HHs in a 3km radius
2. **Electricity** – Sufficient to power 2 HP pump for pumping groundwater to overhead storage tank
3. **Tubewell** – Must have a nearby tubewell that is 100 ft + deep
4. **Experience** – P&L management in any prior business
5. **Team** – Relationships in the community to advocate clean water through enterprise

## Site Selection Process



## Frequently Asked Questions

### 1. How much water can be treated per day with what levels of contamination?

A typical Drinkwell Community System is gravity fed through an Overhead Tank with 5,000 – 6,000 Liter Per Day capacity with an average of 8-9 working hours per day serving 250-300 households at 20 liters per household per day. The system however can be scaled up as needed with a pump driven system by increasing the capacity of the Overhead Tank. The system can treat the highest levels of arsenic and comply with the regulatory limits of arsenic set by the World Health Organization & IS-10500.

### 2. What is the size and weight of a typical system?

A typical Drinkwell Community System is comprised of a 4 nos. FRP column system comprising of pre-treatment, arsenic/ fluoride removal, post-treatment units, UV unit, and ATM dispenser. Size and combination of HIX-nano media & other IX media depend on detail water quality, daily water production, kinetic aspects of the system and media, etc. It is recommended to be designed for each system separately unless 2 sites are identical. As a reference point a typical plant has the following column sizes - col-1 16"x65", Col-2 & 3 - 14"x65" & Col-4 - 12"x48". Besides concentration of target contaminant (e.g. arsenic), separation capacity is influenced by the presence & concentration of other ionic species, competing species, operation pH, separation chemistry & kinetics, bed depth etc.

### 3. What are the expected consumables for a typical Drinkwell System?

Regular consumables are common chemicals like coagulant, sodium hypochlorite, HCl etc. HIX Nano media is regenerable. Regeneration need is expected once in 1-2 years (depending upon water quality, water production, operational practices etc.). Self life of HIX & other IX media is usually >5 years.

### 4. Specifications of the container tanks (raw water & purified water) –material used, size specifications, compliance to standards etc.

A typical Drinkwell Community system has 2 Nos. OHTs 2000 L each (total 4000 L), 1 no. 2000 L capacity. OHT- 3 layered, TW tank- 4 layer plastic tank (conforming IS-12701).

### 5. What is the typical price of a system, as well as pricing for replacement / upgradation parts?

Product pricing for both capital costs as well as ongoing operation & maintenance costs depends on raw water profile, desired capacity, and site location as well as local cost of consumables, overheads, and civil work contractors. Replacements etc. is a part of service/ maintenance agreement. Items covered under warranty (usually given with a detailed technical proposal) are replaced free of cost within warranty period (typically 1 year). A Servicing agreement is decided separately identifying list of services/ activities between Drinkwell and the partner organization.

### 6. We can only fund a registered NGO. Can you help us find one?

Yes. We have several partners and can assist with this process.



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[youtube.com/drinkwellsystems](https://youtube.com/drinkwellsystems)

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