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â??Simple, frequent and non-negotiable monitoring alone can prevent a significant share of waterborne diseaseâ?•

31 January 2026 | Interviews | By Narayan Kulkarni

CLUIX Private Limited, a New Delhiâ??based deep-tech cleantech startup, is redefining water quality monitoring through its AI- and IoT-enabled solutions that ensure safe and accessible water for communities and industries alike. Recently, CLUIX received the Infosys Foundation Aarohan Social Innovations Award, recognising its impactful innovation in the water and sustainability space. In an interview with BioSpectrum India Chitranjan Singh, Founder & Chairman of CLUIX, shared his entrepreneurial journey, leadership vision, and the mission driving this nationally acclaimed innovation.



What single problem in India's water–health ecosystem pushed you to build CLUIX C012?

During my years of service in Defense and later while working closely with communities, I saw a recurring pattern: people were falling sick not because they lacked awareness, but because they simply didn't know their water was unsafe. Testing involved collecting samples, sending them to distant laboratories, and waiting days for reports. By the time results arrived, the damage was often already done. That delay between contamination and consequence deeply troubled me. I believed water testing should be immediate, reliable, and simple enough for frontline workers. That belief became the foundation of CLUIX C012.

How does CLUIX C012 achieve lab-grade accuracy in under 30 minutes, outside a laboratory?

From the beginning, speed without accuracy was unacceptable. I told my son, "We need technology that delivers data fast enough to save lives, not explain harm afterward." Together, we designed CLUIX C012 using APHA-aligned testing methods, controlled reagent chemistry, and precision sensors. The device replicates laboratory discipline in field conditions, ensuring consistency and reliability. By combining calibrated chemistry with embedded intelligence, C012 works like an experienced guide, showing how a test should be done using well-established techniques such as spectrophotometry, nephelometry, and conductivity measurement, and following APHA and BIS 10500 guidelines with reagents that meet NIST standards. It delivers validated, lab-grade results in minutes instead of days.

Which of the 14 parameters is most critical for early disease detection and why?

Two parameters stand out for me: Nitrate and Free Residual Chlorine (FRC).
Nitrate is invisible and tasteless, yet dangerous for infants and pregnant women. It gives no early warning until symptoms appear, which is why routine testing is essential.

FRC, on the other hand, plays a direct role in managing the bacterial load in water. It ensures that any harmful microorganisms present in the water are neutralised, and it continues to protect the water during storage and distribution. Without adequate FRC, even water that leaves a treatment plant in a clean state can become unsafe within hours because bacteria multiply rapidly in pipes, containers or tanks.

Together, nitrate and FRC act as early indicators and early protectors, with nitrate signalling hidden chemical risks, and FRC actively controlling microbial risks. This makes them two of the most crucial parameters for preventing waterborne disease.

What makes your AI and IoT approach fundamentally different from existing water-testing tools?

Most water-testing tools simply measure samples. CLUIX observes patterns. Our IoT-enabled C012 devices generate continuous, geo-tagged, time-stamped data that gives departments like Public Health Engineering Department (PHED) and Rural Development a clear, real-time picture of water quality across multiple villages. Instead of relying on scattered lab reports, they get a unified dashboard that supports evidence-based planning—whether it's optimizing treatment cycles, scheduling maintenance, or directing funds where they are genuinely needed. This makes routine monitoring scalable and turns data into a dependable asset for policy-level decision-making.

AI then transforms this data from information into intelligence. By analyzing long-term trends, seasonal shifts, recurring issues, sudden deviations, and gradual deterioration, AI detects risks much before they turn into public-health crises. It highlights patterns humans often miss and enables early warnings rather than post-incident reactions. This shift from isolated measurements to predictive insight is what fundamentally differentiates CLUIX.

How affordable is the device in real terms for panchayats, NGOs, or frontline health workers?

Affordability for us was never just about lowering the device price; it was about reducing the cost per test and simplifying the entire process so that the people who actually use it, panchayats, NGOs, ASHAs, Anganwadi workers, and frontline health workers, can operate it confidently without technical dependency.

At the same time, the primary buyers are departments like PHED and Rural Development, which already allocate close to 3 per cent of their total budgets specifically for water quality. CLUIX C012 fits naturally within this existing framework. One device can cover multiple villages, enabling frequent and decentralised testing without recurring laboratory costs or logistical delays.

When testing becomes routine, low-cost, and easy to carry out at the last mile, adoption is no longer a challenge. This is how technology becomes truly accessible and scalable by aligning with real user capacity and existing government budgets.

What proof do you have today that CLUIX C012 can reduce waterborne disease risk?

CLUIX is a tool. When used correctly, following water quality frameworks, BIS drinking water standards, and government protocols, it can significantly reduce waterborne disease risk. We already have the SOPs, processes, and public health know how in India. What we lacked was the right tool that could be decentralised, used by frontline workers, and deliver immediate, reliable data. That is the gap CLUIX has filled. By making testing real-time, easy, and accessible at the last mile, we empower systems to act early. In our pilots, contamination was identified well before it turned into illness, allowing timely action and protecting families.

How does GPS-tagged data change accountability for local authorities?

GPS-tagged data removes ambiguity from water safety. Every test is linked to an exact location and time, making contamination impossible to ignore. A polluted source is no longer an abstract report, it becomes a visible point on a map. Authorities can no longer claim lack of awareness. This transparency drives faster response, clearer responsibility, and better governance. When data is precise and traceable, accountability becomes automatic rather than optional.

What barriers do you anticipate in scaling nationwide, and how will you overcome them?

The biggest barrier is trust. Many people still believe accurate water testing can only happen in laboratories. We address this by empowering community members like ASHAs, Anganwadi workers, and local staff to use CLUIX confidently. When people see familiar faces generating reliable results, hesitation disappears. We scale through training, patience, and alignment with government systems, because technology succeeds only when communities feel ownership and confidence.

How will the Infosys Foundation grant accelerate impact over the next 12 months?

The Infosys Foundation grant adds speed and scale to our mission. It allows us to deploy more devices in high-risk regions, expand training programmes, and strengthen real-time monitoring. Faster deployment means earlier detection and quicker intervention. Every month saved translates into families protected from preventable illness. Beyond funding, this support validates our approach and helps us reach communities where timely water safety information makes the greatest impact.

In the next five years, how do you want CLUIX to reshape preventive healthcare in India?

I want water testing to become a habit, not an emergency response. Just as people routinely check blood pressure or sugar levels, communities should routinely check their water. When monitoring becomes simple, frequent, and non-negotiable, water safety turns into a quiet daily practice rather than a reaction to outbreaks. This cultural shift alone can prevent a significant share of waterborne disease.

In the next five years, CLUIX should enable India to move from crisis management to true preventive healthcare through data-driven decision-making. By generating continuous, reliable water quality data from the ground, we aim to equip governments, health workers, and local bodies with the evidence they need to intervene early whether it's adjusting treatment, improving supply infrastructure, or safeguarding vulnerable communities. When decisions are made based on real-time trends instead of assumptions or delayed reports, public health becomes proactive, predictable, and far more efficient. This is the

transformation CLUIX wants to drive.

Do you see potential for CLUIX C012 beyond healthcare?

Yes, absolutely. CLUIX C012 was built using advanced techniques like spectrometry, nephelometry, and conductivity measurement standards that are trusted in laboratories for clinical-quality analysis. Because of its precision, the device can be applied far beyond routine drinking-water checks. It can support point-of-care diagnostics, detect critical chemical and physical changes in water that impact human health, and provide rapid assessments during emergencies such as contamination events, outbreaks, or infrastructure failures.

While healthcare remains our primary focus, the instrument's accuracy and versatility make it suitable for industrial compliance, environmental monitoring, oil and process industries, and even R&D settings where fast, validated measurements are required. For me, the larger opportunity is to build resilience by providing reliable, real-time water intelligence wherever it is needed. Healthcare is simply the first chapter.

Narayan Kulkarni

narayan.kulkarni@mmactiv.com