MIT SMR CONNECTIONS

EXECUTIVE CONVERSATION

# Agenda: Sustainability

Two organizations share their ambitious efforts to improve environmental practices

COMMISSIONED BY:

L&T Technology Services

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**Once upon a time, not so long ago, sustainability was primarily the territory of a handful of environmental organizations trying to get business leaders' attention. Generally, companies believed that improving their environmental practices meant they would have to charge more for their products. So beyond issuing a few press releases, most put off addressing the issue as long as possible.**

That stance began changing dramatically about five years ago. Today, becoming more environmentally and socially conscious is no longer optional; it's a license to do business in virtually every industry.

Stakeholders now expect — even insist — that organizations take real action to reduce their carbon footprints, move away from fossil fuels, and invest in clean energy alternatives. And, as executives from the world's largest companies are discovering, the debate is no longer just about the cost. It's about survival and growth.

L&T Technology Services (LTTS) and PepsiCo Beverage North America (PBNA) understand the sustainability imperative well: They've collaborated on environmental initiatives since 2015. In the last four years, LTTS has implemented water and wastewater projects at PepsiCo locations in Jacksonville, Florida, and Riverside, California. Similar projects are in progress in San Antonio, Texas, and Denver, Colorado. LTTS has also implemented a paperless-factory digital solution at six PepsiCo factories, with plans to implement it across all PBNA sites by 2024.

In this Executive Conversation, Rajendra Gursahaney of PepsiCo and Alind Saxena of LTTS discuss both companies' efforts to achieve sustainability and share their insights about why and how consumers and other organizations alike need to become more serious about recycling.

**"There was a time when companies used to make products that left waste behind as a side stream, with somebody else, usually a government agency, cleaning up the mess. Those days are over. Companies have to clean up the waste they create rather than leaving it for someone else to deal with. The public is watching."**

*— Rajendra Gursahaney, PepsiCo*



▸ **Rajendra Gursahaney:** Today, the ideals of sustainability have spread far beyond a few environmentalists. Governments are talking about it. NGOs [nongovernmental organizations] are talking about it. The employees who want to join our company, people in our communities, everybody and their uncle is talking about it. As an industry, we have to respond for all the right reasons. Essentially, if you aren't working on the sustainability agenda, you'll get run out of town.

We've seen it happen in many, many places, including in our own company, where people joined forces and told us to improve — or else. Sustainability has become front and center just about everywhere. For instance, we see it when we go to a college and try to sell our soda. The purchasing manager, often a student, asks, "Can you tell me about your sustainability journey?" This transition has started playing into overall decision-making. In a couple of cases, we have even won contracts because we were perceived as more sustainable and more caring about the environment than our primary competitor. I think that demonstrable sustainability is only going to get more and more essential to everything we do.

▸ **Alind Saxena:** Quite true, Rajendra. There is a very real need for change around sustainability across industries. As a global ER&D [engineering research and development] company, LTTS is also witnessing this transition at the ground level.

In our organization, we thrive when our customers embrace change. Customers generally make those changes when motivated by different market, regulatory, and social pressures. From a business perspective, we see huge potential as sustainability becomes a mainstream driver.

By conservative estimates, we are looking at industry spending of close to $3 trillion on renewable energy alone by about 2027. These investments will only accelerate as more industries awaken to stakeholders' perceptions and demands around sustainability.

Earlier this year, we revisited our vision, mission, and values and the question of who we want to be for the next five years. Our vision statement for that time period is: "Engineering a sustainable tomorrow through technology and innovations."

With innovation at our core, we are challenging the status quo, continuously leveraging technology to scale for the future, and inspiring new possibilities for our customers.

As we constantly strive for multidimensional growth, we're also holding ourselves accountable for creating a sustainable world and delivering positive outcomes that transcend business boundaries. With the ability to engineer change, and with the effective use of technology, we are committing our energies toward achieving environmental stewardship, driving social development, and ensuring economic progress for all our stakeholders.

To deliver on this commitment, we have created six "big bets" in technology[1] — three of which are purely around sustainability. The first focuses on sustainability as a practice by itself. The second is around electric autonomous connected vehicles (EACV). The third involves digital manufacturing services to forge the factories of the future.

These initiatives are crucial for us, with the sustainability focus forming the foundation of a robust growth trajectory.

We have set up several state-of-the-art laboratories to support these efforts, including the first of its kind EV [electric vehicle] lab in India. In 2019, about 2.5% of global new car sales were for electric vehicles; by 2020, that had risen to nearly 9%.[2] By 2030, it could hit 60%.[3]

So there's a huge jump that is happening, and our labs help enable our customers to test the different products that will be coming out.

Just last quarter, we hired more than 1,500 engineers. We're trying to teach our entire workforce to improve their approaches to solving client problems. We're also looking at simulations and platforms to help enable the scale our customers are seeking. Our Global Engineering Academy, an industry trendsetter, is helping drive this focus on leveraging human capital for a sustainable future.



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## WATER, ENERGY, AND PLASTICS

▸ **Gursahaney:** At PepsiCo, our biggest focus areas for sustainability are water, energy, and plastics. We're also working on effective waste management, minimizing the amount of waste that goes into the dumpster and, ultimately, to the landfill. But our big challenge is water. The key metric, which we call the water use ratio, or WUR, is based on how much total water comes into a factory in the numerator, divided by how much water leaves the factory as finished beverage product in the denominator.

This metric takes into account all the water we use for everything, from putting into beverages to processing to sanitation to hosing the floors and washing our trucks — everything. Theoretically, you should be at a ratio of 1:1, where every drop of water that comes to your factory should eventually go out as a drop in the product. That would mean you have zero waste, what we call zero liquid discharge. That's what we're working toward.

There was a time when companies used to make products that left waste behind as a side stream, with somebody else, usually a government agency, cleaning up the mess. Those days are over. Companies have to clean up the waste they create rather than leaving it for someone else to deal with. The public is watching.

We had an incident in a city in the southern part of India at one of our factories several years ago where we had borewells. There was a demonstration outside our factory, with local residents saying we were using up all their water and drying up the riverbeds and the underground water table. Politicians got involved. NGOs got involved. If we hadn't responded, it's likely we would have been told to shut down our operations and get out of there. Instead, we improved our efficiency to reduce the amount of water used for non-beverage purposes. We invested in technology to harvest rainwater and return it to the water table. That factory today is a net-zero water consumer: We put back into the ground more water than we take out for beverage making.

On average, somewhere between 90% and 93% of our products is water. The rest is other ingredients — flavors and so on. So water is big. And if you can find a way to cut wastewater and use water mindfully, that's key. That's one of the biggest goals we're working on.

The second is energy, whether it's from electricity or natural gas. Some beverages are microbiologically vulnerable because they don't contain preservatives. Gatorade is a perfect example. To prevent spoilage, you have to thermally pasteurize the product. The temperature of the water we receive from the city supply is normally somewhere between 50 and 60 degrees Fahrenheit, and we're heating that up to almost 200 degrees Fahrenheit to kill the bacteria. Then we cool it down again after filling the beverage in the bottle. We do some heat exchange to reduce energy usage. But we're exploring how to take the energy out of this operation completely. We are looking to see if there's a better way to get the same quality, the same microbiological robustness, without consuming fossil fuels.

The third big area is plastics, which have earned a bad name over time. Plastic is very convenient. It was developed based on consumer demand. Cans and glass bottles used to be all we had. But glass bottles were heavy and inconvenient. Also, they weren't resealable. Cans are light and convenient, but they aren't resealable either.

That's how the plastics industry was born. Here was a beautiful package. It cost the same. It looked attractive. You could put labels on it. You could put different shapes on it. And it was resealable. It was an excellent vehicle for the person who wanted to take a drink while on the road. But then the industry and consumers began to understand the environmental



impact in terms of fossil fuel usage, damage to the wildlife in the oceans, and lack of degradability. PET [polyethylene terephthalate] plastic, which is widely used in the beverage industry, takes an estimated 450 years to decompose in the ocean,[4] and, in general, plastics can take up to 600 years to decompose in landfills.[5]

We have to do better with recycling. In the United States, depending on which state they live in, consumers pay a 5- or 10-cent deposit for bottles or cans, which they can redeem when they recycle. But unfortunately, that 5 or 10 cents isn't a big enough motivator for many people to recycle. In fact, the overall recycle rate for plastic bottles in the U.S. is less than 27%.[6] It's sad. We've got to do better.

So we're doing educational outreach. We're working with companies that are developing technologies to repurpose plastic back into plastic beverage containers. We're supporting them technically and financially. We're giving them the opportunity to test their plastic in our factories and to experiment and improve their technology for the overall good. We're buying the recycled resin from them, making bottles out of it, putting the product in it, and tracking how the product is behaving — the shelf-life issues, gas-loss issues, leakage issues, appearance issues, and all of that.

We're giving these companies platforms. We're doing it at a cost to our own organization, yes, but we're doing it because it's the right thing to do. Ultimately, we will have plastics that are made without using fossil fuels. We'll move entirely to plant-based plastics or those developed from recycled materials, or we'll use other packaging materials that are biodegradable, recyclable, or compostable.

We partnered with a company that was developing PET out of rice husks and discarded cardboard boxes. We're also looking at ways to make something that's as good as virgin plastic starting from discarded bottles. That's exciting technology if we can convince people to not throw bottles in the trash and instead toss them in the recycling container. Processing "clean" recycled plastic material is a lot easier and less expensive than harvesting it from mixed waste.

But it's a challenging effort in terms of both addressing the technical issues involved with improving plastic and the difficulty of changing consumer behavior.

We have publicized our goals and progress toward making improvements in those three areas: water, energy, and plastic.[7] We've also established the targets we're going to meet and created a road map for how we're going to get there.

▸ **Saxena:** LTTS has been supporting PepsiCo in achieving its water and waste management targets. We have also developed an Energy and Sustainability Manager solution to transform energy management practices. Our smart water management platform leverages cutting-edge digital capabilities for driving energy optimization, enhancing leakage detection, and streamlining water demand prediction. We're also rolling out R&D programs to develop even more focused solutions to help customers like PepsiCo meet their sustainability targets.

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## INVESTING IN – AND PAYING FOR – SUSTAINABILITY

▸ **Gursahaney:** Many years ago, our resource conservation team used to get the short end of the stick on capital investment because, in many cases, their initiatives weren't as financially viable as other competing initiatives. Often, they didn't save any money at all, and, as a result, they didn't get as much funding as they needed or deserved. So our management lowered the threshold for resource conservation projects. For instance, if a productivity project previously required a return on investment [(ROI)] of 25% or 30% to get funding, the resource conservation projects would now only require an ROI of 15%. That change supported resource conservation projects that otherwise wouldn't have received funding by lowering the bar for their approval.

That approach helped the low-hanging fruit projects for some years. Now we carve out a certain amount of dollars from our capital budgets and reserve it solely for resource conservation projects. That way, they're not competing for cash with the rest of the annual capital budget for other projects that are subject to the normal ROI requirements.

Has this reduced our total capital availability for other initiatives? Yes. But has it helped the ReCon [Resource Conservation] journey? Absolutely.

▸ **Saxena:** Our parent company, Larsen & Toubro, has a major construction business, which requires a lot of carbon management. For LTTS, we have designated 2030 as the deadline for becoming carbon-neutral overall internally. We are committed to getting there sooner rather than later. We've kicked off several initiatives in our organization to meet or beat those commitments, including working with several clean energy providers. We are looking at solar — and, in some cases hydrogen and others — as alternative energy sources. We are considering all of those to see how quickly we can get off fossil fuels altogether.

We included sustainability in our vision statement to ensure that it receives sufficient focus both internally and externally. Sustainability is central to our purpose. At least 80% of our customers are becoming very, very conscious about how they want to work with us, and about the areas they want us to focus on to help them meet their goals and be part of their sustainability journey.

▸ **Gursahaney:** With every new project we do, with every new factory we build, we're building in sustainable means and methods from day one. Looking again at water, our factories traditionally have a WUR of 1.4 — that is, one gallon of water that goes into the beverage also uses 0.4 gallons of water that don't go into the beverage. We're trying to get closer to 1:1, with no waste generated. Our new factory in Denver, Colorado, for example, is targeting a WUR of 1.2, so only one-sixth of the total water coming into the factory won't be used in the finished beverage.

And we're still working on how to reduce that. We've got a pilot project for using that [remaining percentage] in toilets, landscaping, and cleaning. Instead of taking city water for flushing my toilet, can I use the wastewater for flushing? With every new initiative we do, with every new factory, we're already going in with that goal in mind. We're also advocating for co-locating with companies in industries that don't need the same high-quality water that we use, such as cement producers, oil and natural gas companies, mining and metals operations, and so on. They could easily use our wastewater in their processes instead of taking fresh water from the city. One person's trash, so to speak, could and should be another's treasure.

Another question is: What do we do about existing factories? Will our sustainability efforts require capital? Yes. But at least our management is saying that we'll reserve extra capital to deal with these things. So, overall, is there less capital floating around? No, because our annual capital budgets have been increased to accommodate sustainability initiatives.

In addition, more and more people are willing to invest in the technology needed to support sustainability initiatives. Investors are ready to invest in R&D, the trials and resources, because they know there's a pot of gold at the end of the rainbow if they come out with technology that works. And the



cost of that technology goes down over time. We have a global business team that brings these entrepreneurs together. We have regular touch-base calls, where these companies present their product offerings, and we talk and share ideas.

But more and more people are getting the idea. Just look at what's happening to solar panels. There was a time when a square foot of solar panel cost $1,000. Today, the price is one-tenth of that amount. The same goes for battery storage for electrical vehicles. As more people show interest in sustainable technologies, it's encouraging people to follow suit because they see a profitable opportunity and that, in turn, is helping to drive down costs. It's a circle, and it's getting better and better and better.

▸ **Saxena:** Every sector, every industry, now has to align its business objectives with sustainability goals. Nine out of 10 of our customers have sustainability as one of their own major initiatives. We actively engage with our customers in developing solutions that would not just enable their vertical-specific sustainability targets, but also help build industry-leading solutions that are applicable in many domains.

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## ENGINEERING'S ROLE IN FINDING SUSTAINABLE SOLUTIONS

▸ **Saxena:** We find that holistic solutions come through a combination of different technologies. When we talk to customers, we learn how they're all approaching similar problems, which we then stitch together to drive the overall solution. That's helpful in many ways because sometimes people in a particular company, or a particular industry, can't see the whole picture. We spend our time bringing together what we've learned about multiple technologies from many different customers to apply across industries where we can.

▸ **Gursahaney:** In our organization, product and process R&D is very important. Our product is something that people taste and smell. You can't play around with a product like ours without being extremely careful. I see engineering as the way to get things done and R&D as the vehicle to assess whether a particular activity is possible and what ramifications it could have in terms of taste and consumer perception — in short, the brand. In our organization, R&D is front and center, and I work very, very closely with my R&D counterparts. I'm always working with them on zero discharge. I believe that for every drop of water that I'm putting in the drain today, I can potentially put the same amount back in my beverage. I think it's doable if we put enough brains and resources and effort toward that goal.

▸ **Saxena:** You can come up with an idea, but it's of no use if you don't get it implemented correctly. That's where engineering plays a key role. Putting together those answers is crucial, and doing so successfully, within a specified time frame and with clear ROI, is especially important.

We want to make sure every piece of knowledge that comes to us is put into solutions as we go forward. So engineering will continue to be at the center.

As companies invent new products, there are still a lot of legacy products out there, especially in industrial environments, from motors to pumps to machines on the shop floor to other types of equipment that consume energy and aren't as optimized



as we would like. So while we're looking at solutions for new products, there's also a huge demand — and a requirement — for ensuring that we get the legacy products and equipment to be at least two or three times better optimized than they are today. We're playing a major role here by bringing our solutions to these existing products and infrastructures. For example, for a major aerospace engine manufacturer, we're connecting their existing machines on the shop floor to optimize their operations. For another customer, we are optimizing the resource consumption in their current buildings.

▸ **Gursahaney:** There's a lot of pressure on the industry to do better, which is good. Nobody likes pressure, but this is good pressure. Unless you have it, there's no motive to do better. No one thinks it's a bad business proposition to be environmentally conscious. Not anymore.

We've been at this for more than 10 years already. A lot of companies set very lofty goals, and then after they've done the press conference, everybody leaves, and nobody follows up. But we put our goals right out there in the public domain. We publicize our commitments. You, the consumer, the shareholders, the NGOs, the government, Wall Street — you'll all hold us accountable.

▸ **Saxena:** Aptly put, Rajendra. What global businesses need to realize is that discussions and planning are important for ensuring sustainability, but ultimately, it's your commitment to the on-ground transition and transformation that will truly set you apart.

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## ABOUT PEPSICO

PepsiCo products are enjoyed by consumers more than 1 billion times a day in more than 200 countries and territories around the world. PepsiCo generated more than $79 billion in net revenue in 2021, driven by a complementary beverage and convenient foods portfolio that includes Lay's, Doritos, Cheetos, Gatorade, Pepsi-Cola, Mountain Dew, Quaker, and SodaStream. PepsiCo's product portfolio includes a wide range of enjoyable foods and beverages, including many iconic brands that generate more than $1 billion each in estimated annual retail sales.

Guiding PepsiCo is our vision to "be the global leader in beverages and convenient foods by winning" with PepsiCo Positive (pep+). Pep+ is our strategic end-to-end transformation that puts sustainability at the center of how we will create value and growth by operating within planetary boundaries and inspiring positive change for planet and people. To learn more, visit www.pepsico.com.

## ABOUT L&T TECHNOLOGY SERVICES LTD.

L&T Technology Services Limited (LTTS) is a listed subsidiary of Larsen & Toubro Limited focused on Engineering and R&D (ER&D) services. We offer consultancy, design, development and testing services across the product and process development life cycle. Our customer base includes 69 Fortune 500 companies and 57 of the world's top ER&D companies, across industrial products, medical devices, transportation, telecom & hi-tech, and the process industries. Headquartered in India, we have over 20,800 employees spread across 17 global design centers, 28 global sales offices and 89 innovation labs as of March 31, 2022. For more information, please visit www.ltts.com.

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