



Conveyor belts at work in Sustane's fully-automated "repurposing" facility in the District of Chester. Photo courtesy of Kevin Cameron.

Rethinking and Repurposing Landfills

Written By Evert Lindquist

One innovative Nova Scotia company is recycling an impressive 90 per cent of what goes into landfills, but is it solving one problem only to contribute to another?

Just off Nova Scotia's Highway 14, in the forests near Card Lake, a 40,000-square-foot facility is "reinventing" tens of thousands of tonnes of waste to be used again as plastics, fuels, and fertilizers, instead of being landfilled.

Sustane Technologies, at its plant in the Municipality of the District of Chester, processes 70,000 tonnes of waste annually, receiving items locally and from Annapolis Valley, Lunenburg County, and Halifax Regional Municipality.

"We recycle or repurpose 90 per cent of what's currently going to a landfill," says Kevin Cameron, Sustane's senior vice-president of business development.

Inside the plant, a system of presses, brushes, and conveyor belts separates biogenic (produced by living organisms or biological processes) matter such as paper, cardboard, diapers, and food, from recyclables such as plastics, metals, and glass.

With 17 stages of separation, it's also a combustion- and leach-free process that the company describes as "carbon negative," since the plant runs on energy from recycled material. And though thirty staff operate the plant, it gives the impression of running itself.

"There's no hand-picking of waste," Cameron says. "It's all mechanized. We have a control room that most people say looks like an air traffic control room."

Clear-bag garbage, plastic bags, fishing gear, gardening containers, food waste, and agricultural plastics are transformed into fuel for making new plastic (a process called pyrolysis, where organic matter is heated without oxygen), synthetic diesel, organic fertilizer, and renewable natural gas to fuel vehicles or generate electricity. A quarter of the fuel Sustane creates powers the plant, while most of the remainder is shipped to Europe and the Gulf Coast to be made into new plastics.

Chester has about 12,000 residents, but its landfill catchment area encompasses as many as 75,000 people, says Matthew Blair, the district's infrastructure and operations director, and the individual handling much of Chester's landfill portfolio.

"We'll do everything we can to support [Sustane's concept] in the goal of reducing landfill waste," he says.

Waste sent to landfill generates a huge amount of greenhouse gas as a result of solid and organic matter generating methane- and carbon dioxide-producing bacteria that helps decompose things — with municipal solid waste landfills accounting for almost a quarter of Canada's total methane emissions.

Sustane, however, claims to divert enough landfill waste to prevent an estimated 50,000 cars' worth of greenhouse gases being generated outside its operations each year. The overall emissions from Sustane's plant itself are "extremely low" compared with a landfill's environmental footprint, according to co-founder and CEO Peter Vinall, though this doesn't account for greenhouse gases emitted from product shipping and other external operations. But innovating in the \$1.7-trillion waste management industry isn't easy, Cameron notes.

"This is a space that's not experienced a great deal of change over a long period of time," he says. "A lot of bright people have tried to crack this space with new technology, and there've been more failures than successes."

Nova Scotia was scrutinized in a 2019 provincial report for its decades-old waste resource strategy and "over-supply of landfills." The province's 2023 landfill waste audit found less organic and plastic material is ending up in these landfills over time, but plastics still make up about 52,000 tonnes, or 16 per cent, of landfilled material, according to Kurt Laskow-Pooley, programs and development director for the recycling non-profit Divert NS that conducted the audit.

Divert NS provided Sustane with \$135,000 in innovation funding which helped finance a filter system it uses to salvage and clean diesel.

"It's really decreasing the dependence on crude oil by breaking down that waste material and [it] going back into the building blocks of making new plastic material," Laskow-Pooley says.

Cameron, on his end, refers back to the limited options currently available to deal with landfills.

"We've found kind of a sweet spot in low-grade plastics...that would typically be very difficult for communities and companies

to find markets for. We're able to process that, otherwise most of that is destined for landfill."

Limits to what waste Sustane can process are minimal: construction and demolition matter, along with "white goods" such as washers, dryers, stoves, and fridges. Asked which other items he'd like innovation on, Blair says wood. "Dirty" wood that's painted, stained, or treated often gets landfilled.

"That's something we would like to see a secondary market for," he says.

Despite Sustane repurposing most types of landfill material, Cameron says it gets criticized for heating waste such as plastics, amid concerns of releasing toxic substances. But while landfilling or incinerating plastic is environmentally harmful, the pyrolysis method of using temperatures around 400 C or higher to break the plastic back down into oil avoids emitting pollutants — though the greenhouse gases needed to power this process has made it a controversial "solution" in literature.

"The people that are in various departments of environment that you would think would be most supportive are actually the most skeptical," Cameron says. "In fairness to them, they've seen a lot of failures in this space."

Another criticism from environmental groups is Sustane's emphasis on revitalizing waste material, rather than reducing the creation of those materials in the first place.

"Sustane's model is only one example of waste resource management," Laskow-Pooley notes. "We always encourage Nova Scotians to look to prevent material generation in the first place."

He says it's also important to have multiple options for waste-to-energy processing, and multiple end markets where that recycled energy goes. Following through on that premise has led Sustane to partner with out-of-province and -country jurisdictions such as Wetaskiwin, Alta., and Washington State, planning new waste transformation facilities, implementing circular waste practices in smaller communities, and creating dozens of jobs.

Going forward, Cameron says that Sustane is planning a second, larger plant for Nova Scotia, or possibly elsewhere, that would accommodate 120,000 to 200,000 tonnes of waste per year. Cameron estimates it'll take \$60 to \$90 million to build, partly so it has full-scale anaerobic digestion needed to break down organic matter.

And Divert NS's Laskow-Pooley final thought on the technology is one that addresses the real issue many communities, including those around Nova Scotia, are currently faced with.

"Where municipal facilities aren't able to find end markets and aren't able to recycle, companies like Sustane are viable alternatives," Laskow-Pooley says.

The Climate Story Network is an initiative of Climate Focus, a non-profit organization dedicated to covering stories about community-driven climate solutions.

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Evert Lindquist studied journalism and humanities at Carleton University. He's worked for Black Press Media and his environmental work has appeared in outlets such as Hakai Magazine and Canada's National Observer. He has also reported on wetland restoration in Uganda for Farm Radio International. He can also be found forest hiking, paddle boarding, and wildlife watching on Vancouver Island.

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Accessibility: Outdoor Spaces, Recreation Buildings



The Province has taken another important step on the way to an accessible Nova Scotia by 2030 — adopting the first of six accessibility standards. The government has approved the Built Environment Accessibility Standard. It focuses on rules for outdoor and recreational spaces that will be required in the design and planning of new infrastructure starting April 1, 2026.

The built environment includes the spaces where people live, work, learn and play across Nova Scotia. The Nova Scotia Building Code Regulations will be amended to address the accessibility of buildings. Together, the building code and the Built Environment Accessibility Standard will enable a more accessible built environment.

The standard will help ensure things like better parking options, easier access to eating areas and benches in parks, and accessible lockers and pools in new recreation facilities for people with disabilities. In

addition to the built environment, other areas with standards under development include education, employment, goods and services, public transportation and information and communication.

Quick Facts:

- Nova Scotians have been extensively involved in developing the built environment standard and others through committees and providing input on recommendations
- raising awareness of the new built environment standard and educating people about it will continue through 2026
- almost two in five Nova Scotians over the age of 15 identify as having a disability; this number is expected to grow as the population ages
- almost 59 per cent of Nova Scotians with disabilities report experiencing barriers in the built environment
- the accessibility standards will be enacted as regulations under the Accessibility Act.

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