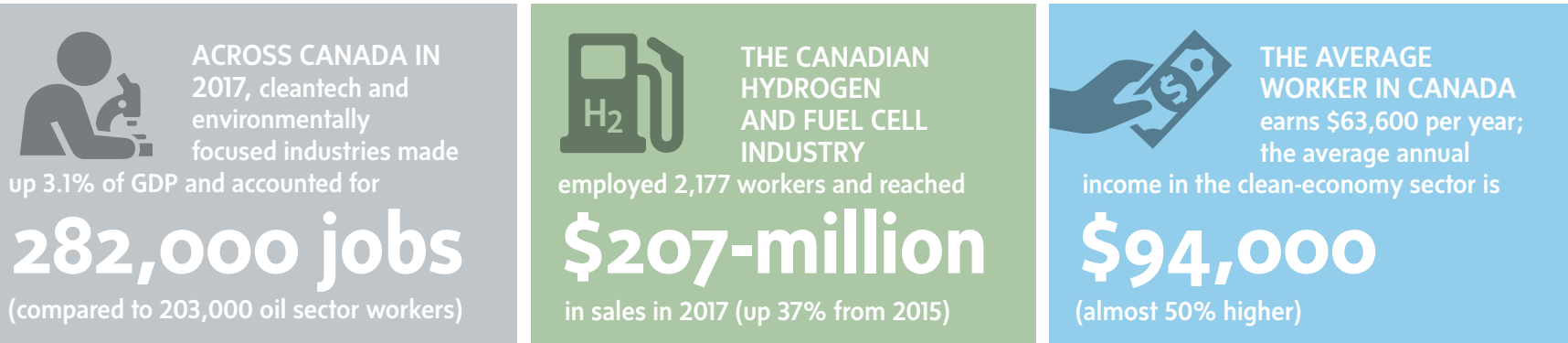
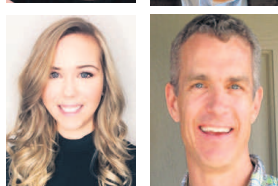


# CANADA’S Clean50

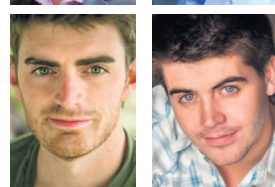
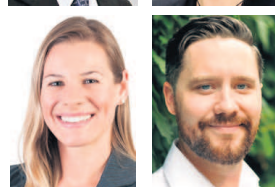
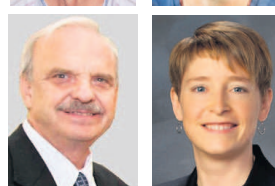
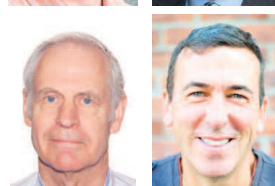
PART ONE of a three-part series highlighting the impact of award-winning sustainability leaders







Earth Day, 2019



## AN OPEN LETTER to OUR FELLOW CANADIANS

We, past and present Canada's Clean50 Award winners, represent a wide cross section of Canadians from business, science, government and academia. We are very concerned that some Canadians and politicians alike have failed to recognize both the tremendous economic opportunity in decisively addressing the increasingly urgent climate crisis, and the looming threat to our shared future, should we continue to ignore it. **We are asking all Canadians to make climate their very top priority in upcoming elections.**

**Taking immediate action to limit climate change, and mitigate its impacts on Canada, needs to be considered an emergency at every level of government.** A recent study shows that Canada's climate is warming twice as fast as expected. The best time to act is now. **We simply cannot afford to postpone a response any longer.**

**Some individuals will try to claim that Canada is not the problem - that the problem is China or India or the USA. Unfortunately, that is simply not true.**

**Countries don't cause carbon pollution: People do!** Canadians may be surprised to learn that on a per-person basis, we Canadians are the worst offenders in the G7\*. Canadians, on average, produce 2.5 times more carbon pollution per person than do the Chinese, 9 times more than do Indians, and 5% more than Americans\*. We are two to three times worse than the Japanese, the English, the French, and the Germans\*. We simply cannot reasonably expect other countries to take meaningful action to reduce their country's emissions, when our emissions are actually rising.

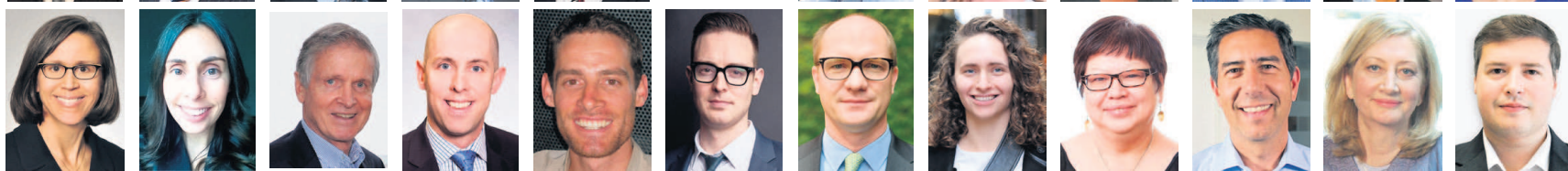
**Others will claim that present warming trends are part of a "natural cycle".** Science clearly tells us that is not true, that **in fact temperatures should actually have been decreasing** each century over the past 6,000 years\*. Instead, temperatures have risen steadily, and the 5 hottest years ever recorded have been the last 5 years\*. Climate change is real - and by both burning too many carbon based fuels - and cutting down the trees needed to absorb that carbon, humans are responsible\*.

**Some politicians claim that "Carbon Taxes Kill Jobs" or that they don't work. Neither claim is true.** Leading economists around the world agree: Charging polluters is the very best way to cut emissions. Overwhelming evidence shows that taxing GHGs leads to reductions in GHGs and spurs investment in infrastructure, new technologies and building renovations by companies and individuals. Growth that creates companies, and more jobs – not fewer – while improving the environment.\*

**Leading the fight against carbon pollution offers Canadians the chance to share in a massive \$30 trillion market opportunity by 2030\*.** That's 18 times Canada's entire present GDP\*. As current leaders in the clean tech industry, Canada is well positioned to continue growing with this market. Over 280,000 Canadian workers are already employed in "green economy" jobs\*, and Canada ranked third on a recent list, with 12 of the top 100 clean tech companies in the world\*. Charging pollution taxes will only increase the number of Canadian companies creating clean tech solutions and jobs. And while we know many of our industries are declining, jobs in the "green economy" continue to grow, and at \$94,000, pay 48% better than the average Canadian job.

When deciding who will earn your votes, now and in years to come, we urge you to vote only for candidates who have a credible plan to cut carbon emissions.

**We ask you to demand that our leaders seize this opportunity to ensure we both slow down climate change, and build the most prosperous, lowest carbon future we can give to ourselves and our children: An economy that will offer Canadians a healthy environment, and growth and prosperity for years to come.**



Where shown, both the Clean50 honouree and their organizations support this message:

Top left to right by row. ROW 1. [Guy Adam](#) Alliance Magnesium | [Wayne Addison](#) Kiko Water Systems | [Kerry Adler](#) CEO, SkyPower Global | [Meredith Adler](#) Student Energy | [Kazi Ahmed](#) CEO, Betterfrost Technologies | [Celine Bak](#) Analytica Advisors | [Kody Baker](#) CEO, VeloMetro Mobility | [Helle Bank Jorgensen](#) Competent Boards | [Lisa Bate](#) Chair, WorldGBC | [Mike Battistel](#) President, Cascadia Windows | [Eric Bauce](#) Université Laval | [Eric Beckwitt](#) Freightera | ROW 2. [Mikele Brack](#) UPPlift | [Kevin Brady](#) Sustainable Enterprise Consulting | [Bryan Buggiey](#) Vancouver Economic Commission | [Stephen Cheeseman](#) Chinook Power | [Eric Chisholm](#) Purpose Building | [John Coyne](#) Vice President, Unilever | [Ron Dembo](#) CEO, Zerofootprint Software | [Frank Dottori](#) CEO, WRC Timber | [Frances Edmonds](#) HP Canada | [Stewart Elgie](#) Smart Prosperity Institute | [Ted Ferguson](#) President, The Delphi Group | [Aaron Freeman](#) Pivot Strategic Consulting | ROW 3. [Miranda Fuller](#) Oxford Community Energy Coop | [Mike Gerbis](#) CEO, GLOBE Series | [John Grace](#) UBC | [Tim Gray](#) Environmental Defence | ROW 4. [Jim Harris](#) Strategic Advantage | [Brett Henkel](#) Inventys | [Charles Hopkins](#) UNESCO Chair York University | [Celesa Horvath](#) Ventus Development Services | ROW 5. [Mohamed Khalil](#) CEO, Pyrocycle | [Dr. Patrick Kiely](#) CEO, Island Water Technologies | [Joanna Kyriazis](#) Clean Energy Canada | [Trevor Langdon](#) President, Green Standards | ROW 6. [Dustyn Lanz](#) Responsible Investment Assoc. | [Jean Luc Lavergne](#) CEO, Lavergne Groupe | [Steve S.J. Lee](#) 3% Project | [Peter Love](#) Love Energy Consultants | ROW 7. [Damon Matthews](#) Concordia University | [Paul Mertes](#) CEO, CircuitMeter | [Alex Mifflin](#) SK FILMS | [Tyler Mifflin](#) SK Films | ROW 8. [Rob Niven](#) CEO, CarbonCure | [Sandra Odendahl](#) CMC Research | [Nicholas Parker](#) Parker Venture Management | [Emily Partington](#) Quinn & Partners | ROW 9. [Simon Pickup](#) CEO, Hydra Energy | [Gavin Pitchford](#) CEO, Delta Management | [Mario Plourde](#) CEO Cascades | [Catherine Potvin](#) McGill University | ROW 10. [Tony Pringle](#) Quinn & Partners | [Juergen Puetter](#) Renewable Hydrogen Canada | [Grace Quan](#) CEO, Hydrogen In Motion | [Francisca Quinn](#) Quinn & Partners | ROW 11. [Tom Rand](#) ArcTern Ventures | [Fidel Reijerse](#) CEO, RESCo Energy | [André Rochette](#) CEO, Ecosystem | [Dianne Saxe](#) Saxe Facts | ROW 12. [Craig Scott](#) Ecology North | [Elizabeth Sheehan](#) Climate Smart | [Merran Smith](#) Clean Energy Canada | [Shirley Speakman](#) Cycle Capital | ROW 13. [Christie Stephenson](#) Dhillon Centre UBC | [Coro Strandberg](#) President, Strandberg Consulting | [Katie Sullivan](#) Managing Director, IETA | [Bruce Taylor](#) CEO, Enviro-Stewards | ROW 14. [George Tsintzouras](#) CEO, Alert Labs | [Wal van Lierop](#) Chrysalix VC | [David Van Seters](#) Sustainability Ventures | ROW 15. [Doug Webber](#) Purpose Building | [Jonathan Webster](#) CEO, EnvAerospace | [Lloyd A. Bryant](#) | [Jim Burpee](#) | [Chris M Campbell PhD](#) | [Richard Corley](#) | [Dana Decent](#) | [Brian Denney](#) | [Audrey Dépault](#) | [Chantale Despres](#) | [Ron Dizy](#) | [Tom Ewart](#) | [Diane Kilcoyne](#) | ROW 16. [Karen Lockridge](#) | [Jennifer McLaughlin](#) | [Antony Marcil](#) | [Darryl Neate](#) | [Chad Park](#) | [Kevin Quinlan](#) | [Dan Rames](#) | [Shoshanna Saxe](#) | [Kekinusugs Judith Sayers](#) | [Ron Seftel](#) | [Vicky Sharpe](#) | [Serguei Tchertok](#) | Not Pictured: [Keyvan Cohanin](#) | [Joan Prowse](#) CineFocus Canada

\*every claim made in this letter is backed up by fact. Full explanation of the details are available at the on-line version of this statement, which can be found at [www.clean50.com/2019openletter](http://www.clean50.com/2019openletter)



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# CANADA’S Clean50

PART TWO of a three-part series highlighting the impact of award-winning sustainability leaders



CANADA’S GREEN BUILDING INDUSTRY generated approximately \$23.45-billion in GDP in 2014 and supported more than

**297,000 jobs**

across Canada



THE CLEAN ECONOMY ACROSS THE WEST COAST OF NORTH AMERICA grew by 18.9% between 2010 and 2014, adding nearly

**92,000**

green jobs over that period



ALBERTA’S WIND ENERGY SECTOR will generate \$3.8-billion in local spending by 2030, including nearly

**15,000**

person years of employment

Source: Delphi Group

## A GROWING PASSION FOR TREE PLANTING

CN efforts deepening community connections

**WHEN IT COMES TO MOVING FREIGHT AND PASSENGERS** over long distances in an economical, energy-efficient and environmentally friendly manner, railway locomotives are the original green machines. “Rail is one of Canada’s climate-change solutions,” says Chantale Despres, sustainability director for Canadian National Railway (CN). A number of facts support this assertion. Rail is four times more fuel efficient at moving freight over the same distance than heavy trucks, reducing greenhouse gas (GHG) emissions by as much as 75 per cent. A single train can replace 300 trucks or more, reducing road congestion and promoting traffic safety. Trains can move a tonne of freight more than 200 kilometres on a single litre of fuel. Additionally, over the past 25 years, CN has further reduced GHG emissions from locomotives by 40 per cent, partly through the use of renewable fuels such as biodiesel.

In 2011, CN doubled down on its commitment to sustainability by launching EcoConnexions, a suite of programs designed to support the railway’s environmental

“**At CN, we strive to be a good neighbour and our goal is to make the communities we serve safer, stronger and more sustainable, and one of the things we came up with in 2012 is a program called From the Ground Up.**

**Chantale Despres,**  
sustainability director for Canadian National Railway



CN pensioners and employees are joined at a CN EcoConnexions tree-planting event on September 8, 2018, by London MP Kate Young (kneeling on left) and London City Councillor Anna Hopkins (kneeling on right). CN

strategy. Originally conceived as an employee engagement tool, it has grown to become a way of expanding engagement and developing stronger partnerships in communi-

ties where the railway operates in both Canada and the United States. “At CN, we strive to be a good neighbour and our goal is to make the communities we serve safer,

stronger and more sustainable, and one of the things we came up with in 2012 is a program called From the Ground Up,” says Ms. Despres. It calls for the planting of trees, and so far, a lot of them have been planted. This year, CN will reach the two million mark, making CN the biggest tree planter in North America, after the forest industry itself. Decisions are made at the local level as to what kinds of trees to plant and where to place them, with the effectiveness of the program fertilized by the expertise of organizational partners such as Tree Canada and America in Bloom. To date, trees have been planted in 263 communities along CN’s network. CN’s programs also include tree planting and mass reforestation projects.

The program has proven immensely popular across the network, says Fiona Murray, CN’s vice-president of Public and Government Affairs. “Each community designs its own project, which typically means including multiple stakeholders who help us engage with the communities and help people in the communities engage with each other,” she says. Considering the size of the CN network, it’s not surprising that the range of initiatives is vast and diverse, everything from planting Great Oaks along the Mississippi to conifers around Fort McMurray, Alberta, which was so recently devastated by fire. In many locations, the trees are planted in co-operation with local leaders. Schools and students are also included in the process, so the next generation can learn about the importance of trees and participate in both their planting and subsequent care.

Ms. Murray adds that reaching the two-million tree milestone is significant in a year in which the railway is celebrating its 100th anniversary. Multiple events are planned, including A Moving Celebration, a movable container village, in which CN 100-themed interactive containers will stop in cities across North America and invite CN’s extended family and the general public to join the fun. “The tour will have something for everyone,” she says. “There will be history to discover, interactive safety and innovation exhibits, music, local food to eat, as well as education about the tree-planting program. We’re hoping that Canadians and Americans across our network will join the celebration and see that we are part of the fabric of the continent, part of its economic backbone, part of its future and part of the sustainability solution. And who doesn’t love trees? They’re something we can all agree on. They’re good for communities, good for the environment, and as From the Ground Up demonstrates, good for growing roots in the communities we serve.”

“And,” adds Ms. Despres, “if properly tended, some of them just might be around for the 200th-anniversary celebrations.”

## PARTNERSHIP DIVERTS AND RECYCLES PLASTIC WASTE

Imagine turning discarded plastics into new products and leveraging that idea into a job creation activity benefiting people impacted by disaster? That’s exactly what happened when a Canadian technology innovator got together with a company dedicated to sustainability and corporate citizenship and the two aligned with non-profit groups working to improve the lives of the disenfranchised.

The innovation originated with Jean-Luc Lavergne, the man behind the Lavergne Group, who has long devoted his knowledge, time and energy to proving that a circular economy of plastics is not only possible, but can also be profitable. While factors including strong product performance, high quality standards and innovative technology have contributed to his firm’s success, Mr. Lavergne says finding a receptive partner was key.

In 2007, the Lavergne Group found a committed partner in HP – and this collaboration led to a string of successes.



An innovative closed-loop process makes new HP cartridges from recycled cartridges and other used plastics. SUPPLIED

“Over 10 years ago, HP partnered with Montreal’s Lavergne Group to develop an innovative closed loop process to make new HP cartridges from recycled cartridges. The process required the addition of other used plastics and landed on adding used

plastic bottles and clothing hangers,” says Frances Edmonds, head of Sustainable Impact, HP Canada. “The process has used over 99,000 tonnes of recycled plastic, which was used to create more than 3.8 billion HP ink and toner cartridges through 2017.

“The exciting thing is that even with all the collection, processing and shipping, this recycled plastic has up to a 42 per cent lower carbon footprint than virgin plastic, and allows HP to reduce energy consumption by 63 per cent and water consumption by 38 per cent,” she says.

Together, the Lavergne Group and HP have kept vast amounts of plastic out of landfills, proving that closed loop processes can reduce supply chain costs and boost performance parameters.

At the Lavergne Group, every one of the growing team’s 145 employees is committed to making plastics part of the circular economy due to the conviction that there is already enough plastic in existence to be recycled and last us for the next 200 years.

“HP uses a million used drinking bottles a day in the Montreal process. The results are stunning, keeping 784 million HP cartridges and an estimated 86 million apparel hangers and four billion post-consumer plastic bottles out of landfills,” says Ms. Edmonds. “We recently partnered with the First Mile Coalition and Thread International to create employment in Haiti, where HP sourced over 550,000 pounds of post-consumer plastic bottles (equal to roughly 12 million bottles) that might otherwise have washed into waterways and oceans.”

The result of these efforts can serve as an example of how innovation and a commitment to sustainability can have a large impact that includes addressing concerns about plastics in oceans and waterways and improving the lives of people who are already impacted by climate change events. “We are enabling economic and educational opportunities by building a supply chain for recycled plastic and working with local partners,” adds Ms. Edmonds.

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INTERVIEW

TRENDS SHAPING THE LOW-CARBON ECONOMY



**Q&A WITH GAVIN PITCHFORD DELTA MANAGEMENT CEO AND CLEAN50 FOUNDER**

**As the only search firm in Canada focused squarely on roles in the green economy, what trends are you seeing?**  
In the absence of government-mandated change, business and industry will continue to pursue sustainability only when it makes business sense to do so. That said, we’re increasingly seeing a shift in organizations looking beyond the next quarterly result to consider long-term climate-related risks to the business, especially as those may connect to rising carbon pollution taxes, weather events and supply chains, and to the increasing numbers of responsible investors who want to consider an organization’s environmental, sustainability and governance (ESG) scores.

**Is that playing out in some industries more than others?**  
The two largest sources of carbon pollution in Canada are transportation and buildings – so we’re seeing venture capital investment in cleantech focusing on both areas. On the transportation side, Canada has a growing and world leadership role in hydrogen and natural gas fuel cells, and organizations are trialling solutions that are market ready, but still constrained by a lack of supporting refuelling infrastructure.  
On the building side, we’re seeing significant investment from major commercial property owners cementing their overall resilience



Net-zero-energy communities in Canada are closer than you think and Clean50 award winners are advancing their development. [ISTOCK.COM](#)

**If you’re not factoring climate change and sustainability into your overarching strategy, you’re simply not paying attention.**

by creating internal organizations to focus on innovation strategies, sustainability and smart building technologies. A lot of the technologies are based on utilizing Internet of Things sensors to radically reduce energy consumption and show short-term return on investment. We’re seeing virtually every major property owner and property manager hiring experts in those areas. Since the paybacks are so short and the technology is sufficiently advanced and scalable, it just makes sense. So a lot of our work lately has been identifying building automation systems strategy experts, real estate focused sustainability professionals and what I call “innovation as a strategy” profession-

als. Every major property owner in Canada now has at least one VP with “innovation” in the title.  
Beyond that, we see innovation strategies that go beyond business as usual to the core of the way the business operates. A couple of our clients, Mattamy Homes and En-wave Energy, are collaborating with the town of Markham to design and build the first-ever net-zero-energy community in Canada. Another of our clients is offering building developers who want to eliminate greenhouse-gas-driven heating and cooling free geothermal energy installations that occupants will pay for – likely at a discount to traditional HVAC costs – over 40 years. All three have hired executives to support those new business models. It’s exciting to see this evolve and the impact it will have.

**What are the trends in sustainability measures that go beyond the “fad of the month”?**  
Assessing climate risk is going to continue to be important, especially for organizations with real property assets, whether that be governments or commercial property owners, and also for businesses whose supply chains might be affected. Adaptation to new norms is in order, whether that is flood proofing or drought proofing, preparing

for the increased prevalence of ice storms and all the things that climate change will send our way, and that business operators will rely on their landlords to deal with. Obviously, technology and AI will enable us to manage some of those risks more effectively – and so we’ll see ongoing development and deployment.  
Underlying all of that will be investment strategy. Responsible investing – reviewing an organization’s ESG performance as well as its contribution to climate change and exposure to present and future carbon taxes – will increasingly drive whether a company is viewed as investment grade or not. We’re going to keep seeing capital markets hire people to do responsible investment analysis, and, on the other side, organizations hiring people to make sure they identify and eliminate those risks before the analysts ask difficult questions. I’ve heard about examples of analysts going into companies in which they have invested and explaining to their CEOs that they have exposure to climate risk in their infrastructure or their supply chain – risks of which the companies themselves were unaware. That simply isn’t going to fly for much longer. If you’re not factoring climate change and sustainability into your overarching strategy, you’re simply not paying attention.

**READ MORE Clean50 STORIES IN TOMORROW’S GLOBE:**

- EMBEDDING SUSTAINABILITY.** An engaged university is creating true community of practice where companies learn and exchange experiences about creating favourable organizational conditions for sustainability.
- HYDROGEN SOLUTION.** Linking the hydrogen supply chain with the development of a storage solution involving nano materials and light and portable tanks.



CHAMPIONS FOR CHANGE

Congratulations to SFU Beedie Associate Professor Dr. Stephanie Bertels and the team of academics, researchers, and industry partners behind the Embedding Project, on their recognition as a 2019 Clean50 Top Project.  
Grounded in research and inspired by practice, the Embedding Project uses a collaborative and global approach to help companies embed sustainability across their organizations. Just one way SFU Beedie lives its commitment to developing socially-responsible business leaders.

To access cutting-edge, practical resources, visit [embeddingproject.org](http://embeddingproject.org)




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# CANADA’S Clean50

PART THREE of a three-part series highlighting the impact of award-winning sustainability leaders



THE CITY OF VANCOUVER’S green and local food economy has grown by 35% since 2010, equal to

**24,700** jobs



IN 2016, THE CITY OF EDMONTON determined that approximately 14,700 people were directly employed in sectors related to its green energy economy, generating nearly

**\$1.8-billion** in GDP



ON AVERAGE, a zero-carbon building can be achieved with positive financial return of 1% over a 25-year life cycle (inclusive of carbon pollution pricing), requiring an

**8%** capital cost premium

Sources: Left and centre, Delphi Group; Right, CaGBC

## TURNING COLLECTIVE KNOWLEDGE INTO IMPACT

How to embed sustainability in day-to-day operations and decision-making

**THERE IS CONSENSUS AMONG LEADERS IN BUSINESS,** government and academia that the time to take action on social and environmental challenges is now. “Social responsibility and environmental sustainability are not just topics of discussion, they are realities this and future generations have to address. That’s not a luxury anymore, it’s a necessity,” says Ali Dastmalchian, dean of the Beedie School of Business at Simon Fraser University (SFU).

This urgency to drive results has inspired collaborative endeavours like the Embedding Project, a public-benefit research project hosted at Beedie, says Dr. Dastmalchian. “This is an area where people are very thirsty for knowledge. We work together to generate solutions to some of today’s complex problems in order to foster positive change.”

Public institutions like SFU have a crucial role to play in generating and disseminating well-researched and well-presented resources that can positively shape business practice – a goal that is well aligned with SFU’s strategic vision, says Dr. Stephanie Bertels, founder of the Embedding Project and associate professor at Beedie.

“We want to be there to help companies from the moment they are asking, ‘What can we be doing?’,”



Members of the Embedding Project’s Peer to Peer Networks value having time to bring a problem to the table so that other members can offer their input to help solve it. [iStock.com](#)

she says. “Being a corporate change agent isn’t easy. While companies may say they want to change, there can be a lot that stands in the way of that change.”

Any company’s path to embedding sustainability will reflect its organizational context, culture and leadership, yet in-depth work with dozens of companies across a range of industries and jurisdictions shows some common turning points, explains Dr. Bertels. “Our embedding framework highlights 60 practices companies need to pay attention

to, which include everything from integrating sustainability into governance to paying attention to what stories get repeated over and over.”

While the Embedding Project serves to direct companies toward creating favourable organizational conditions, it has also evolved into a true community of practice, she says. “Real learning and insights, we find, come when there is high trust – and vulnerability – in the room. We are intentional and explicit about creating the safe spaces for this to unfold.”

“**Being a corporate change agent isn’t easy. While companies may say they want to change, there can be a lot that stands in the way of that change.**”

**Dr. Stephanie Bertels,** founder of the Embedding Project and associate professor at the Beedie School of Business at Simon Fraser University



With trust comes openness about challenges, explains Dr. Bertels. Members of the Embedding Project’s Peer to Peer Networks, for example, value having time to bring a problem to the table so that other members can offer their input to help solve it.

“Our peer meetings bring companies from a range of different industries together, so there is often someone in the room that can bring a fresh perspective,” she says. “By learning from the experiences of companies across a broad range of industries, we can harness their collective knowledge to help all companies embed sustainability into their day-to-day operations and decision-making.”

More and more corporate leaders realize that their business success is tied to sustainability, says Dr. Dastmalchian. The Beedie School’s engagement with business and communities brings a practical perspective to mapping out a way forward. At the same time, it is inspiring students, graduates, faculty and partners to recognize the true value of embedding the principles of corporate social and environmental responsibility across organizations, communities and society.

Dr. Bertels believes that when the goal is measurable impact, tracking performance can enable companies to prioritize their efforts and adjust their course. However, the trouble is that many companies can’t tell whether their culture is conducive to embedding sustainability or how the goals they are setting measure up, she says. “That’s where our research comes in. We help companies to benchmark themselves on the practices that support a strong culture of sustainability decision-making and determine whether they are setting strong enough goals.”

## TURNING FOOD WASTE INTO SUSTAINABLE BIOPLASTIC PRODUCTS

In Ontario, an estimated 2.3 million tonnes of food and organic waste was sent to disposal in 2015. Luna Yu believes that rather than going to landfills and releasing huge amounts of greenhouse gases, organic waste can be a resource.

“It’s all about creating a circular economy,” says the CEO of Genecis Bioindustries Inc., a Toronto company that’s harnessing the principles of biology to turn food waste into polyhydroxyalkanoates (PHAs) – a class of bioplastics produced by micro-organisms.

“Our technology can get rid of food waste by turning it into sustainable bioplastic products,” says Ms. Yu, who describes this as a two-stage process that involves two groups of bacteria. The first breaks the organic waste down into small carbons. The second group eats the carbon and makes PHAs out of their own cells.

PHAs have been around for years, says Ms. Yu. But because they’re made largely with sugars derived from sugar cane or corn, they’re expensive to produce and typically command prices that are about four times that of regular plastics.

“**It’s all about creating a circular economy. Our technology can get rid of food waste by turning it into sustainable bioplastic products.**”

**Luna Yu,** CEO of Genecis Bioindustries Inc.

By using food waste as a carbon source, Genecis has reduced the cost of making PHAs by as much as 40 per cent, says Ms. Yu. And unlike other bioplastics, the PHAs produced at Genecis can go into any existing waste stream. “If you put them in organic waste composting facilities, they will break down in a matter of weeks, and if they end up in landfill,

they will biodegrade in a couple of months,” she explains. “In recycling facilities, our PHAs can be rebled and combined with petroleum plastics – something you can’t do with a lot of other bioplastics.”

Genecis is working with a range of corporate partners to divert food waste and create circular business solutions.



The Genecis team is harnessing the principles of biology to create PHAs – a class of bioplastics produced by micro-organisms. [SUPPLIED](#)

Companies benefit from the opportunity to rigorously reflect on what they are doing and where they fall short, says Dr. Bertels. “We see over and over that this helps to drive further action.”

Yet while a focus on challenges is important, “we also need to take the time to celebrate small wins,” she says. “If anything, the corporate leaders we work with are so focused on what remains to be done that they don’t take time to celebrate the important successes they have achieved.”

The Embedding Project received a 2019 Top Project award from Canada’s Clean50, the organization dedicated to celebrating efforts and achievements that advance sustainable development and clean capitalism in Canada. “It’s a privilege to be recognized for our work,” says Dr. Bertels. “Just like the corporate change agents we support, we sometimes need to stop and reflect that we are doing our part to address pressing societal challenges.”



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Proud founders and stewards of the Canada’s Clean50 Awards, and the Clean50 Summit, since 2011.



Check out the 2019 Clean50 on pages 14 and 15

# GETTING HYDROGEN FUELS READY TO LAUNCH

As the CEO of Hydrogen in Motion Inc. (H2M), a startup working to advance a viable clean energy alternative to fossil fuels used for transportation, Grace Quan is looking to change the world on both a personal and a macro level.

"We see our technology as a contribution to solving one of the most critical challenges of our times by providing a sustainable, renewable energy solution that will have a positive impact on our environment," she says.

H2M tackles the challenge of how to store hydrogen on board vehicles, says Ms. Quan. "We developed a unique engineered material, like a nanosponge, where hydrogen gets absorbed into the surface of the material. A small amount of pressure, about 50 bar, can store and release the hydrogen."

This groundbreaking technology allows hydrogen to be stored in light and portable tanks at not much more than ambient conditions, enabling high-density energy storage in the form of hydrogen as well as cost-effective, easy-to-use hydrogen fuel cell applications, she explains.

“We see our technology as a contribution to solving one of the most critical challenges of our times.”

Grace Quan,  
CEO of Hydrogen in Motion Inc.



"We are going to effect change not just by providing a superior solution but by also making it affordable," says Ms. Quan, who brings both the financial background and the vision to take this technology to com-

mercialization, which is estimated to happen in late 2019 or early 2020.

On the personal level, Ms. Quan is one of the few female and visible minority leaders in clean technology. She hopes her example can inspire positive change in a field where women are still underrepresented.

H2M is an active supporter of diversity and women in science, technology, engineering and math (STEM), says Ms. Quan. "We have a girls in STEM internship program for the summer, where high school students can experience what it's like to work as a theoretical physicist, chemist, material scientist, mathematician or engineer. We invite them to participate in all the activities we offer in our lab, and we hope to inspire them to pursue a career in STEM."

Ms. Quan received the Canada's Clean50 award for research and development and welcomes the opportunity to be part of the Clean50 community. "There are a lot of visionaries and leaders looking to make a positive change in the world," she says. "They are very dedicated, very passionate people – and they are leading the charge."



The Clean50 community is made up of leaders dedicated to advancing a low-carbon economy. SUPPLIED

## HOW TO BECOME PART OF THE 2020 CLEAN50




Nominations for the next Clean50 opened on Earth Day, April 22, and close on Canada Day, July 1. For the ninth time, Delta Management and a team of Clean50 student analysts will be scouting for 50 individual leaders, 10 emerging leaders and 20 sustainability projects from across Canada and from all 16 different categories of the Clean50, looking for people who have made a special contribution to Canada's sustainable and low-carbon future.

"If you know someone who is deserving or if you yourself would be interested in being considered for a Clean50 award, please visit [www.clean50.com](http://www.clean50.com) to review the criteria, and take three minutes to nominate someone today," says Gavin Pitchford, executive director of Clean50 and CEO of Delta Management Group. "If you're a third-year or higher student in environmental studies or business with exceptional communication skills who would like to be a part of the Clean50 research and analysis team this summer as a well-paid intern, prove you're up to the task by figuring out who to reach and how, and send in your resume and a short note."


"Working on this mission will provide students with remarkable access and insight into which individuals and which companies are committed to positive change," he adds.




Hydrogen in Motion provides a solution for storing hydrogen on board vehicles in portable tanks. SUPPLIED



# SUSTAINABLE AND PROUD



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