The Zero Waste Collective

Created by Tara McKenna,
The Zero Waste Collective is an online
community that aims to inspire people
from all walks of life to find more joy by
living with less waste.

WOMEN IN CLEANTECH

7th Annual Women in Cleantech &
Sustainability WCS Talks Virtual Series
A TED-style event featuring the
brightest minds and most inspiring
stories of the clean economy
metamorphosis.

May 8, 2021

THE ECO HUB

The Eco Hub is a premier online destination for conscious people — covering sustainable fashion, beauty food, wellness, travel, lifestyle, and zero waste.

A Clean and Just Recovery Depends on Your Voice

As we prepare for a post-COVID-19 future, we know that returning to "normal" isn't an option. More action is needed to ensure a safe, equitable, and sustainable future for Canadians.

Tim Gray

We can't allow the COVID-19 crisis to make us blind to other massive challenges that we faced before it began and that'll still exist after it's over: dismantling environmental racism, fighting climate change, ending plastic pollution, keeping our water clean, and removing toxic chemicals from the products we use.

A clean and just recovery for Canada means, above all, investing in a society that places people's

often been left behind.

A transition to a sustainable low-carbon economy

The protection and restoration of land, freshwater, and ocean ecosystems along with the wildlife that call these places home.

Banning many single-use plastics, and ensuring that the rest don't end up in our environment and our bodies.

health and the well-being of natural ecosystems that sustain all species first. That means that any investments made must advance environmental progress, address environmental justice, and be consistent with Canada's international environmental commitments.

A clean and just recovery for Canada means investing in:

The replacement of toxic chemicals used in agriculture, consumer goods, and manufacturing with safer alternatives.

The development of accessible, affordable, and healthy communities and transportation networks.

A future that prioritizes social and racial justice, economic equity, and well-being, built in partnership with Indigenous peoples and the communities most exposed to environmental harm.

Investments in the Canadian economy cannot be at odds with our collective commitment to a clean and just recovery. With the right investments, we can build an economy and society that are stronger and more resilient than before the crisis began.

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Join Environmental Defence as we call on the federal government to step up and shift Canada toward a stronger, equitable, and more sustainable society by visiting **environmentaldefence.ca/greenrecovery.**

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Please recycle

TD Commits to Ambitious Climate Action Plan and Targets Net-Zero Emissions by 2050

Executive Director,

Environmental

Defence



Tetra Pak is on a company-wide mission to create cartons that are more environmentally-sound than ever.

Abigail Cukier



Larine Urbina Vice President of Communications (U.S. & Canada), Tetra Pak



Jason Pelz Vice President of Sustainability (Americas), Tetra Pak

THE TETRA PAK AMBITION

In the 1950s, Tetra Pak revolutionized food packaging with its paper-based, aseptic carton that can store liquids, including milk, for months without refrigeration.

Today, the company aims to transform the industry once again with a commitment to deliver the world's most sustainable food package. Tetra Pak is working to create cartons made solely from plant-based or recycled materials that are responsibly-sourced, fully recyclable, and carbon-neutral.

"Tetra Pak has long been committed to sustainability, but we're now doubling down and taking this to the next level," says Larine Urbina, Vice President of Communications (U.S. and Canada) at Tetra Pak. "The company is investing 100 million euros a year for the next five to 10 years in sustainable packaging solutions, working collaboratively across the value chain to ensure that we have innovative technologies and approaches to develop these new packages."

It's time for a better solution

Packaging plays the vital role of maintaining the nutritional value and taste of the product it contains while expanding access to food. Unfortunately, some materials in packaging contribute to greenhouse gas (GHG) emissions, depletion of fossil-based resources, and waste in landfills and waterways. While recycling is part of the solution, only nine percent of plastic actually gets recycled. The packaging industry, along with food producers and consumers, realize that the world needs a better answer. And Tetra Pak intends to be a leader on this journey.

In addition to packaging liquid food products like milk, dairy alternatives, juice, and soup, Tetra Pak also provides processing tech-

cheese, prepared foods, and more. Tetra Pak's packages are made of an average of 70 percent paperboard from renewable wood fibres. However, they also contain thin layers of plastic and aluminum, both of which play a key role in securing food safety and extending shelf life.

"It's a balance between protecting food and protecting the planet. Every layer in the package serves a specific purpose toward protecting the product inside," says Jason Pelz, Vice President of Sustaina-

bility (Americas) at Tetra Pak. "For example, the thin aluminum layer plays a key role in food safety and long shelf life, so we can't just remove it from the packaging. Instead, we're working to find a more environmentally-sound solution."

Sustainability throughout the supply chain

Pelz says that, in addition to the actual packaging, Tetra Pak's commitment to sustainability focuses on the entire supply

chain, which includes ensuring that materials are responsibly and sustainably sourced, replacing as much aluminum and plastic as possible, and increasing the efficiency of its manufacturing plants.

Already, all of its packages use paperboard from Forest Stewardship Council™ certified or controlled sources, meaning that the company sources raw materials from forests managed in a way that prevents biodiversity loss and ensures renewability. All of its sugarcane-based plastic is Bonsucro-certified, which means that it's fully traceable to its origin, ensuring ethical business practices.

net-zero GHG emissions in its operations by 2030 and net-zero GHG emissions across the entire value chain by 2050. The company also educates consumers on recycling and works with customers, waste management professionals, recyclers, municipalities, and others in the value chain to expand the collection and recycling of packages.

Protecting food remains a priority

Pelz adds that the company won't compromise on one of its founding principles — reducing food waste. Each year, 33 percent of food produced globally is lost or wasted, while many people across the world go hungry. Food waste also affects climate change. When we waste food, it wastes the energy and water it takes to grow, harvest, transport, and package it. And food rotting in a landfill produces

the GHG methane.

It's a balance

protecting food

and protecting

the planet.

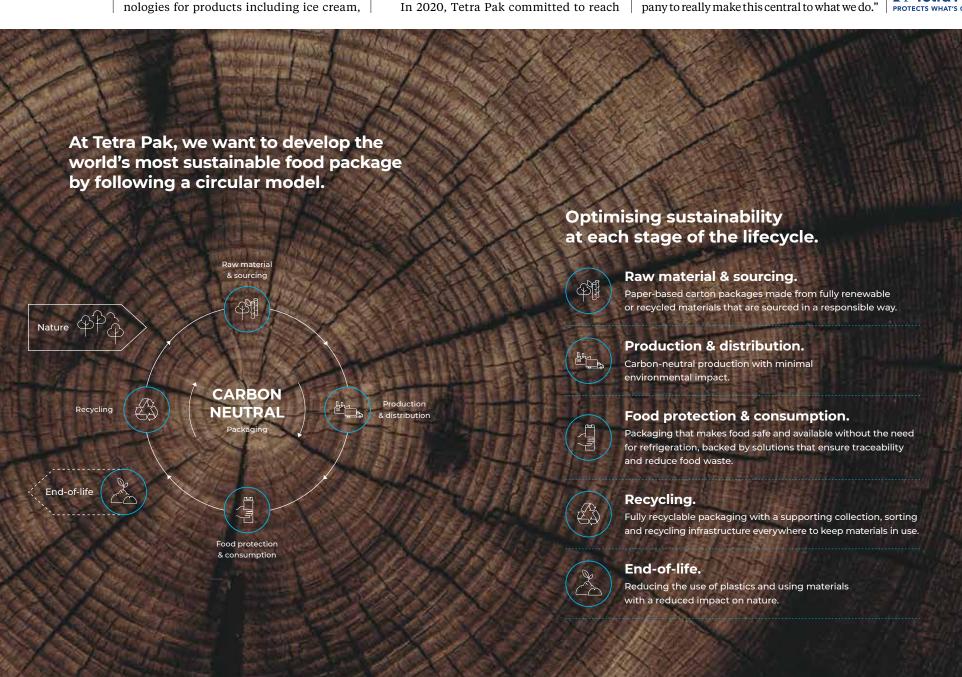
between

Urbina says that to reach its goals, Tetra Pak is strengthening its valuable partnerships with food producers, raw materials providers, and recyclers. "We recognize that to truly make it to the next level, we can't do it alone," she says. "It takes collaborative innovation to drive change."

Within Tetra Pak, Pelz says that the journey to creating the world's most sustainable food package is a whole company effort, with employees who are passionate about their mission. "It's not just one department," he says. "It's a much bigger movement within the comVisit bit.ly/ gonaturegocarton to learn more.

This page was sponsored by

🍂 Tetra Pak





Jess Kaknevicius



Jess Kaknevicius Vice President of Education, Sustainable Forestry Initiative

Sustainably-managed forests are critical to our collective future. The forest sector is a key partner in the fight against climate change. Forests — particularly when they're managed sustainably — sequester carbon, and products sourced from these forests can store carbon for decades.

The importance of sustainably-managed forests to global challenges is clear. The Canadian government even recognized the forest sector as essential during the COVID-19 pandemic and indicated that the sector will play an important role in Canada's

COVID-19 recovery, in part because it offers diverse, high-quality jobs for more than 200,000 people.

The Sustainable Forestry Initiative (SFI) is an independent, non-profit organization that advances sustainability through forest-focused collaborations. SFI is a sustainability leader through its work in standards, conservation, community, and education, and together with its network is providing solutions to global challenges like climate change. Project Learning Tree Canada (PLT Canada), an initiative of SFI, helps grow the next gen-

eration of forest and conservation leaders.

Since 2018, PLT Canada has placed young people in over 3,500 forest, conservation, and parks jobs with support from the Government of Canada and over 200 employers across the country. The organization provides professional development support through its job placements, mentorship programming, and much more. These critical services are becoming increasingly relevant as Canada will need to replenish an estimated 47,500 forestry jobs between now and 2028.

Learn more about job opportunities, mentorship in the green sector, and support for employers at pltcanada.org.

This article was sponsored by the Sustainable Forestry Initiative.



The Essential Service That's Protecting Our Future: Our Forest Sector

The Canadian Institute of Forestry is the national voice of forest practitioners, with an interdisciplinary membership across Canada working to ensure that our forests are vibrant, healthy, and sustainable.



Mark Pearson Executive Director, Canadian Institute of Forestry

Kathryn Enders

Executive Director.

Ontario Farmland

Shelley Petrie

Foundation

Program Director, Greenbelt What are the greatest environmental challenges facing Canada's forests today?

Canada's forests face numerous threats due to a changing climate, including increased outbreaks from insects and diseases, and fire activity. In 2020, Natural Resources Canada reported that over 18.2 million hectares of forests were affected by insects and fires combined¹. However, Canada's forests remain resilient, adaptive, and well-man-

aged. A diverse and inclusive workforce will increase the forest sector's capacity to adapt and to recover from adversity. (freetogrowinforestry.ca)

What innovative solutions are being developed to address these global issues?

Forests sequester carbon and provide a range of services, representing a vital nature-based solution to mitigate climate change. Considered an essential service throughout

the pandemic, the forest sector has been implementing innovative technologies and management strategies to adapt and to support Canada's transition to a low-carbon economy, such as building with mass timber, utilizing and refining biomass, and studying tree genetics for future climate conditions.

"The State of Canada's Forests, Annual Report 2020. 2020. Natural Resources Canada, Canadian Forest Service, Ottawa, 88 p. **Z**

To learn more, visit **cif-ifc.org**.

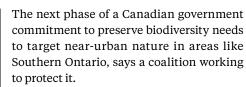
This article was sponsored by the Canadian Institute of Forestry.



Ontario Coalition Focuses on Near-Urban Nature Protection

A coalition of governments, communities, and non-profits is pushing for greater protection of nearurban nature in the Greater Golden Horseshoe area.

Ted Kritsoni



As part of a UN pledge signed by 84 countries in 2020, Ottawa has committed to protect 30 percent of the country's land and waters by 2030. The federal government has also committed to plant two billion trees nationwide over the same period. The Southern Ontario Nature Coalition (SONC), which includes various community-based conservation organizations, policy experts, and Indigenous engagement specialists, says that vital near-urban natural systems, which contain some of the country's highest levels of biodiversity, are at risk but that government targets provide an exciting opportunity to protect them.

Near-urban nature is comprised of the forests, river valleys, wetlands, farmland, and other ecological features that surround and intersect urban communities. This nature provides important ecosystem services like flood control and water filtration.

Among SONC's leading participants is the Greenbelt Foundation — an independent, charitable organization, which, among other priorities, invests in the enhancement and stewardship of near-urban agricultural and ecological areas in and adjacent to Ontario's Greenbelt.

Taking a coordinated approach

The Greenbelt Foundation and its partners hope to contribute to a coordinated approach to protecting near-urban nature through a Near-Urban Nature Network identified by SONC. This project uses new federal tools to identify high-value habitats and corridors in order to strengthen near-urban ecosystems

and accommodate the migration of plants

The challenge is that these near-urban areas have fragmented landscapes with a high degree of agriculture and private landownership. To get lawmakers and landowners onboard while also attracting government investment will require a highly-coordinated

approach.
With agriculture being a predominant land use in Southern Ontario, members of the agricultural community play an important role in providing habitat and creating ecological corridors.

"Once we pave over farmland, we can never get it back," says Kathryn Enders, Executive Director at Ontario Farmland Trust, another SONC partner. "There's a lot of pressure from urban expansion in that area."

As part of SONC, Ontario Farmland Trust is helping farmland owners establish easement agreements as a strong tool to permanently protect their lands from non-agricultural uses and urban development. Easements can cover any land or property size, and owners can still sell or will their land, but the agreement stipulates that it must remain in agriculture, says Enders.

"Stronger policies would help, but it's important to remember that policy can change when governments change, so we need to find ways to permanently protect farmland," she says.

Planting the seeds

One important solution identified by SONC is to plant trees across the region, including in the Greenbelt's 21 urban river valleys. Doing this will improve flood management capacity and wildlife connectivity. SONC partners estimate that tree-planting investment through

the Federal 2B Tree Program could amount to 54 million new trees in the region — enough for a healthier 30 percent forest coverage.

"For new initiatives like SONC to grow and emerge, there needs to be guaranteed and specific funding set aside for near-urban nature restoration, stewardship, and conservation," says Shelley Petrie, Program Director of the Greenbelt Foundation. "There's a great deal of conservation activity localized in various municipalities and jurisdictions, but it's a challenge to coordinate these activities to work collectively on bigger-picture regional conservation."

Working in tandem with Indigenous communities is key to SONC's collaborative efforts to realize that bigger picture, she adds. Canadian Indigenous Professional Services joined the coalition as a partner to help create safe and meaningful space for leaders from Indigenous communities to collaborate on the best approaches for protecting the region's biodiversity.

"Indigenous knowledge systems, science, and other ways of knowing have preserved nature for centuries but aren't always sufficiently recognized or acknowledged in Western science," says Petrie. "These are critical perspectives to take into account as we work toward protecting and restoring near-urban natural areas."

Through its work in developing a plan to protect near-urban nature in the Greater Golden Horseshoe, SONC hopes to begin a national conversation about protecting near-urban biodiversity, apply its findings to other near-urban areas across Canada, and help Canada meet its UN commitments to protect biodiversity in impactful ways.

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To learn how you and your community can get involved in near-urban nature protection, visit greenbelt. ca/near_urban_nature_project.

sponsored by the Greenbelt Foundation.

This article was



Possibility grows here



Many investors dream of making a real difference with their money and now they can with Viridis Terra's TreesOfLives® fund.

Sandra MacGregor



Martin Beaudoin Nadeau Founder & CEO, Viridis Terra International

Viridis Terra International is a Canada-based company that specializes in ecosystem restoration and sustainable management with a mandate to combat the global problems caused by land degradation and climate change.

Restoring degraded ecosystems

"Our activities focus on the restoration of degraded ecosystems, lands, and soils, as well as the formulation, implementation, and sustainable management of large-scale forest landscape restoration projects," explains Martin Beaudoin Nadeau, Founder and CEO of Viridis Terra International.

It was the organization's dedication to environmental stewardship that led Viridis Terra to launch the TreesOfLives® fund. The fund is based on a model that focuses on three pillars essential to a green economy: partnering with landowners, forest landscape restoration, and an investment platform that uses artificial intelligence based on data collected in the field.

When people invest in the TreesOfLives® fund, Viridis Terra is then able to offer technology and expertise to help landowners create models to sustainably restore and develop degraded land. In turn, the forests and the land become fertile, grow, and produce, which contributes to carbon sequestration. In this way, those who invest in TreesOfLives® are removing a significant portion of greenhouse gases from the atmosphere and are thus helping to offset their own carbon emissions - all while assisting local communities in enjoying a better quality of life.

Eventually, the commodities grown by the landowners are sold to buyers looking for zero-deforestation and certified sustainable products. Profits from these sales are shared between the landowner and the investor.

A meaningful investment option

TreesOfLives® is an impact investment vehicle that's open to both individuals and organizations. Through their contributions, the fund can finance large-scale restoration projects in partnership with landowners and communities. The estimated targeted return on investment for the fund is more than seven percent.

Viridis Terra founder and CEO Martin Beaudoin Nadeau discusses the exciting launch of the TreesOfLives® fund.

Why did Viridis Terra launch the **TreesOfLives® fund?**

The reason we launched the TreesOfLives® fund is that we want to create a green economy around land restoration and to bring capital to these landscapes that are degraded. The fund lets us do that on a very large scale and lets us have a huge impact on fighting climate change and the degradation of natural landscapes.

At Viridis Terra, we're driven by a commitment to fighting against the effects of climate change sustainably, leading to a better future for all.

What makes the TreesOfLives® fund different than other similar sustainable. environmentally-oriented funds?

Our fund is different because not only does an investor get financial returns, they also get a personal return for themselves by offsetting their own ecological footprint. Investors become key players in fighting the climate crisis. It's a meaningful way to make an impact.

Who can invest in the fund?

Individuals and companies can both invest. Investing in TreesOfLives® allows investors to offset their carbon footprint with certified carbon credits. Furthermore, these investments can help remove substantial amounts of greenhouse gases from the atmosphere and a portion of their investment can be used to further offset their carbon emissions. Also, by investing with TreesOfLives®, investors can indirectly transform the cost of restoration and smart reforestation into an impact investment. Investors can really make a difference.

Expected yields are based on data from similar projects carried out by Viridis Terra and its partners in the past in the same areas where Viridis Terra carries out its restoration activities. However, yields are not guaranteed and may vary considerably due to various factors. See our legal documentation on treesoflives.com for full

For more information on investing in the TreesOfLives® sustainable impact investment fund, visit treesoflives. com and to learn more about Viridis Terra, visit viridisterra.com

This article was sponsored by Viridis Terra International.

ViridisTerra®

Canada's Emerging Energy Efficiency Sector Is Primed to Power Our Future

While it's often overlooked as a sector in the traditional sense, energy efficiency presents promising opportunities for well-paid, fulfilling careers and a role in addressing the climate crisis.

Abigail Cukier



Corey Diamond Executive Director, Efficiency Canada

Sarah Arsenault in Fredericton, NB, is the marketing and communications manager for Naveco Power. Fellipe Falluh started his own business called Retrofit Construction in Montreal, QC. Thivya Viswanathan is an energy analyst with the Thompson Okanagan Tourism Association in Kelowna, BC, helping tourism businesses lower their greenhouse gas emissions and energy bills. What do they each have in common?

They're all working in the growing energy efficiency sector, which already employs more than 436,000 people across Canada. While many energy efficiency jobs, such as laying insulation or installing HVAC systems, are in the building and construction industries, there are also opportunities for entrepreneurs, marketers, designers, programmers, policy professionals, sustainability advocates, and many others in efficiency-driving sectors including manufacturing, wholesale trade, professional services, and utilities.

Along with providing good, stable jobs - jobs that are usually local and can't be outsourced — the sector could provide almost 40 percent of our energy needs by 2050 by harnessing the power of the energy we don't use, which is essential to helping Canada combat climate change and reach its goal of net zero greenhouse gas emissions by 2050.

Efficiency Canada mobilizing energy efficiency sector

Efficiency Canada is the national voice for an energy-efficient economy, researching strong energy efficiency policies, communicating the value of the energy efficiency sector, and mobilizing the sector to take action. Corey Diamond, Executive Director of Efficiency

Canada, says that maximizing the benefits of energy efficiency will lead to a sustainable environment and a productive economy.

"Energy efficiency is about using less energy to achieve the same, or better, energy services. We want the services of warmth, light, mobility, and productivity. It doesn't

It doesn't make

economic and

environmental

costs of energy

sense to pay

the

waste.

make sense to pay the economic and environmental costs of energy waste," Diamond says. "Energy efficiency contributes to more comfortable and durable buildings, more productive workforces, and competitive industry."

It takes a lot of people to make that happen. "These are people who design, build, and retrofit build-

ings, install better equipment, and help make industrial processes more productive," says Diamond.

The energy efficiency sector is growing so fast that it's hard to find qualified workers to fill the growing number of jobs. In fact, according to an ECO Canada report, 70 percent of employers had difficulty finding qualified applicants. There are numerous opportunities for well-paying, interesting, and fulfilling careers in the sector.

Strong workforce needed to scale up energy efficiency

"With Canada officially committing to a net zero emissions economy by 2050, we need to

do more to attract and develop a strong workforce to scale up energy efficiency. Across the country, this will mean more opportunities for people to enter the workforce to help implement energy efficiency programs," says Diamond. "At the same time, homeowners and small businesses will save money that

they can re-invest into other

less wasteful practices." An earlier Efficiency Canada report forecasted that the energy efficiency measures in the federal government's Pan-Canadian Framework on Clean Growth and Climate Change would help boost Canada's GDP by one percent over the next 14 years, with economic activity associated with energy efficiency creating an annual average of 118,000

jobs between 2017 and 2030. "It's a strong energy efficiency workforce that will help power this economic growth, create healthier homes and buildings, and lead the fight against global

climate change," says Diamond. "There are so many great stories of people in the energy efficiency sector," he adds. "These stories highlight a sector that's making a strong contribution to Canada's economy, while being on the frontlines of addressing the climate crisis."

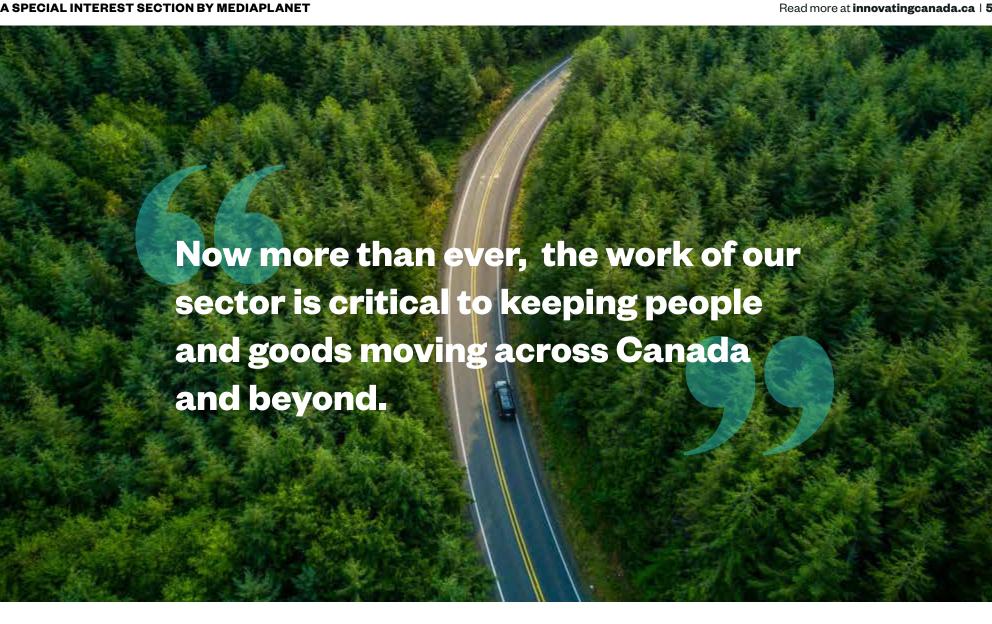
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by Efficiency Canada.





Driving Toward a Low-Carbon Future

Canada's transportation fuels sector believes that it can be a key contributor to a low-carbon economy. Bob Larocque, President and CEO of the Canadian Fuels Association (CFA), discusses the CFA's recently-released roadmap to the future, Driving to 2050.



Bob Larocque President & CEO. Canadian Fuels Association

How are the members of the CFA driving innovation to lower emissions and supporting Canada's plan for net-zero emissions by 2050?

Our sector is at the heart of the energy transition that's already underway in Canada. Achieving a low-carbon future will require the use of a wide range of available fuels and technologies. There's no single solution to solve Canada's diverse energy needs, and we're leveraging innovation in various ways to do our part. Aside from producing low-carbon liquid fuels such as gasoline blended with ethanol and biodiesel, our sector is involved in electric vehicle charging infrastructure across the country and hydrogen vehicle fuelling stations in select locations. On the fuel production side, we're also lowering emissions

by using carbon capture technology as well as co-processing, which utilizes bio-content along with traditional petroleum feedstocks.

There's a lot of commentary lately referring to the end of oil and gas. How do you respond to claims that your sector is part of the past and not part of the future?

Our industry is proud of the fact that Canadians have been relying on our products for more than 150 years. Now more than ever, the work of our sector is critical to keeping people and goods moving across Canada and beyond. This has been on full display over the past year as we've supported Canada's response to the pandemic. By continuing to use innovation and harness technology to improve our processes as well as our products, our sector can be an important part of Canada's low-carbon energy mix for generations to come.

How does Canada's current transportation fuels infrastructure fit into a low-carbon economy?

We don't need to start from scratch when it comes to building a greener transportation network. We have an excellent opportunity to leverage and adapt Canada's existing transportation fuels infrastructure to meet our needs for the future. We believe that we can build a strong, resilient economy and significantly reduce greenhouse gas emissions by working in collaboration with governments and all stakeholders to optimize and integrate Canada's energy resources.

Visit canadianfuels.ca to learn more.

This article was sponsored by the **Canadian Fuels** Association.



Alberta's Oil Sands Are Driving the Future of Cleantech

For years, Alberta's oil sands have been a major driver of the Canadian economy. But with the collapse in global crude oil demand as a result of the pandemic, key players in the region are looking for new opportunities for Alberta's traditional resources.

cleantech economy.

What kind of projects?

Melissa Vekil

Alberta Innovates, the province's innovation engine, is responsible for the Bitumen Beyond Combustion (BBC) program, which aims to find alternative applications for Alberta's massive stores of bitumen. The need for diverse applications of bitumen has taken on new urgency with the growing popularity of electric vehicles and their impact on oil demand.

"Diverting bitumen to new materials could

Mediaplanet spoke with Laura Kilcrease,

CEO of Alberta Innovates, to learn about some of the exciting projects Alberta

Innovates is undertaking to advance the

How does Alberta Innovates progress

Our Clean Technology program invests

in projects that reduce environmental

impacts, support Alberta's energy

transition, and generate jobs in the

cleantech sector in the province.

reduce emissions, increase economic value, create jobs, diversify the economy, and perhaps even birth new industries," explains Bryan Helfenbaum, Executive Director of Advanced Hydrocarbons in the Clean Resources division of Alberta Innovates.

Helfenbaum says that there are a number of compelling non-fuel alternatives that can be derived from bitumen, including carbon

The BBC is one, of course. Smart grids

are another — the Alberta Smart Grid

Consortium brings together industry

important area. Our current project

players to accelerate the adoption of grid

with the City of Edmonton is converting

100,000 tonnes of municipal solid waste

into 40 million litres of biofuel per year.

optimization technology. Biofuel is another

fibre for structural use, asphalt binder for infrastructure, activated carbon for filtration, and vanadium for batteries.

"Bitumen would be strategically advantaged to provide materials to a growing and more prosperous global population, perhaps ironically playing an important role toward transitioning to a low-carbon future," he adds.

We're also investing in hydrogen, as the Greater Edmonton area is poised to become Canada's first hydrogen node.

oil sands? Alberta's oil and gas industry is one of the largest markets for clean technology in Canada and is perfectly poised to lead energy transformation. We must continue to take advantage of the natural resources, highly-skilled workforce, and existing

What does the future hold for Alberta's

infrastructure to drive this transformation.

longer-lasting buildings and infrastructure. The use of bitumen could reduce the feedstock cost by 90 percent compared to the traditional source.

How far are we from using bitumen for alternative commercial applications?

It depends on the application. Carbon fibre represents a lucrative opportunity, but the scale and quality of the fibre need further advancement. Alberta Innovates and the Clean Resource Innovation Network recently launched Phase 2 of the Carbon Fibre Grand Challenge to catalyze this, and so I anticipate that commercial projects could begin within five to eight years.

Laura Kilcrease CEO. Alberta Innovates



Helfenbaum **Executive Director** of Advanced Hydrocarbons in the Clean Resources Division, Alberta Innovates

Q&A

Mediaplanet had a virtual chat with Bryan Helfenbaum, Executive Director of Advanced Hydrocarbons in the Clean Resources Division at Alberta Innovates, to get his insight on the different potential uses for bitumen and what this means for

Why is there urgency to find alternative applications for bitumen?

Ninety percent of bitumen gets processed into fuel, such as gasoline and diesel. However, bitumen is not an ideal feedstock

for fuels, so its value is lower compared to lighter oils. Also, 80 percent of the greenhouse gas emissions associated with bitumen are generated when these fuels are consumed.

What's the importance of carbon fibre and other advanced materials?

Carbon fibre is often referred to as the material of the future, given its strength and non-corrosive properties. However, there's a cost barrier to its current proliferation. Research indicates that an overall 50 percent drop in the price of carbon fibre could lead to 10 times more demand, with applications ranging from making vehicles lighter, to constructing

To learn more about how Alberta innovates, visit albertainnovates.ca.

This article was sponsored by Alberta Innovates.

ALBERTA INNOVATES



Geothermal energy is the whole package. It's clean, it's reliable, and it's there whenever you need it. But it has never been portable or scalable. Until now.

D.F. McCourt



John RedfernPresident & CEO,
Eavor Technologies



Paul Cairns
Chief Business
Development
Officer,

Eavor Technologies

You can spend years in Iceland and not run out of things to see, but one sight you'll be hard-pressed to find is an oil rig or gas plant. In the face of a climate crisis, there's a lot to learn from this island nation that runs on geothermal power.

But you may have noticed that Canada isn't a volcanic island. "Even though traditional geothermal has been around for 100 years, it's still a tiny fraction of the world's power, and there's a good reason why," says John Redfern, President and CEO of Calgary's own geothermal disruptor, Eavor Technologies. "It only works in a few places and it's not scalable. The obvious question is: what technology would we need to make geothermal work anywhere?"

You can tell pretty quickly that Redfern is the kind of guy with answers for questions like that. But, in the beginning, that wasn't even the question that Eavor was asking. It was focused instead on something Canada has a surplus of: obsolescent fossil fuel assets.

Eavor has developed a whole new way of doing geothermal that's perfectly suited to Canadian geology, and it can be exported worldwide.

Leveraging Canada's oil and gas expertise to lead the clean revolution

Where traditional geothermal relies on freely-cycling water through fractured volcanic formations, the Eavor-Loop™ uses a closed -loop system to pump a proprietary circulatory fluid through a network of precision-drilled pipes kilometres underground, using the Earth's natural heat as a rechargeable battery. As the fluid flows through the deep bored wells, it heats up, and that heat can be removed as clean energy on each cycle. Or, when demand is low, the heated fluid can be recirculated, increasing the intensity of energy stored within it, all to be dispatched whenever it's needed.

For the Canadian workforce, the idea of drilling for zero-emission power is like hitting the jackpot. "The oil and gas guys know that we need to transition to clean energy, but of course they don't want to be a turkey voting for Christmas," says Redfern. "Now, along comes our technology built on the same skill sets and equipment used in oil and gas, and it becomes a match made in heaven. People are going to transition their jobs to closed-loop geothermal without retraining, and sometimes without even leaving the rig they were working on."

Rounding out the renewable mix and changing the world

Today, Eavor is developing hundreds of commercial prospects worldwide, with a goal of bringing its costs down below five cents per kilowatt hour.

"Wind and solar are always going to be the cheapest clean energy per kilowatt hour," acknowledges Redfern. "But you can't have a grid that runs on only wind and solar. You need something with a higher energy density that can provide baseload power and that's dispatchable even when the sun isn't shining or the wind isn't blowing. Closed-loop geothermal is the perfect third course to round out the renewable energy meal."

At this point, everyone is taking Eavor seriously. With investment from Chevron and BP, it's at the head of the closed-loop pack, and it's working like hell to stay there. "We're talking about the largest market on Earth. Our limiting factors are going to be things like, literally, how many drilling rigs there are on the planet," says Eavor Chief Business Development Officer Paul Cairns. "There's a tremendous amount of work to be done and we can't do it all on our own. By using our partners to help us go global, we change the world."

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Eavor is hiring and looking for strategic partnerships. Get in the loop at **eavor.com**.

This article was sponsored by Eavor Technologies.





TD Bank Group Leads the Way to a More Sustainable Future

With a notable commitment to sustainability and a series of innovative collaborations, TD is at the forefront of addressing climate change.

Sandra MacGregor

As climate change remains one of the most critical challenges of our time, one Canadian bank stands out as a leader in its commitment to environmental sustainability.

In November 2020, TD announced its global Climate Action Plan, which includes a target to achieve net-zero greenhouse gas emissions for its operations and financing activities by 2050, in alignment with the principles of the Paris Agreement.

The announcement is in line with TD's long-standing emphasis on corporate citizenship and environmental sustainability. In 2010, TD was the first bank in North America to become carbon neutral, and this plan further strengthens the bank's resolve to help drive positive impacts globally as a top North American financial institution. Since 2017, TD has contributed over \$56 billion of its \$100 billion commitment in low-carbon lending, financing, asset management, and internal corporate programs by 2030. In 2020, the bank issued its inaugural sustainability bond to direct capital toward green and social projects in support of the United Nations Sustainable Development Goals to help build a more sustainable economy.

An actionable plan

While long-term, ambitious goals are important to mobilize people, setting shorter-term targets is essential. To help ensure progress, a significant step in TD's leadership journey is to integrate its Climate Action Plan into its business operations. These strategies

include a focus on data measurement and analytics, whereby TD will use industry-specific approaches to prioritize greenhouse gas reduction in each sector. To this end, the bank has joined the Partnership for Carbon Accounting Financials to support the development of carbon accounting methodologies for financial institutions globally, as well as the Institute of Sustainable Finance and the Center for Climate-Aligned Finance at the Rocky Mountain Institute. TD has also established the ESG Centre of Expertise, drawing on experts across TD to invest in research and support academic progress and technological

To support its clients, TD has established a Sustainable Finance and Corporate Transitions group. The group will provide clients with advice on a variety of things like sustainability-focused financing. Furthermore, in recognition that the Arctic Circle is a unique and fragile environment, vital to the health of the global climate system, TD won't provide new project-specific financial services, for the exploration, development, or production of oil and gas within it.



Nicole Vadori, Associate Vice President and Head of Environment at TD, shares insight into why TD created its ambitious Climate Action Plan.

Why did TD feel the need to release its Climate Action Plan?

Achieving long-term sustainable growth is critical to our future prosperity. Climate change poses real business challenges, as well as environmental and social ones, which will require consistent effort over many years to overcome. But it cannot be done alone or by one person or organization. It requires the collective action of governments, businesses, researchers, thought leaders, civil society, and everyday citizens. We recognize that the path to meeting our climate change targets is still being established, but our proposed actions set now will help support our clients and help them capture the opportunities as we transi-

As someone who works for TD, how does it feel to have an employer that's striving to implement such an ambitious plan for environmental sustainability?

tion to a low-carbon economy.

COVID-19 showed us how quickly the world can change, and climate change is another global crisis that requires immediate action. Although the task ahead of us is ambitious, I'm proud to be a part of a company that lives its purpose and does the right thing in the face of uncertainty.

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Reaching a low-carbon future will require conscious choices from everyone. Visit td.com/tdreadycommitment and td.com/esg to learn more about what TD does to build a bank with purpose.

This article was sponsored by TD Bank Group.

