

RISING TO THE CLIMATE CHANGE CHALLENGE

BY KAREN SUMNER



Meeting the central aim of the Paris Agreement, which is to keep the global temperature rise to well below two degrees Celsius above preindustrial levels, requires a broad commitment at all levels of society. UTS graduates are doing their part as global citizens to tackle the challenge of climate change.

As scientists, educators, business leaders and activists, the six alumni profiled below come at the climate emergency from diverse perspectives. They also illustrate the power that each of us has to alter a dangerous course set by human activity.

Elizabeth Bush '81, a member of the Canadian delegation at the 50th Session of the Intergovernmental Panel on Climate Change in August 2019.



ELIZABETH BUSH '81 COMMUNICATES SCIENCE THAT INFORMS GOVERNMENT POLICY

Elizabeth Bush knew that she and her colleagues at Environment and Climate Change Canada had done their jobs well when the House of Commons voted this past June to declare a national climate emergency. While no crisis is good news, it was a moment of recognition for

the work Elizabeth does as a science advisor and for the effort she and her colleagues put into the *Canada's Changing Climate Report (CCCR)*, which tells Canadians how Canada's climate has already changed and what changes might occur in the future.

With one graduate degree in biology and another in environmental studies, Elizabeth is well positioned to understand science information and communicate it clearly to inform the development of policy.

"It's fascinating to me that the science is always evolving," she says. "And it's rewarding to be involved in advancing other people's understanding of the research. For example, I was glad to have been on the team that got greenhouse gases listed as 'CEPA-toxic,' which then gave our federal government the authority to regulate these gases under the *Canadian Environmental Protection Act*. That kind of work is satisfying, even though the situation itself is serious."

Indeed, the messages in the CCCR that Elizabeth led development of and partly authored are, in the main, dire. Warming in Canada is, on average, about double the magnitude of global warming. In the Arctic, it's nearly three times the global rate. These patterns will roughly continue in the future. With our oceans becoming warmer, more acidic and less oxygenated, the health of our marine ecosystems is threatened. Sea ice, snow cover and ice on land are also declining, permafrost is thawing, coastal flooding is expected to increase, and some weather extremes will continue to intensify. These are some stark facts for Canadians.

"Canada is part of a global climate system," explains Elizabeth. "Worldwide emissions are creating amplified warming here. We can only stop global warming by reducing carbon emissions worldwide to net zero and substantially reducing other greenhouse gas emissions. To hold global warming to well below two degrees Celsius after the mid-century, as in the Paris Agreement, we need to do this soon."

Is Elizabeth hopeful? “Well, I’m not despairing. That’s not productive. I focus on what I can do personally to make a difference and on working toward effective climate policy.”

CAMILLE LI '92

CREATES CLIMATE PROJECTIONS BASED ON LARGE-SCALE ATMOSPHERIC DYNAMICS

It’s not easy work, but it involves a lot of physics, which is one reason Camille Li loves it. Professor of Atmospheric Sciences at the University of Bergen and the Global Climate Research Leader at the Bjerknes Centre for Climate Research (BCCR), Camille has established a career in Norway partly because there is greater funding for climate science in Europe than in North America.

“Bergen is the birthplace of modern meteorology, which is basically using computer models to predict weather,” she says. “So scientifically, it’s amazing to work here. Plus, Norway is an interesting place: it’s one of the world’s largest exporters of oil but also a global leader in domestic clean energy. Its oil profits fund its environmental efforts, while its oil activities contribute to climate change.”

Despite this contradiction – or perhaps because of it – Norway has become a leader in climate science. The BCCR is one of the largest climate research institutions in Europe, with over 200 researchers from 37 countries, and has provided the Intergovernmental Panel on Climate Change (IPCC) with simulations on climate developments. This is precisely the work that Camille does.

“I look at observational data of what has happened in the past and what is happening now, as well as model data, to determine the likelihood of future climate changes under various emission scenarios for greenhouse gases. There’s a lot of



uncertainty because the atmosphere is a chaotic system, making it hard to predict specific outcomes for specific regions. Our current global warming of 1 degree Celsius doesn’t always speak loudly to people, because it doesn’t say what’s happening where they live.”

That’s what Camille wants to tackle next: more accurate regionally-based information. Such projections would help countries to develop the policies they need to protect their environment and their citizens.

“The more specific we can be, the better. Reducing uncertainties in regional projections is the next big challenge.”

KAI CHAN '93

MAKES IT EASIER FOR ALL OF US TO BE ENVIRONMENTALLY RESPONSIBLE

“My primary role is to frame climate change as a much broader problem of a frontier economy in which we view our natural world as an unlimited resource and pollution as a minor side effect,” says Kai Chan, Professor at the Institute for Resources, Environment and Sustainability at the University of British Columbia (UBC). “We have engineered our economies to be unsustainable, and we need an alliance between climate change communities and biodiversity communities to find solutions.”

Kai leads the Connecting Human and Natural Systems (CHANS) Lab at UBC, which conducts analysis and modelling of social-ecological systems. He is also co-founder of CoSphere, a soon-to-be-launched “community of small-planet heroes.” CoSphere has a citizen side, offering non-partisan, science-based analysis of policy, and a consumer side, offering concrete interventions in the economy that will safeguard the environment.

“You can’t really simplify the problem of climate change, because any one problem is connected to a complex web of issues. For example, increased flooding is caused in part by land use change, deforestation, and wetlands being paved over as cities expand. Add in more extreme weather events, warmer air that carries and dumps more water, and rapid snow and ice melting, and there’s nowhere for the water to go. This is a multifaceted issue that requires collaboration to address.”



ABOVE: Kai Chan '93.
LEFT: Camille Li '92, with Ola Elvestuen, Minister of Climate and Environment of Norway, at the Bjerknes Centre for Climate Research in Bergen.



ABOVE: Gavin Pitchford '76. BOTTOM RIGHT: Celesa Horvath '85.

Despite that complexity, Kai believes it is possible to simplify solutions at the citizen level. Canadians have said that they want to take action, but they don't always know how.

"There is so much information out there – the cognitive load of navigating through it toward a more sustainable practice is too high. CoSphere makes it simpler to mitigate our impact on the environment. I believe it should be both easy and enjoyable to live in a more sustainable way."

GAVIN PITCHFORD '76 CONNECTS LEADERS ACROSS SECTORS TO COLLABORATE FOR A SUSTAINABLE FUTURE

How do you get Canada's leaders in industry, finance, energy, academia and government to make meaningful connections across their diverse fields and collaborate on climate change solutions? If you're Gavin Pitchford, CEO and Founder of Delta Management, you establish the Clean50 Summit and Clean50 Awards. With Delta already positioned as a leading search firm for sustainability and clean tech professionals, Gavin was well placed to build a community of leaders who have advanced sustainability, clean tech and clean capitalism in Canada.

"Nine years ago, we noticed there was a lack of cross-sectoral conversations," he says. "And yet, we all recognize that there is a clear and present need for immediate action and for cross-sectoral collaboration when it comes to climate change. The Clean50 initiative is designed to bring together and recognize Canada's leaders in sustainability and bridge the gaps between sectors. The format makes it possible to build collaborations that will move us closer to a sustainable future."

The Clean50 Summit uses a workshop structure, putting Clean50 Award recipients in different small groups over the course of the day with different problems to solve. The active, hands-on, team-based approach is designed to build trust and relationships between participants.

"Some remarkable collaborations have come out of this – new relationships that carry on after the Summit and new initiatives between and within organizations."

On Earth Day, one hundred Clean50 honourees published an open letter in *The Globe and Mail* urging Canadians to make climate the top priority in upcoming elections. This was the largest group from diverse industries and occupations to come together in this way, and it made news across Canada.

"The Clean50 provides a structure that genuinely connects these leaders," says Gavin. "They are more powerful and more effective at driving necessary change by knowing each other and working together."

Celesa Horvath '85 and **Don Schmitt '70** are amongst past Clean50 Honourees. UTS itself won a 2013 Clean50 Top Project Award for the Maximum City summer program.

CELESA HORVATH '85 HELPS CORPORATE CLIENTS ADOPT RESPONSIBLE AND SUSTAINABLE PRACTICES

Celesa Horvath just wrapped up a project that has been her entire focus for the past two years. Its aim: to move more goods by rail and fewer by long-haul trucking, potentially leading to a 75 per cent reduction in greenhouse gas emissions related to the movement of goods.

"Helping clients with these kinds of projects is how I contribute to more sustainable development in Canada," she says. "My goal is for client



projects to have fewer negative environmental outcomes.”

Over her three-decade career as a consultant, with the last 15 years as owner and principal of Ventus Development Services, Celesa has been involved in projects in Canada and around the world for clients in the energy, mining, infrastructure, transportation and government sectors. She helps companies understand and navigate the environmental assessment and review processes. What does the law require? What scientific studies are needed? What community studies?

“Many of my clients want to do things differently. They want better and cleaner outcomes. I help with crafting sustainable corporate policies and strategies, and I help with implementation.”

At this stage in her career, Celesa works more with renewable energy projects and less with oil and gas: “I have the luxury of choice, and I exercise it.” But her focus is not entirely on government and corporations. A self-described urban refugee, Celesa moved from Toronto to a small rural community and adopts sustainable practices on a personal scale.

“I want all of us to think in a more collaborative and holistic way about our role and impact. Before we look to corporations to make change, let’s look at our own life choices. Our environment is a reflection of our individual decisions. My hope is that we use our power and focus less on past decisions and more on future options.”

MATTHEW LIE-PAEHLKE '98

EMPOWERS INDIVIDUALS TO BECOME ADVOCATES FOR CLIMATE SOLUTIONS

Matthew Lie-Paehlke wants to know if you’ve taken the pledge – specifically, the climate pledge. A PhD student in urban planning at the University of Toronto with a focus on climate organizing, Matt is the founder of Climate Pledge Collective, an open-ended, decentralized movement to reduce our collective carbon consumption.

The climate pledge sheet offered by the Collective makes taking action simple. Under the categories of food, home efficiency, consumer goods, daily transport, air travel and civics, the sheet lists about 45 lifestyle changes (such as taking public transit, limiting meat consumption and switching to green natural gas) that benefit

the environment. Each item earns a different point score based on its impact. In addition, the pledgee is asked to choose a sponsor to help them stay on track.

“I call this a tiny climate organization,” says Matt. “It basically started with my own choices, like living without a car and giving up flying. I really believe in the role of the individual and the influence we have on our friends, family and colleagues. I wanted to offer a way for people to design their own pathway to a low-carbon future and work at the neighbourhood level too.”

As one of its projects, the Collective offers a how-to for organizing a climate picnic, where small groups get together, make climate organizing visible, and plan for future actions. It has also run climate crisis subway ads and encourages simple activities like “ALLe-mails ALL,” which entails sending a personal message about climate change to everyone in your address book.

“We know there is no single solution to climate change. It requires engagement at every level and scale. We’re working at the grassroots level to encourage people to take action in the ways that best fit their lives.” ■



Matthew Lie-Paehlke '98

UTS TAKES ACTION

In one example of sustainability education at UTS, M3/Grade 9 geography students work throughout the year to prepare for a climate change conference. They are responsible for understanding an individual province’s or territory’s current climate change risk and proposing a plan to mitigate that risk, which they then present at a First Ministers’ Meeting.

“The entire course is framed around this project,” says geography teacher **Katherine Joyce '06**. “We want students to understand the complexity of climate change. Can their solutions actually work? Can they acquire the tools and resources they need? They learn a lot about government policy development and how to advocate for change.”

Teachers in science and civics make cross-curricular connections throughout the year to deepen and extend student learning. “The feedback is really positive,” says Katherine. “Students feel better informed and more capable of leading change by the end of the year.”