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PICS*news*

SUMMER 2015

Yes, Virginia, We Are Making Progress

PICS reluctantly says farewell to outgoing PICS executive director, Tom Pedersen, whose next projects include writing a book about the success of BC's ground-breaking climate-action policies.

This is the last front-page piece I will write for the PICS Newsletter, for my term as Executive Director ends on October 31st. In preparing to write it I took a look back at some of the editorials we've printed since the first issue six years ago. That glance in the rear-view mirror reminded me that, despite little overall progress being made by society in tackling human-induced climate change, there remain grounds for optimism.

Let me offer a few examples, first of the "little progress" variety. In the Summer 2012 issue I wrote about the environment *and* the economy, pointing out that there is no "versus" in that phrase. And yet, in the election campaign currently before Canadians, we are told by our Prime Minister that acting on climate change will damage the economy. That's fiction, as progressive climate policies applied in British Columbia, California, Germany, Denmark and elsewhere have clearly shown. Yet on September 27, the Prime Minister's office once again released a statement claiming that putting a price on carbon "will kill jobs". The continued trumpeting of that fiction indicates that the political dial hasn't been moved very far, at least with respect to the current governing party. Indeed, at the national scale in Canada, progress has been very slow, and depending on what we wake up to on October 20, we may still have an immense amount of work to do.

Tom Pedersen summing up his 6 years at PICS at the institute's Annual Forum

Another editorial, in the Winter 2013 issue, raised the very serious problem of ocean acidification, termed by some the 'evil twin' of global warming. That concern has an environmental and economic context that's real rather than theoretical––scallop farmers near Nanaimo for example are facing large losses as larvae struggle to secrete their calcium carbonate shells in the face of waters being driven increasingly acidic by an ongoing influx of carbon dioxide. And just to the south, some oyster growers have pulled up stakes and abandoned Puget Sound, relocating their operations in more chemically forgiving parts of the ocean. It's not carbon pricing that's killing jobs in both BC and Washington State, it's carbon dioxide emissions.

In the Winter 2011 issue, I raised the issue of extreme weather events and food security, stemming from the record heatwave that devastated Russian wheat production in the summer of 2010 while extraordinary monsoon rains a month later flooded the Indus Valley and destroyed vast swaths of crops in Pakistan. At that time, global warming had not yet been fingered as a significant contributor to such extremes but that's no longer the case. Four years on, statistical attribution studies have become very sophisticated and the research community is now able to assess the probability that global warming will increase the intensity and/or frequency of extreme events. One outcome of such research: the integrity of global food production is increasingly threatened. We should expect prices to reflect that, and indeed, they already are.

But despite the ongoing deluge of bad news there remain reasons to be hopeful. In the Spring 2013 Newsletter, I wrote that within two days of each other in May of that year, the Dow Jones Industrial Average closed above 15,000 and the concentration of carbon dioxide rose above 400 parts per million for the first time in probably 800,000 or more years. That coincidence nicely illustrated the long-held view that industrial growth and fossil-fuel burning go hand in hand and, according to traditionalists, you can't have one without the other. But that is no longer true. Last year, for the first time since the Industrial Revolution began, global economic growth and growth in greenhouse gas emissions became decoupled, thanks to a remarkable global expansion of zero- or lower-carbon energy sources. We cannot yet claim that decoupling is permanent, but it does give me cause for hope. It also reinforces the need to continue to work toward climate solutions, and that's a challenge that PICS will continue to accept.

Finally, let me just say that it has been an immense privilege to have been able to serve you, the climate-solutions community in British Columbia, for the last six years. Thank you for granting me the opportunity. À bientôt.

Tom Pedersen

PICS is hosted and led by the University of Victoria in collaboration with the University of British Columbia, Simon Fraser University and the University of Northern British Columbia.

Achieving "net-zero" energy buildings

PICS teamed up with the Pembina Institute this summer to release two more white papers aimed at ramping up energy efficiency in BC's new and existing building stock. The two papers are Evolution of Energy Efficiency Requirements in the BC Building Code and The Path to "Net-Zero Energy" Buildings in BC.

Along with its Pacific Coast Collaborative partners—the states of California, Oregon and Washington—BC has committed to "lead the way to 'net-zero' buildings"—meaning ultra-efficient buildings that produce at least as much energy as they consume. While this is an admirable commitment, BC has yet to define its net-zero target and articulate a plan to get there.

The "path" report describes the environmental and economic case for ultra energy efficient buildings, reviews some of the targets and policies adopted in leading jurisdictions, and then articulates ten key policies to get to "net-zero ready". The second paper focuses specifically on the role and history of building regulations in accelerating energy efficiency.

PICS executive director Tom Pedersen says with building floor space expected to double globally by 2050, it is essential that the energy intensity of buildings falls rapidly.

"These two papers provide a policy pathway for achieving significant reductions in carbon pollution from new buildings, while also leveraging major energy savings and job creation for British Columbians." Radio and print media picked up on the report's findings, including Vancouver Sun columnist Barbara Yaffe.

The Pembina papers follow May's release of another PICS white paper, Accelerating Energy Efficiency in BC's Built Environment – Lessons from Massachusetts and California. All white papers are available on the PICS website.

Lewandowsky: cognition & climate change

"We have the facts. It's now over to the social scientists to figure out how to move us forward as a society to address this global problem."

Motivating people to take action against human-caused climate change will require more than one solution due to the complexities of the influences involved – that's one of the take-home messages for those attending or tuned into Stephan Lewandowsky's June 25 lecture at UVic.

Professor Lewandowsky is one of the world's leading cognitive psychologists whose research examines peoples' memory, decision-making and knowledge structures. Originally from Australia and now working at the University of Bristol, he has published over 140 articles, chapters, and books on how people respond to corrections of misinformation and what variables determine people's acceptance of the scientific consensus (97%) for anthropogenic climate change.

It turns out those variables are time and place dependent. Lewandowsky cited studies showing how the changing "societal canvas" will alter the value that people place on the environment, versus money for example, how a person's political affiliations rather than education will shape their willingness to accept or reject scientific findings, and even how day-to-day weather patterns will sway peoples' point of view.

"If you are really unskilled in all this…then you hold a climate meeting in Copenhagen in December so that Greenpeace is standing in the snow saying 'beat global warming'—that's really well done," he added sarcastically.

Stephan Lewandowsky at his June 25th lecture at UVic

The media too are often guilty of being influenced by short-term weather patterns when writing opinion pieces on climate change. "When it's cold outside people think global warming is a hoax; when they are hot and sweating they think climate change is for real," Lewandowksy said.

His favourite study shows people are more inclined to accept global warming when a dead, dried-up tree was left at the entrance to a conference – leaving two dead trees was even more effective. "That's how our species works. They look at dead trees and make the connection."

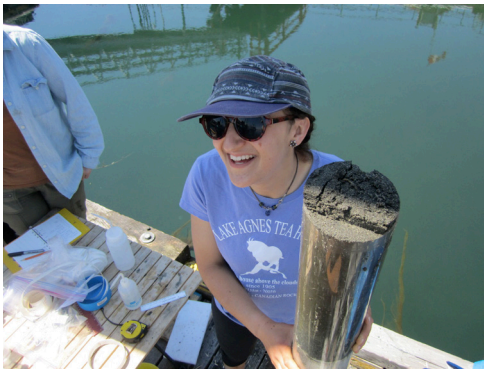
So how should society deal with these cognitive challenges behind climate change acceptance? Lewandowsky says a crucial step is dealing with the surplus of misinformation– in particular the false statement that there is no scientific consensus, because the public will only call for policy action if agreement among scientists is clearly seen and understood.

Exposing the misinformation, activities and motivations of those who manufacture denial is part of that process – and something that Lewandowksy and his colleagues did last month with a new paper that found common methodological flaws in climate sceptic papers, including "cherry picking" of data to force certain outcomes, ignoring inconvenient data and disregarding well known physics.

Summer 2015 Internships

This summer eight PICS internships took place across British Columbia in a wide variety of disciplines, ranging from a fenestration modeling specialist looking at the energy efficiency of windows in Victoria, to a sustainable transportation planner in Kelowna, and carbon management planning for businesses in Prince George.

2015 marks the 5th year of the popular internship program, which hires students from the four PICS consortium universities (UVic, SFU, UBC & UNBC) to work in a climate related field for four months. PICS awarded a total of 14 internships this year; six more will be taking place in the fall. Below are profiles of two of this year's interns:



Maya Guttmann preparing sediment cores in the Comox Estuary

Maya Guttmann, UBC

Maya Guttmann was this year's Blue Carbon Intern for the Comox Valley Project Watershed Society, which works to protect and restore sensitive local watersheds and habitats. Maya's tasks included assisting with the installation of a silt fence to improve water quality, and monitoring plant survivability at a recently restored saltmarsh site, using observations to create recommendations for similar future projects. She participated in eelgrass restoration, helping prepare eelgrass bundles to be planted by scuba divers.

Maya also conducted a literature review of how to take marine sediment cores and produced an instructional document on extracting sediment cores, for use by other coastal restoration groups. She had a sediment corer constructed by a local machinist, which was used to process sediment cores on the docks of the Comox Estuary for later analysis.

Adam Seip, UNBC

This summer Adam Seip worked as a Climatology Research Assistant at the Regional Office in Prince George for the BC Ministry of Forests, Lands, and Natural Resource Operations. His fieldwork consisted of collecting data from and doing maintenance on 25 weather stations and hundreds of weather data loggers all over northern BC. The climate data Adam collected are being used to monitor climate change trends in the region, particularly in the areas of forest health and permafrost loss.

Adam Seip in a helicopter, on the way to check weather stations south of Tumbler Ridge in the Peace River Valley

One location with a more specialized purpose is a carbon flux site that collects data in a mountain pine beetle-killed tree stand. This site monitors net carbon emitted from the stand along with the change in rain and snow depths due to a loss in canopy cover. Adam also rappelled to reach temperature probes in the cliff side at Mt. Gunnel, which is experiencing increased avalanches due to permafrost melting.

Shale gas development's potential impact

Want to know the potential impact of shale and liquefied natural gas (LNG) development on BC's land, water resources and greenhouse gas emissions? There's a tool for that.

This past June saw the launch of a new interactive tool developed by the Pembina Institute with support from PICS and others. The BC Shale Scenario Tool allows users to select specific LNG proposals and assess their environmental impact, dependent on factors such as the scale of development, different source basins (e.g. Montney or Horn River), and the different technologies and practices used (e.g. reducing methane leaks or recycling waterwater).

This planning tool is one of a series of initiatives supported by PICS' major project entitled *The Scale of Natural Gas Development and Maximising Net Social Benefits.*

"Phenomenal Physics" summer camps

This summer PICS brought fun and interactive activities on climate change and energy generation to the "Phenomenal Physics" summer camps for kids in grades 2 to 10 that are run each year by UBC Physics & Astronomy Outreach program.

Young campers created their own "greenhouse gas effect" models by developing tiny, controlled "atmospheres" and measuring temperature effects from changing surface colour and environment type. And they explored renewable energy generation through assembly and exploration of small wind turbines alongside hand-cranked, circuit generators.

PICS support has also enabled the outreach program to further develop climate change science on its "Physics Teaching for the 21st

"Fun with Physics" campers measuring ground surface temperatures as part of their climate science lessons

Century" (C21) website as well as develop high school teachers' education kits. C21 will provide new information on climate modeling, renewable energies, and carbon storage, and will link to the PICS Climate Insights 101 series of free online education courses and videos. The teachers' education kits will include instructions and supplies for experiments in climate change, energy consumption and sustainability. Currently, the UBC team is working on a number of experiments, including:

- Hand Crank Energy Generation and Efficiency
- Electricity Generation: Wind and Water
- Solar Energy: Photovoltaics vs Heat
- Thermal Absorption: A Greenhouse Effect Model

Vancouver's high school teachers will further design the kits during two workshops this fall. Once completed around 25 kits will be made available for use by junior and senior high school teachers in classrooms across Vancouver.

Climate Reality Project

Nastenka Calle, PICS SFU program coordinator, was amongst 523 new "Climate Reality Leaders" from 21 countries, who received training this past July from former US Vice-President Al Gore, founder and chairman of The Climate Reality Project, in Toronto, Canada.

The project is a global movement aimed at pressuring world leaders at the UN climate talks in Paris this December to reach a binding agreement to sharply reduce greenhouse gas (GHG) emissions and expand renewable energy—the ultimate goal being to reach net zero carbon emissions. Climate Reality Leaders aim to spread the word and build public support for action in Paris.

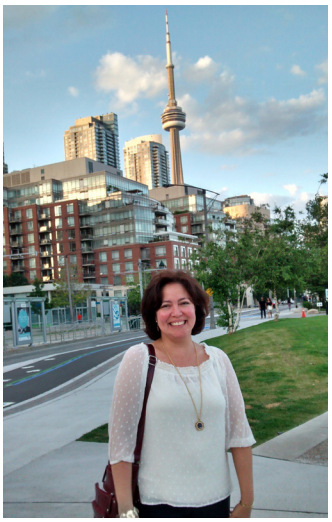
The training in Toronto covered climate change impacts and the economic fallout of inaction, but a key focus of the session was on solutions, through the sharing of best practice for reducing GHGs, and new opportunities in the clean tech sector.

Nastenka says one easy way for people to take action on climate is to support the call for a binding agreement in Paris by signing and promting the Road to Paris petition.

The Canadian Water Summit and Blue SFU

PICS lent its support this summer to two events dedicated to safeguarding the health of Canada's watersheds – the BLUE SFU Water Research Day on June 24, followed by the 6th Annual Canadian Water Summit.

SFU's research day enabled academics to share their latest findings in the areas of ecological conservation; protecting watersheds and salmon biodiversity; First Nations fisheries, socio-economic factors and environmental health; climate change adaptation and water governance; urban sustainability; and water, sewage and storm water issues.



Nastenka Calle in Toronto

Water-related research at other leading universities was also highlighted such as UVic's POLIS research project, and the PICS water-energy nexus research being undertaken as part of its natural gas project. The creation of the Pacific Water Research Centre at SFU was also announced at the event.

Upcoming events

- Reality Check: Climate Change, the Resource Economy and the Road to Paris: An Evening with Professor Tim Flannery in Vancouver on October 14.
- The Global Warming Hiatus: What's Up With That? Free public lecture with John Fyfe on October 21

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