



FALL 2014

PICS Associate Director goes back to the grid

PICS reluctantly bids farewell to its longest-serving staff member, Dr. Lawrence Pitt, a physicist engineer with an eye for the human factor in climate change solutions, as he explains...

In January, I return to my clan, the Institute for Integrated Energy Systems at University of Victoria (UVIC). It has been a great pleasure working with and learning from my PICS colleagues during these past six years.

Rather than provide a retrospective, I would rather share some of the influential ideas that I encountered or revisited while on my journey with PICS. These ideas helped to shape my thinking on humanity and its relationship with environment. From my

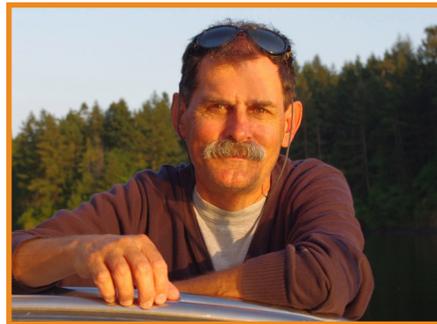
friends at the PICS' sister organisation, the Pacific Climate Impacts Consortium (PCIC), I learned how the whole Pacific Ocean and our fabulous British Columbia topography combine to make climate variables like temperature and precipitation rich in variety, spatially and temporally. And the climate is changing, so let's measure it. Hence, we now have the provincial climate data set and new PRISM maps for BC.

Other insights, however, wove more slowly into my brain from a previously dark corner of knowledge for a physicist-engineer like me—the humanities. Economists, historians, sociologists, psychologists, political scientists and a surprising number of geographers, either as academics or policy-makers, have provided me with new ways to think and ponder. This interdisciplinary sojourn, poked and prodded by my PICS colleagues, was difficult for me at first, for the terminology was confusing. Gradually I spoke of jurisdictional authority and social licence more often than I did of heat-rates and transmission constraints.

Then I discovered a little gem called "Ten Suggestions for Policy Makers" (Rayner and Malone 1998) based on a social science workshop called Human Choice and Climate Change. Two of my favourite suggestions are: 1) Prepare for the likelihood that social, economic, and technological change will be more rapid and have greater direct impacts on human populations than climate change; 2) Direct resources into identifying

vulnerability and promoting resilience, especially where the impacts will be largest. Probably the most influential ideas that I encountered came from geographer Mike Hulme during his visit to

Vancouver hosted by PICS. I highly recommend [his talk](#), still visible on our website, where he outlines the six-dimensional space that people occupy in thinking about climate change—he calls it framing. Mike was also a co-author of the Hartwell Paper. Another Hartwellian, Reiner Grudmann provided this synopsis: The Hartwell Paper argued that



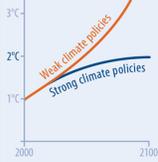
Dr. Lawrence Pitt bids farewell to PICS

we need to provide energy access to a rising world population, while at the same time preventing the disruption of environmental systems. Solutions should be relentlessly pragmatic, bottom up, and focused on criteria of human dignity and public health, not grandiose global targets and timetables. Climate change is a wicked problem, which cannot be solved but only managed more or less intelligently. Obviously this is a different approach than pursued at the Lima COP20 meeting (and many others), as preamble to Paris 2015.

And finally, I frequently visit and revisit the wisdom of the prolific Vaclav Smil, another geographer, who reminds us that energy transitions are multigenerational affairs and that the grand-pattern for the global energy system seems, as first pointed out by Ausubel and Marchetti, to be an evolution from low-energy density, high-carbon biomass (when we were mostly farmers) to high-energy density, low-carbon sources more suited to our increasingly high-spatial density urban dwelling circumstances. This style of long-term thinking is reflected in the [2060 Project: Energy Pathways for BC](#)—one of the new "Big Five" PICS research themes—to which I will continue to contribute. From these and other influences, my thinking about humanity and its relationship with environment has evolved towards a more pluralistic approach in appreciation of its rich dimensions. Consequently, I have derived much from my PICS experience. Merci.

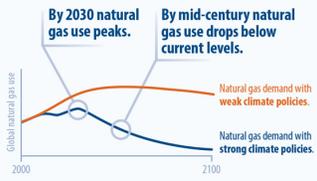
IS B.C. LNG REALLY A CLIMATE CHANGE SOLUTION?

Global warming must be limited to 2°C to avoid the worst impacts of dangerous climate change.



Governments around the world can help avoid 2°C of global warming by implementing **strong climate policies**.

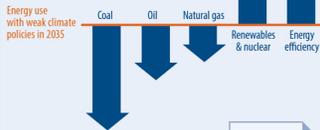
With strong climate policies in place:



By 2030 natural gas use peaks.

By mid-century natural gas use drops below current levels.

In 2035, strong climate policies result in better efficiency, more renewables and nuclear and less fossil fuels as compared to weak climate policies.



If strong climate policies are not in place, fossil fuels — including natural gas — continue to make **climate change worse**.

STRONG CLIMATE POLICIES could include:

- Carbon pricing
- Emissions regulations
- Renewable energy and efficiency standards

Since these policies are not yet in place today...

...**B.C. LNG is NOT a climate change solution.**

Encourage B.C. to make responsible energy choices. Talk to your neighbours, community and MLA.

pembina.org/lng



BC's LNG not a climate solution

Research released in October by PICS and the Pembina Institute found that the BC government's plan to increase the supply of liquefied natural gas (LNG) onto world markets won't help solve climate change in the absence of strong climate policies, and could in fact, make it worse. In particular the white paper "[LNG and Climate Change: The Global Context](#)" challenged the rhetoric that LNG would displace more GHG-intensive coal in the energy mix. The research attracted extensive media coverage around the country, and sparked discussions via blogs, opinion articles and talk back radio. On CBC's Early Edition BC Environment Minister Mary Polak agreed that LNG by itself was not a climate solution, but said it can be an important 'bridge' fuel to help nations transition from other fossil fuels. The Pembina researchers note that tying BC's economic engine to a resource whose production will decline within 15 years if strong international climate policies do eventuate is a recipe for a boom and bust — something with which many BC communities are unfortunately all too familiar. Instead, government investment in renewable energy sources could promise a better future.

This [infographic from The Tyee](#) (left) summarizes the white paper.

Canadian cleantech is cutting edge

What is the fastest growing industry in Canada? The answer is cleantech, as attendees of the [The Cleantech Edge](#) event in Vancouver recently found out after hearing about the sector's latest trends and success stories.

The free public event, co-sponsored by PICS and The David Suzuki Foundation on September 18, saw the SFU Segal Building venue at capacity for the evening line-up of speakers that included Céline Bak, president of Analytica Advisors; Ross

CEO Alliance.

Canada's cleantech story, it turns out, is a beacon of hope in what too often is a gloomy dialogue about this country's lack of progress on climate change. Today, Canada has more than 800 cleantech companies and 74 per cent of them export their innovations. Revenue from the sector grew nine per cent to \$11.3B in 2012, according to Analytica Advisors research, while the mining, oil



Céline Bak speaks at the Cleantech Edge event

and gas sector grew just 0.3 percent over the same period. Analytica Advisors' Bak is Canada's leading analyst on the cleantech sector. She says cleantech must be given an official category in the Canadian economy in order to secure funding and R&D support, and also to gain access to tariffs on environmental goods that overseas competitors currently receive. "Cleantech is clearly the future," Bak says, explaining that 20 per cent of the industry's 41,000 employees are under the age of 30. Bak believes that revenue from cleantech could rise to \$32B plus 120,000 jobs by 2022 with the right support and recognition. Jonathan Rhone says cleantech's "meteoric" rise in the past decade has seen it permeate sectors from health to electronics and even fossil fuels. But he warns that "customers are no longer prepared to pay a premium for green", so companies needed to be competitive.

All the speakers share great optimism about the future of cleantech, which is tipped to reach \$2.5 trillion globally by 2022. As David Suzuki said during his opening remarks – now is cleantech's time to "begin it." PICS executive director, Tom Pedersen, underscored the vital role of cleantech in reducing GHG emissions and mitigating climate change, and the increasing urgency of that goal.

QUEST2014 & Community Energy Symposium

PICS was an official event supporter for the [QUEST2014](#) conference from 1-3 December, 2014, that featured more than 300 participants across many sectors. Panelists from Fortis BC, PowerStream, and Enmax discussed how key provincial and municipal regulations, alongside technology and social demand for sustainability has driven energy conservation, smart grids and renewables in BC over the last 10 years.

Leading up to QUEST, PICS UBC worked with the Collaborative for Advanced Landscape Planning (CALP) and Quality Urban Energy Systems of Tomorrow (QUEST) to host the **Community Energy Symposium 2014** in New Westminster, BC. The event drew nearly

Beaty, chairman of Pan American Silver Corp & Alterra Power Corp; David Helliwell, CEO of Pulse Energy; and Jonathan Rhone, CEO of Axine Water Technologies and head of the BC Cleantech

120 Metro Vancouver practitioners from local government, real estate, property development and utility sectors. Showcased at the event was CALP's innovative online tool, the [Community Energy Explorer](#) that, once completed, local governments will use to enhance energy literacy and engagement in the community.

Quantifying bioenergy from BC Forests

The BC Government will be adding a new category to its official annual list of forest products - energy. And it's been triggered by a [paper](#) written by PICS Intern Adam Kamp, (ex Simon Fraser University), working with BC Ministry of Forests, Lands and Natural Resource Operations' Caren Dymond. Kamp and Dymond surveyed mills and forestry operations across BC, and quantified for the first time exactly where mill residue goes. They found that large amounts of wood fibre are already being burned across the province to produce bioenergy.

Most logs harvested from BC forests are sawed into lumber, and much of the excess wood from that process is chipped and taken to pulp and paper mills. The bark and some of the sawdust or shavings may be used to heat the kilns or dry the lumber or go to pellet plants. Of the biomass used for pulp, only about 45 per cent actually ends up as paper (the number is much higher for newsprint). The rest? It primarily becomes a high-carbon waste product called black liquor.

"Before this study, we didn't know where a third of our harvested biomass went," Dymond said. But many mills are in fact using this liquor as fuel for boilers, generating heat and electricity. Some are hooked into district heating systems or are selling the power back into the BC grid - in fact, about ten per cent of BC's total grid power was supplied by biomass in 2011. Turns out BC mills have already been helping lower emissions, and having the new data will help the province analyze the true potential of its bio-energy resources.

Adapting to climate change: new course

Need to brush up on your climate change knowledge, or wondering how BC can adapt? This fall PICS released its third

animated and interactive online course in its popular *Climate Insights 101* series of education products.

The new online course is titled [BC Climate Impacts & Adaptation](#) and like its

predecessor courses - *Climate Science Basics* and *Mitigation Needs & Action* - it contains test-your-knowledge sections and typically takes two hours to complete, although users can jump directly to individual topics within the lessons.

The new course will be of special interest to British Columbians, with data on how the province's climate has already warmed since 1900 and what changes lie ahead. BC is projected to

experience more warming than the global average in the coming decades. This will affect regional water flow and supply, crop suitability and food security, distributions of pests, urban and industrial planning. Global warming will cause sea level to rise, and it is likely to increase the frequency of extreme weather events, among other impacts.

Designed to bridge the gap between scientists and general society, *Climate Insights 101* has online users in more than 170 countries. The series has been developed and peer-reviewed by leading climate scientists and experts from British Columbia. All products and teaching materials are available on PICS' newly revamped [education webpages](#).



PICS new online course: "BC Climate Impacts & Adaptation"



Learning how renewable resources can generate energy at Science World

PICS at Science World

PICS SFU continues to encourage the community to take climate action through its energy conservation program. In October, SFU Science in Action and PICS participated in the Community Science Celebration at Science World, introducing hands-on activities that teach children about using renewable

resources to generate electricity and the importance of conserving

energy to reduce greenhouse gases. This event also provided our PICS SFU program coordinator with the opportunity to showcase the *PICS Climate Insight 101* "bite size" videos and talk to people about simple actions they can do to reduce their carbon foot print. The free weekend event attracted nearly 20,000 people and to date the PICS YouTube-hosted video "What YOU can do about climate change" has over 25,000 views.

Helping BC adapt to climate change – Dr. Ian Picketts

Former PICS Fellow Ian Picketts is continuing to help British Columbia prepare for and mitigate climate change, through his ongoing post-doctoral research and his new teaching position at Quest University Canada, in Squamish. Under his [PICS fellowship](#), Ian studied community adaptation to climate change at the University of Northern British Columbia (UNBC). His research was interdisciplinary, action oriented, and directly contributed to developing a climate change adaptation strategy in Prince George.



UNBC's top graduate student, PICS Fellow Ian Picketts

Ian holds a degree in environmental and geological engineering from Queen's University. Several years of engineering remediation work experience in Manitoba, Alberta and Canada's Arctic increased his concern about the causes of the messes he was cleaning up. This led to a job at the Pembina Institute in Calgary as an environmental policy analyst. There he got his first taste of promoting sustainable energy development and climate change action at a community, industry and government level. His next stop was UNBC, where he gained his Master's and PhD in Natural Resource and Environmental Studies, and was also awarded the Governor General Gold Medal as UNBC's top graduate student.

Ian's recent post-doctoral research looks at the interactions between climate impacts and the impacts of resource development in the Nechako watershed in northern BC. He also assisted in creating a plan for an integrated sea level rise management strategy for the BC lower mainland. PICS congratulates Dr. Picketts on his many successes in helping BC meet the climate challenge and prepare for a sustainable future.

Fall Vancouver events

Leading experts in the transportation sector from academia, government, NGOs and professional

practitioners participated in the "**Transportation Futures for BC**" workshop held on September 11 in Vancouver. The [resulting report](#) identifies key priorities for PICS' major research project on low-emissions transportation in BC, which is part of five interdisciplinary areas of the [PICS new strategic research plan](#). Transportation accounts for 37% of

greenhouse gas emissions in BC and has enormous implications for the economy, land use, and livability.

Adapting to the impacts of climate change as well as living more environmentally sustainable lives were the major themes of **two public lectures** hosted by PICS in Vancouver this fall. On [September 23](#), three speakers from PICS universities shared their

perspectives. Dr. Stewart Cohen from Environment Canada gave an overview of the IPCC Fifth Assessment Working Group II report of which he was a co-author; Lori Daniels, Faculty of Forestry at UBC presented on BC's increasing and intensifying wildfires; and Jonathan O'Riordan, former Deputy Minister and now research director with SFU's Climate Adaptation Team spoke about the transformative policies and technologies needed in a changing climate.

Dr. Kate White, from UBC's Sauder School of Business, and Dr. Stephanie Bertels from SFU's Beedie School of Business gave [public presentations](#) on October 14, on effective way to change behaviours for a more sustainable future, plus tips on how to embed sustainability into organizational culture.

Coming up in January...

Mark your calendar on January 22, 2015 for the next PICS UBC SFU lecture "**Mapping extreme temperatures and their health risks in the Lower Mainland**" with Anders Knudby, SFU and Sarah Henderson, UBC. This free public lecture will take place at 5:30 pm at SFU - Vancouver Campus. And the University of Victoria and PICS will also host a **public forum on divestment** on Monday, January 26. Watch the [PICS event calendar](#) for more details.

CONTACTS

Dr. Tom Pedersen
Executive Director
picsdir@uvic.ca

Dr. Lawrence Pitt
Associate Director
lpitt@uvic.ca

Megan Jameson
Administrative Officer
mjameson@uvic.ca

Robyn Meyer
Sr. Communications Officer
rmeyer@uvic.ca

Nancy Chan
Executive Assistant
nchan@uvic.ca

Stephanie Inman
Program Assistant
picsra@uvic.ca

Kyle Aben
Program Coordinator
University of Northern BC
abenk@unbc.ca

Nastenka Calle
Program Coordinator
Simon Fraser University
n_calle@sfu.ca

Sara Muir-Owen
Program Coordinator
University of British Columbia
sara.muir-owen@ubc.ca

Pacific Institute for Climate Solutions
University of Victoria
PO Box 1700 STN CSC
Victoria, BC V8W 3R5

Phone (250) 853-3595
Fax (250) 853-3597
E-mail pics@uvic.ca
www.pics.uvic.ca