





# SSHRC, NSERC, CIHR, AND GENOME CANADA ARE TAKING RESEARCH IN NEW DIRECTIONS.

DISCOVERY >

IDEAS >

INNOVATION >

We fund research that fuels evidence-based decision making on issues of importance to Canadians and to the world.

# CONTENTS

5	Conference Highlights
7	Message From the President
8	Minister Duncan Reflections: One Year as Minister of Science
10	Public advocacy, private diplomacy secured Hoodfar's release: Cotler
12	Environment Canada trying to ease flow of oil spill research
14	Energy policy has to make room for political movements like Trump's: panel
16	Volunteer Organizing Committee 2016
17	Panel Organizers & Community Friends
18	Partners
19	About CSPC
21	Program Takeaways
22	 Keynotes
33	 Theme 1
46	 Theme 2
56	 Theme 3
58	 Theme 4
61	 Theme 5
66	8th Canadian Science Policy Conference



#CSPC2016

## CSPC Themes

-  **Theme 1:**  
A New Culture of Policy Making and Evidence-Based Decision-Making: Horizons and Challenges
-  **Theme 2:**  
A New Innovation Agenda for Canada: What Are We Building?
-  **Theme 3:**  
Clean Energy and Climate Change as Global Priorities: Implications for Canada?
-  **Theme 4:**  
Canada's Return to the International Stage: How Can Science Help Foreign Policy?
-  **Theme 5:**  
Science Funding Review: New Visions and New Directions



# LE CRSH, LE CRSNG, LES IRSC, ET GÉNOME CANADA DONNENT DE NOUVELLES ORIENTATIONS À LA RECHERCHE.

DÉCOUVERTE >

IDÉES >

INNOVATION >

Ensemble, nous finançons des travaux de recherche qui facilitent la prise de décisions éclairées concernant des enjeux importants pour le Canada et le reste du monde.



# CONFERENCE HIGHLIGHTS



The 8th Annual Canadian Science Policy conference took place November 8-10 in Ottawa, Ontario. This year as in past years CSPC had in attendance and participating delegates and speakers representing the “who’s who” of science and innovation policy from both the current leadership cadre and the next generation of Canada’s top scientists, business leaders and science policy experts. A few exceptional highlights from this year’s conference are as follows:

#### **600+ participants, 200+ speakers in 33 panel sessions covering these five themes**

- A New Culture of Policy Making and Evidence-Based Decision-Making: Horizons and Challenges
- A New Innovation Agenda for Canada: What are we building?
- Science Funding Review: New Visions and New Directions
- Clean Energy and Climate Change as Global Priorities: Implications for Canada?
- Canada’s Return to the International Stage: How Can Science Help Foreign Policy?

#### **Five pre-Conference day long symposiums:**

- 1st Canadian symposium on “Achieving Diversity in STEM, Advancing Innovation” – organized by Faculty of Science, Ryerson University
- 1st Canadian “Space Policy Symposium” – organized by Canadian Space Commerce Association
- 2nd National Symposium on “Evidence-Based Decision Making” – organized by Council of Canadian Academies
- 2nd National Symposium on “Science Diplomacy” – organized by CSPC
- Workshop: “Science Policy 101” – organized by CSPC

CSPC was proud to present its 2nd Annual Science Policy Awards of Excellence — Youth Category which follows in the spirit of our 2013 Young Generation Award. This award recognized a young individual under the age of 35 who was able to propose an innovative and compelling evidence-based policy that will make a positive difference to Canadians. Congratulations to this year’s winner Amani Saini from British Columbia.

#### **Registration Statistics:**

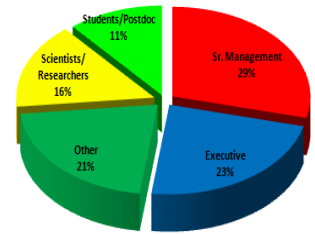
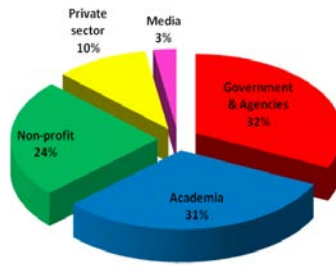
The CSPC 2016 had the highest number of delegates up to date attend the conference. With 675 participants in attendance, 217 of whom were panellists which constitutes another milestone for CSPC.

The subsequent graphs illustrate the registration and survey data for CSPC 2016.

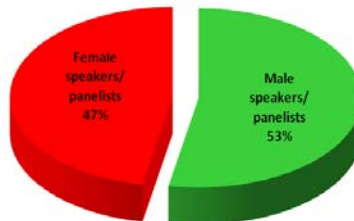


Canada

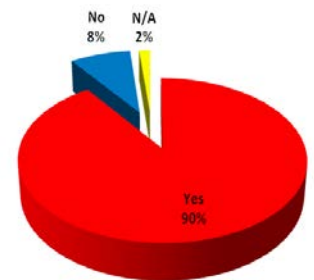
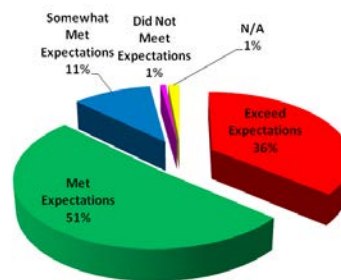
These two graphs illustrate the variance in registration by sector and by position title. The majority of the participants registered were from Government and Agencies (32%) followed by participants from Academia (31%). In reference to title the majority of delegates held positions in senior management (29%) followed by Executive (24%).



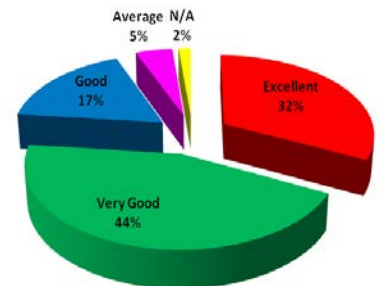
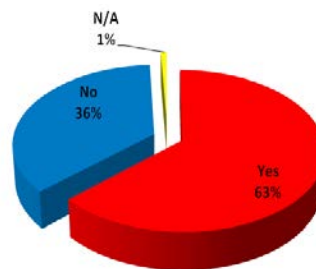
It has been CSPC's mission to strive towards a gender balanced panel of speakers and presenters, although not quite there, we are for sure on the right path as is illustrated in this graph.



As is illustrated by these two graphs, overall respondents indicated that the conference met or exceeded their expectations, with 90% indicating that they would attend a future conference.



CSPC is the place to meet new members of the community. As illustrated, 'first time attendees' at CSPC 2016 was 63%. The majority of delegates 76% of indicated they either had an excellent or very good overall experience.



**CIFAR**  
 CANADIAN  
 INSTITUTE  
 FOR  
 ADVANCED  
 RESEARCH

**ICRA**  
 INSTITUT  
 CANADIEN  
 DE  
 RECHERCHES  
 AVANÇÉES



# MESSAGE FROM THE PRESIDENT

This year we are holding the biggest Science Policy Conference ever. With more than 30 sessions, six pre-conference round table symposiums, and 200 speakers, we will cover almost all the major issues in science and innovation policy.

We have managed to achieve a relatively even gender balance among our speakers as 47% are female. In addition, nearly 30% of our participants are executives, CEOs, presidents, and executive directors.

We are here, of course, to network, to connect, to listen and learn and share knowledge and experiences. More importantly, we are here to inspire and to be inspired by the remarkable breadth and scope of what is happening in Canada in science and innovation. We are also here to inspire a new generation of scientists and policy makers from all sectors, some of whom will be exposed to this type of discussion for the first time. For these young people, this is a chance to hear about the impact of their research on policy making, and how it is possible to make a difference in their society and in the world.

This is also an opportunity to, perhaps, meet a Deputy Minister, to shake hands with a Cabinet Minister, and listen to Nobel Laureate Dr. Arthur McDonald. This conference gives us unique insights on how they analyze the issues and what it is like to be in a position to have influence. For our young scientists, experiences like this can make them think: I want to be like them, and I can work hard and get involved and make a difference.

Hearing discussions at the forefront of the intersection between science and society, hearing about science and human rights and how the two relate, hearing about science and diplomacy, science and politics, science and evidence-based decision-making, science advice to government: that is the value of CSPC.

It's CSPC that brings the challenges of policy making around climate change in non-metropolitan areas of British Columbia to Ottawa to be discussed among federal policy makers and scientists. It's CSPC that brings topical and important discussions about capacity-building in science policy. It's CSPC that brings a wide range of stakeholders together to meet with new science policy fellows, providing a panoramic view of science and innovation policy. And that is the value of CSPC: we bring together young researchers to become engaged in policy making, to be involved, and to talk about capacity building in science policy.

None of this can happen without your support. I want to thank all those who help this conference. First of all, the delegates: more than 680 people. As well, I want to thank everyone who submitted panel proposals; the 65 organizations across the country, 25 of whom got the chance to organize panels; 20 community supporters, organizations who helped us with promotions, and of course, our financial supporters who are absolutely crucial. I want to thank the Ontario Government and in particular the Ministry of Research, Innovation and Science, Government of Canada for their support through various



departments, in particular ISED, and the granting councils, in particular SSHRC who had a such key role in securing support and planning the panels.

I must thank numerous individuals who helped me with their advice: the CSPC Board of Directors, and in particular, our chair, Janet Halliwell, and Dave Watters for their engagement.

Finally, this year, like previous years, we have had many committed volunteers who helped organize the conference through their engagement with various committees. I would like to sincerely thank them for their hard work throughout the year to organize the CSPC 2016.

Sincerely,  
Mehrdad Hariri  
CEO & President  
Canadian Science Policy Centre  
Centre sur les politiques scientifiques canadiennes (CPSC)



# MINISTER DUNCAN REFLECTIONS: ONE YEAR AS MINISTER OF SCIENCE



## What a difference a year can make.

This time last year, I had the honour of presenting my first major speech as Canada's new Minister of Science at the Canadian Science Policy Conference. My appointment to Cabinet – the first to include an equal number of women and men in Canadian history – was exciting and humbling.

The new role presented an opportunity to rebuild the government's respect for and trust in our scientists.

Over the previous ten years, science was pushed to the margins of government policy and politics. Morale among researchers was low partially because of their inability to speak freely about their work. Scientists united to protest the death of evidence on Parliament Hill and research funding had flat-lined.

Our government was elected with the promise of returning science to its rightful place at the federal table and making decisions informed by the best-available evidence. In our first week, we reinstated Statistics Canada's long-form census which was quickly followed by ensuring subject matter experts, including scientists, were free to speak about their work. These important steps set the tone for our approach to science, one that embraces a culture of openness and optimism and that

strives for diversity.

In addition to working with research leaders to address the gaps in equity and diversity in the sciences, our government also brought back the University and College Academic Staff System (UCASS) survey which offers a snapshot of the composition of faculty staff on campuses across the country and how it is changing. The data generated by the survey will help post-secondary institutions create a more inclusive and diverse faculty, one that reflects today's Canada.

If we are to overcome some of the grand environmental, social and economic challenges that we face as a country, we simply cannot afford to leave more than half of the population — and half of our brilliance, half of our ideas — behind.

Science has played an integral role in the review of environmental assessment and regulatory processes, in our reinvestment in federal scientists at the Department of Fisheries and Oceans, and in renewed international scientific collaboration in the Arctic. I had the honour of joining my international colleagues in the first-ever White House Arctic Science Ministerial meeting in September where I advocated to work in partnership with Indigenous Peoples and northern communities so that we may collectively address the rapid changes experienced in the North.





It is the importance of science which led me to consult with scientists and experts across the country and internationally as we work to establish a Chief Science Advisor position. Once the mandate is defined and the position filled, a Chief Science Advisor will be a strong, enduring voice for science and scientists in government.

The government's support for science must also be strategic, effective and have the greatest possible benefit for the scientific community and for Canadians in general. That is why in June we launched an independent review of fundamental science – the

first of its kind.

I appointed a distinguished nine-member panel to examine the existing federal funding mechanisms for fundamental science. Chaired by former University of Toronto President David Naylor, the panel has travelled the country seeking input from scientists, researchers, administrators, and Canadians at large. In addition to meeting with stakeholders in over a dozen roundtables, the panel also received over 1,200 individual submissions from scientists and the public alike through its online portal.

While the Government of Canada has worked towards discovering and addressing any gaps in federal science funding, we continue to ensure funding flows to important scientific initiatives and programs through the commitments made in Budget 2016. This includes \$2 billion through the Post-Secondary Institutions Strategic Investment Fund to improve research and innovation infrastructure across Canada, \$900 million to support 13 cutting-edge research projects through the Canada First Research Excellence Fund and a \$95 million top-up to the three federal granting councils, the largest, unfettered increase in more than a decade.

Over the past year, our government has done a lot to foster science in this country. But I know there is plenty more to do. I look forward to keeping science's place at the federal table and ensuring that good science policy benefits our community, our environment, our economy and our middle class.

Kirsty Duncan  
Minister of Science



# PUBLIC ADVOCACY, PRIVATE DIPLOMACY SECURED HOODFAR'S RELEASE: COTLER



## Science panel discusses Homa Hoodfar's detention in Iran, suppression of academic freedom

A former MP and international human rights lawyer said he suspects a Concordia University professor was released after being detained by Iranian authorities only because of “the combination of effective public advocacy and effective private diplomacy.”

Irwin Cotler, former minister of Justice and Attorney General of Canada, added he believes timing was also a factor in the release of Homa Hoodfar, who became very ill during her detention in Tehran's notorious Evin prison. Iran became worried they might have “another Kazemi case on their hands,” Cotler said, referring to Zahra Kazemi, an Iranian-Canadian freelance photographer who was arrested in Iran in 2003 and killed by officials.

Fear about Hoodfar's declining health, pressure from the public and the Canadian government's behind-the-scenes work all convinced Iran that continuing to detain Hoodfar was no longer in their self-interest, Cotler said.

Cotler made his remarks at an evening keynote session on human rights and academic freedom on Nov. 9 in Ottawa. The panel, organized by the 2016 Canadian Science Policy Conference, also featured Hoodfar as a guest speaker and was moderated by The Globe and Mail's science reporter, Ivan Semeniuk.

Hoodfar was arrested in early June while on a visit to Iran. The 65-year-old professor, who often writes on sexuality and gender in Islam, was charged by Iranian authorities for “dabbling in feminism” and detained for 112 days. Prime Minister Justin Trudeau confirmed Hoodfar's release September 26 and she landed back on Canadian soil three days later.

Cotler told the audience he believes Hoodfar's liberation was also strategically timed to draw attention away from Iranian authorities' other activities.

“What we may not appreciate is after she was released, some of the leading human rights activists in Iran were sentenced to 15 years in prison,” Cotler said. “But this was obscured by the understandable and welcome release of Homa Hoodfar.”

Discussion of Hoodfar's detention came about as part of a broader conversation about the suppression of academic freedom and the wrongful imprisonment of scholars around the globe.

“The image of the scientist as a political prisoner, or the scholar at risk of detainment or under threat of suppression, is an image



that's as old as science itself," Semeniuk said in his opening remarks. "It's right in the DNA of science that these incidents of imprisonment and suppression can at times be part of the job.

"What's easy to overlook is that this is part of the present. For many hundreds of scholars around the world, it's a terrifying part of their everyday reality."

Viviana Fernandez, the assistant director at the Human Rights Research and Education Centre at University of Ottawa, was the third guest speaker sitting on the panel. When asked about the scope of the problem, Fernandez cited two reports from the Scholars At Risk Network, an organization that works to protect scholars and "the freedom to think, question and share ideas."

According to its 2015 monitoring report, the organization — which tracks incidents such as killings, wrongful acts of imprisonment, wrongful prosecutions and threats to peaceful student expression — documented 333 attacks on higher education communities across 65 countries between January 2011 and May 2015. In the 2nd edition of the report, the organization tracked 158 attacks across 35 countries between May 2015 and September 2016.

"Where these attacks are happening is really widespread and the rising numbers is quite concerning," Fernandez said. "Especially when you see attacks against students ... and students who engage in violent attacks within institutions.

"That generates a climate of fear and a climate of insecurity where the pursuit of academic research is quite difficult to continue and foster."

There is "a tremendous amount of variance" in the circumstances and reasons for the attacks, and incidents are usually specific to particular kinds of research, according to Fernandez.

When asked what factors put scientists and scholars at risk, Fernandez said it all comes down to the nature and international aspect of academic work.

"There is a certain degree of prestige associated with the fact that (academics) are possessors and creators of knowledge and they can share that knowledge in different forms," she said. "It makes them a target when positions conflict with priorities of the state or priorities of the powers that are controlling the situation."



Cotler said the key to securing the release of academics and journalists detained because of their work is governments and citizens around the world applying political pressure to create a situation where continued detention is no longer in the self-interest of the country responsible for the arrest.

"What is important is that (advocacy and diplomacy) exist and both are aware of each other," he said. "If it can be coordinated, it can be more effective."

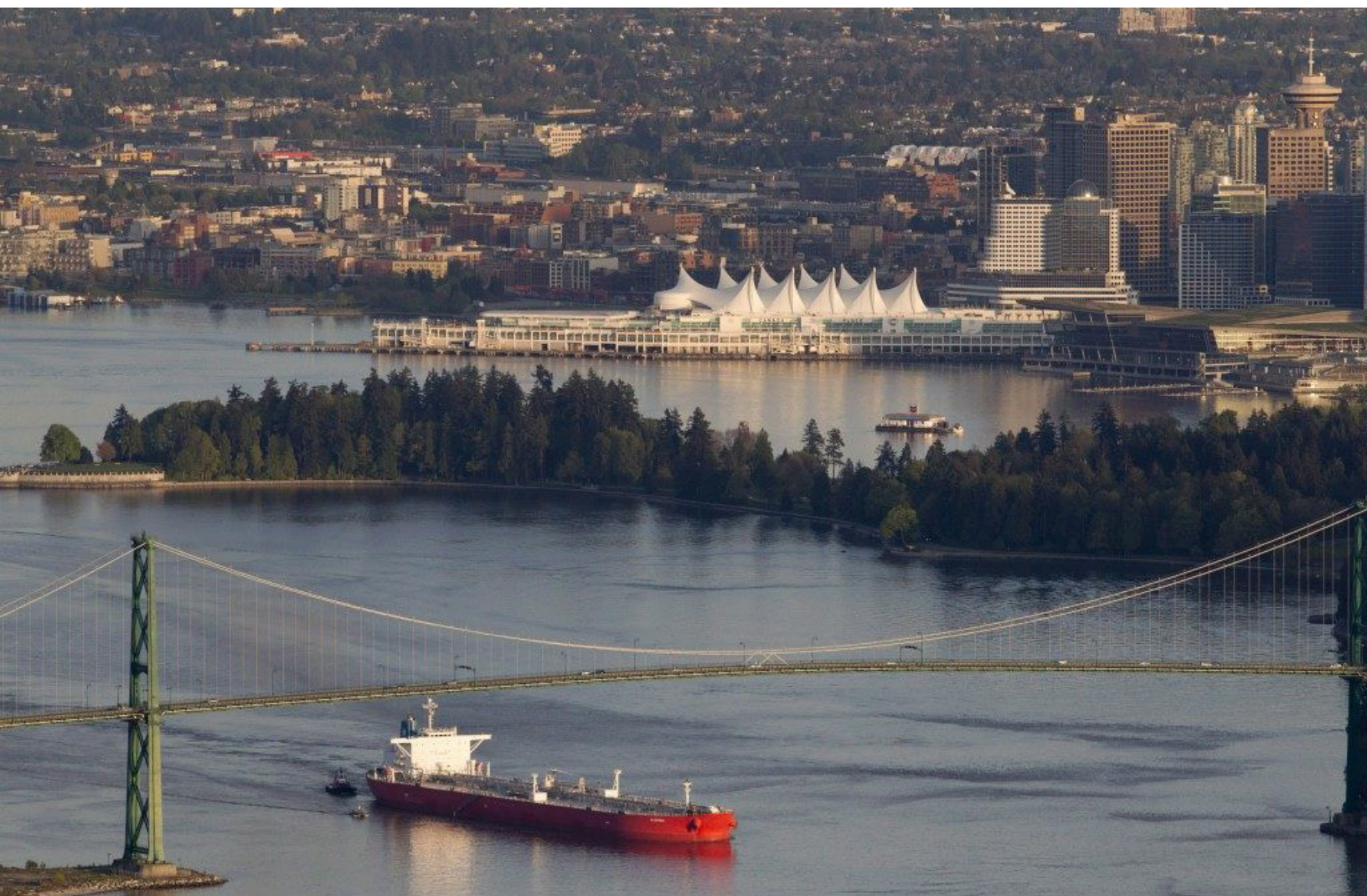
When asked for his thoughts on what a Donald Trump presidency might mean for diplomacy in cases of human rights violations and wrongful imprisonment, Cotler did not dwell on the subject.

"Well, I'm somewhat concerned about the direction that may take place," he said.

— James Munson



# ENVIRONMENT CANADA TRYING TO EASE FLOW OF OIL SPILL RESEARCH



An oil tanker goes under the Lions Gate Bridge at the mouth of Vancouver Harbour.  
THE CANADIAN PRESS/Jonathan Hayward

## Network of experts still a work in progress

A team of Environment Canada scientists is trying to fill key research gaps among oil spill response officials as a looming increase in oil tanker traffic raises worries for coastal communities.

Environment Canada and Climate Change has been producing field guides on how oil behaves in water for a long time, but these texts aren't digitized or widely available, said Jen Collette, director of science and technology policy at Environment Canada, speaking at the Canadian Science Policy Conference Wednesday.

"These are physical, tangible field guides and so you've either got one or you haven't got one," said Collette. "Some of is still in fairly technical language, so how do you translate that to be accessible?"

Collette, who has been leading a team in charge of setting up a network of experts on oil spill research for the past several years, said there might be a chance to create an online portal for oil spill science, she said. "But those are things that don't happen easily off the corner of a desk, so they require some investment to make them happen."

The work on the network, which was the topic of a panel at the conference Wednesday, has been taking place against the backdrop of rising oil production in Alberta, new pipeline construction and the prospect of more tanker traffic.

"Both the East Coast and the West Coast of Canada could see





Jen Collette, director of science and technology policy at Environment Canada

significant increases in tanker traffic should major resource developments proceed," said Collette.

A recent Angus Reid poll on shipping identified oil spills as the top-ranking safety concern, she said.

But oil spill research is a fast-changing and uncoordinated body of work in Canada. There is no agenda for organizing research for end-user needs, Collette said, meaning those who have to respond during a spill.

The former Conservative government began the work of creating the network of experts after an 2013 report by an expert panel on tanker safety and a 2015 Royal Society of Canada report said that oil spill research needed more money and better coordination.

Collette's office began by compiling of list of research funders, producers and users — no easy task, given no coordination had happened before.

Finding the total figure for money spent on offshore spill research was especially difficult, she said. "Industry can be very private about the amounts of money that are being spent and not all organizations are equally transparent about their investments," she said.

In the end, the office was able to estimate that in 2015 the federal government alone spent \$100 million on offshore oil spill research, said Collette. Environment Canada later said

that figure was actually the amount of funding since 2013.

Her office found big gaps in coordinating research for on-the-ground response, as well as for those writing regulation and policy, said Collette. The network of experts, which is still defining its role, could have a big role in that type of coordination to avoid duplication and make sure users have what they need, she said.

The network's creation aligns well with the priorities of the Liberal government, which has given Environment Canada a strategy of "better linking science producers and users."

On Monday, Prime Minister Justin Trudeau announced a \$1.5 billion national oceans protection plan, intended to grow oil spill response and ease coordination and involvement of provincial, municipal and indigenous governments.

The announcement comes ahead of a federal decision on the Kinder Morgan pipeline expansion, which would increase the number of tankers docking at Vancouver's Westridge Marine Terminal from five tankers a month to 34.

The new national oceans protection plan will likely tap into the network of experts, as it opens the door to more co-management with other governments. After the announcement, the Coastal First Nations — a coalition of nine First Nations along B.C.'s coast — made a public request to be involved in determining tanker traffic on the coast and in the design of the oil response upgrade.

Environment Canada's research in oil spill behaviour is playing catch-up as well, given the ever-increasing number of oil products in the market.

The department has been testing more spill-treating agents after a 2014 bill allowed them to do so, said Carl Brown, research scientist with Environment Canada's emergencies science and technology section.

But other legislation is outdated and prevents the use of other products. "To allow use of some of these tools, we may have to change ten or twelve pieces of legislation," said Brown.

The department also has to work around a ban on performing large-scale testing on coastlines, he said. Testing away from coasts is now allowed, he said.

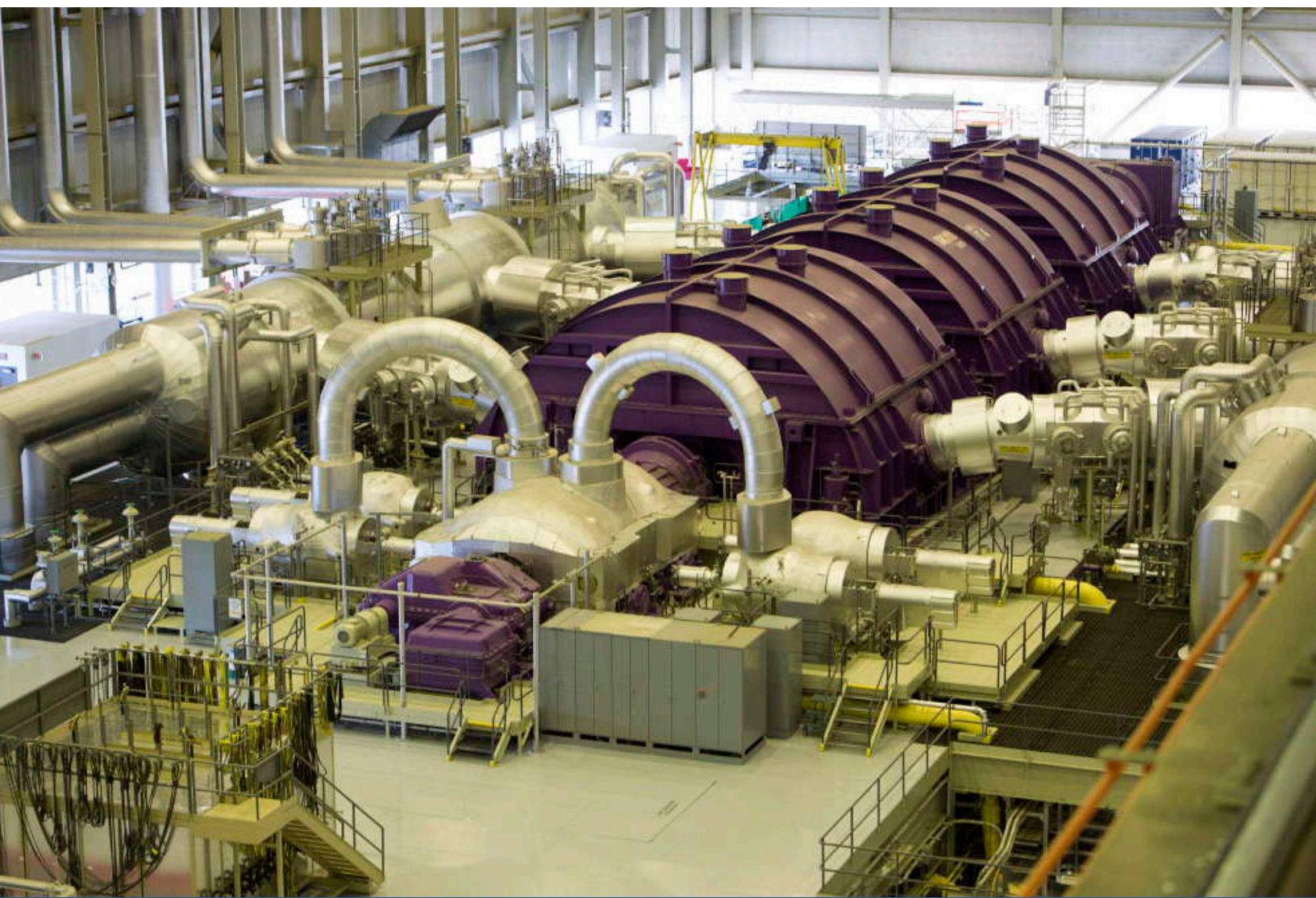
The last major coastline experiment was the Baffin Island Oil Spill Project in the early 1980s in the Arctic, said Brown.

The department often collects water samples along different types of coastline and tests the behaviour of oil in them over weeks and months, he said.

The network of experts would allow for the department's work to be used more widely because Environment Canada is rarely the lead government agency during a spill, which is determined by a spill's source, said Brown. The Canadian Coast Guard or Transport Canada usually takes responsibility if it's from a ship, he said.

— James Munson

# ENERGY POLICY HAS TO MAKE ROOM FOR POLITICAL MOVEMENTS LIKE TRUMP'S: PANEL



A steam turbine at the Darlington nuclear facility in Courtice, Ontario. THE CANADIAN PRESS/Frank Gunn

## The right decision needs evidence and quality data more than ever, say science policy panelists.

The election of Donald Trump as U.S. president poses a risk for North American energy integration but collaboration can still prevail, said the head of the Canadian Electricity Association Wednesday.

After speaking at a panel on how politics can interfere with good policy Wednesday morning, Sergio Marchi described the Republican candidate's victory as a worry for Canada's large energy utilities — but not a reason to panic.

"Is it a concern that raises in your mind, I'd be dishonest to say no," said Marchi, a panelist at the Canadian Science Policy Conference in Ottawa. "But am I spooked that we will not be able to work those (issues)? No, I'm not."

The exiting Obama administration put in a motion the creation of a continental climate change and energy strategy during its last year in power after the election Prime Minister Justin Trudeau brought a brief period of like-mindedness between Ottawa and Washington.

Both governments, along with Mexico, agreed to increase the





Hon. Sergio Marchi, President and CEO, Canadian Electricity Association

share of renewable generation to 50 per cent in North America by 2025 after a Three Amigos summit in June in Ottawa. The target promised to be a boon for Canadian utilities, given their capacity to boost their hydroelectric generation and sell to the U.S.

Marchi said Trump's hostility to increased trade will have to face the political reality of U.S. legislators who want to buy Canadian hydro.

"Whenever we meet with American policy-makers and states and industry, they haven't pushed back," said Marchi. "We haven't seen that protectionism. They said, 'We need those inputs so that we can be aided so that we can get to our targets.'"

A greater and more immediate concern, he said, is what happens to federal plans for a carbon price. Trudeau is expected to meet with premiers before the end of the year to discuss his government's decision to impose carbon pricing across the country.

Marchi said it doesn't make sense to impose carbon pricing unless its equivalent in its economic impacts to what the U.S.

does. Saskatchewan Premier Brad Wall raised concerns about the U.S. not moving ahead on carbon pricing on Wednesday.

"We really have to make sure with our trading partner that things are level," said Marchi.

Marchi and his co-panelists tackled the complicated relationship between energy policy and politics Wednesday, with Trump's victory providing fresh fodder for discussion.

The energy sector consistently faces difficulties in politics because of how little the average citizen knows about how it works. That means energy players have to lean on evidence and facts as a way of influencing policy-makers, the panelists said.

"When I'm speaking about politics, I'm speaking about the politics of compromise, of accommodation, of consensus-building," said Marchi. "You will never have a decision based on 100 per cent evidence as long as there is that political accommodation equation. What we need to try and sell to political leaders ... is that good policy doesn't necessarily mean bad politics."

He pointed to the experience of Liberal governments in the 1990s which, he said, cut services to reduce the federal deficit — a move that initially seemed politically dangerous but ended up being popular.

But energy is an issue where the right policy increasingly relies on an immense amount of data that organizations don't always know how to decipher, said Daniel Duguay, senior director at Thomson Reuters Canada, which provides data analytics services to the public and private sectors.

Regulators and companies are going to need to look at issues through a systems-based approach to figure out the right course of action — meaning they need to see policy impacts in a broader context, said Duguay.

"We will have more data and information than we've ever had and we'll struggle with making best use of it to describe these system level changes," said Duguay, referring to coming breakthroughs in data analytics.

"The advancements will not only enhance our ability to make decisions, they have the potential to overwhelm our current approaches to how we make decisions," he said. "So for many sectors the era of big data does not guarantee or ease decision-making. In fact, it may make it worse."

The Liberals' rise to power last year altered the way energy is governed in Canada, said Marco Presutti, director general of Natural Resources Canada's energy policy branch. That political shift has led to the creation of entirely new governance structures to enable the implementation of policy, he said.

"A lot of that hasn't really existed in the recent past," said Presutti. "I think first ministers' meeting — we've had one and now we're having another one — is a step in the right direction in terms of dealing with some of these issues and challenges ... We're just starting to put those pieces in place to move forward on some of the energy priorities of the country."

— James Munson

# VOLUNTEER ORGANIZING COMMITTEE 2016



## **Program Development:**

1. Kori St.Cyr - Chair
2. Rebecca Solomon
3. Homa Kheyrollah Pour
4. Jessica McQuiggan
5. Naomi Shuman
6. Renata Osika
7. Rajul Singh
8. Prasamsa Singh
9. Jan Trumble - Waddell
10. Ilia Tretiakov
11. Jennifer Zwicker

## **Editorial:**

1. Nasim Haghandish - Chair
2. Alice Raine
3. Kim Morris
4. Natasha Kruglyak
5. Rebecca Solomon
6. Nicole Seneca
7. Brennan Vogel
8. Ekaterina Turlova
9. Rida Anmol

## **Outreach and Social Media:**

1. Conor Meade - Chair
2. Natasha Kruglyak
3. Kathryn May
4. Rebecca Solomon
5. Alice Raine
6. Charles Mclvor
7. Aaron Maxwell
8. Kenza Samlali
9. Ernesto Icogo
10. Ossana Nashalian
11. Amandeep Chahal
12. Elena Groppa
13. Bart De Baere

## **Special Events:**

- Sandra Noel - Chair, Awards Committee  
Uzma Urooj - Coordinator, Science Diplomacy Symposium



# PANEL ORGANIZERS & COMMUNITY FRIENDS

## Panel Organizers:

- Accelerator Centre
- BC SUPPORT Unit
- Canadian Research Data Centre Network
- Canadian Science Policy Centre
- Canadian Science Writer's Association
- Canadian Space Commerce Association
- CIFAR (Canadian Institute for Advanced Research)
- Colleges and Institutes Canada
- Consortia Advancing Standards in Research Administration
- Council of Canadian Academies
- Cybera
- EURAXESS North America
- Faculty of Science, Ryerson University
- Friends of CIHR
- HealthCareCAN
- Hoffmann-La Roche Ltd
- Impact Centre, University of Toronto
- Information and Communications Technology Council
- Institute for Management & Innovation, University of Toronto
- International Development Research Centre
- Let's Talk Science
- Marine Environmental Observation Prediction and Response Network (MEOPAR)
- National Alliance of Provincial Health Research Organizations
- Ontario Chamber of Commerce
- Ontario Ministry of Research, Innovation and Science
- Rainer Engelhardt
- Regional Innovation Initiatives, British Columbia Ministry of Technology, Innovation and Citizens' Services
- Royal Society of Canada
- S&T Policy Division, Environment and Climate Change Canada
- School of Information Management, Dalhousie University
- School of Public Policy, University of Calgary
- Science & Policy Exchange
- SSHRC, CIHR, NSERC, Genome Canada

- Stem Cell Network
- TEC Edmonton
- TELUS Spark
- The Professional Institute of the Public Service of Canada (PIPSC)
- The Royal Society of Canada's College of New Scholars, Artists and Scientists
- Thomson Reuters
- UBC Deputy Vice-Chancellor and Principal, Okanagan campus
- University of Ottawa
- World Federation of Science Journalists

## Community Friends:

- Bad Science Watch
- Baycrest Health Sciences
- Canadian Association of Physicists
- Canadian Nutrition Society
- Canadian Research Data Centre Network
- Carleton University School of Public Policy & Administration
- CPAC (Cross-cultural Professionals Association of Canada)
- Earnscliffe Strategy Group
- EURAXESS - Researchers in Motion
- FACETS
- HealthCareCAN
- Innovate Calgary
- MEOPAR
- NAPPRO
- NIO (Neurotechnology Industry Organization)
- NSHRF (Nova Scotia Health Research Foundation)
- Partnership Group for Science and Engineering
- Research Money
- Science Atlantic
- Startup Canada
- The Centre for Blood Research
- The National Alliance of Provincial Health Research Organizations
- UBC, Biodiversity Research Centre
- UBC, Centre for Blood Research
- WWF (World Wildlife Fund)

# PARTNERS

## LEADER LEVEL

---



## THINKER LEVEL

---



## COLLABORATOR LEVEL

---





# ABOUT CSPC

## About CSPC

Established in 2009, Canadian Science Policy Conference (CSPC), was created to meet an important need for an inclusive national dialogue on science technology and innovation policy. CSPC vision is to ensure systematic connectivity between Canada's diverse scientific enterprises and policy makers in both the bureaucracy and political levels.

The CSPC has become Canada's most comprehensive, multi-sector and multi-disciplinary forum, attracting politicians and hundreds of professionals from industry, academia, non-profit, federal and provincial governments annually. CSPC hailed by Nature Magazine as one of signs of hopes of science policy in Canada. The conference has traveled across Canada from Toronto (2009), Montreal (2010), Ottawa (2011), Calgary (2012), Toronto (2013), Halifax (2014), and Ottawa in 2015 and 2016.

## Conference Objectives

1. To provide an inclusive forum at the national level to identify, discuss and provide insights
2. To forge stronger linkages and create networking opportunities among science policy stakeholders;
3. To provide a venue for a new generation of scientists, entrepreneurs and policy makers to interact, innovate and shape the future of Canadian science policy landscape which is required for a knowledge-driven economy;
4. To provide a supportive environment for innovative ideas and projects in science policy, and encourage further collaborations across sectors;
5. To lay the foundation for a centre dedicated to science, technology and innovation policy.

## Impacts

### *Building a Network*

CSPC has successfully established a national network of stakeholders. Hundreds of private sector, academic, government, and non-profit organizations have enthusiastically embraced our endeavor. Every year, they submit diverse panel proposals, identify emerging issues, attend the conference and signal the greater capacity for growth and transformation in Canadian science policy.

### *Gateway for New Generation of Scientists and Policy Makers*

Over 300 graduate students and post docs from across Canada have served on various committees for the development of the conference. CSPC has become a gateway for the younger generation of scientists and policy makers to enter the science policy arena.

### *Generating Content, New Insights and Horizons*

Generating content, elevating the science policy discourse and introducing novel topics in science policy has been another significant impact of CSPC. A proceedings book, summary of all discussions at every conference, as well as the audio records of all sessions are posted on CSPC website for public use. In addition, at every conference, many prominent figures are being interviewed, and the videos are available for public use in CSPC YouTube channel.



## Building a Network

CSPC has also made the coverage of science policy an issue for mainstream media. Over the years CSPC has been covered by numerous media outlets, including CBC, CPAC, Globe and Mail, iPolitics, Hill Times, etc. Nature magazine hailed the conference as one of the hopes of science policy in Canada. A few samples of coverage listed below:

- Science Magazine, Optimism at Canada's annual science policy summit, CSPC 2015
- iPolitics: Scientists excited by the end of 'decade of darkness', CSPC 2015
- CPAC, Science and Politics Keynote Session, CSPC 2011
- CBC, Scientists Diplomacy, a role must grow, CSPC 2010
- Nature, Editorial, Call For A Bigger Vision, 463, 135,14 January 2010

In summary, CSPC has made significant impacts including:

- Establishing a national and inclusive cross sectorial dialogue
- Building a community of individuals and organizations through the network the annual conference
- Linking younger generation of trainees, early career professionals, scientists and policy makers, to science and innovation policy fields
- Raising awareness about Science Policy issues in mainstream Canadian society
- Introducing many novel topics to a Canadian audience, including Science Diplomacy
- Introducing quality discussions into the science and innovation arena
- Presenting and engaging the most prominent figures from policy and private sectors with the science and innovation policy conversation

## Prominent Figures Engaged with CSPC

### Advisory Committee

More than 60 people have served on the CSPC Advisory committee over the past six years.

### Hon. Co-Chairs:

#### 2012

- Elizabeth Cannon University of Calgary President,
- Preston Manning,
- Eric Newell: former CEO Syncrude and Chancellor of University of Alberta

#### 2013

- Michael Wilson former Minister of Finance and Chancellor of University of Toronto
- Mandy Shapansky CEO, Xerox Canada

#### 2014

- Frank McKenna; Deputy Chair, TD Bank Canada, Former premier of New Brunswick
- John Risley; CEO, Clearwater Fine Foods Inc. CEO

#### 2015

- Dr. Roseann O'Reilly Runte

### International Figures:

Many international figures have spoken at previous CSPC's, for almost all of whom it was their first time in Canada, including:

- Sir Peter Gluckman, Chief Science Adviser New Zealand
- Vaughan Turekian, appointed Science Adviser to Secretary John Kerry
- Bruce Alberts, Chief Editor Science Magazine
- Ian Chubb, Chief Scientist, Australia
- Nina Fedoroff, former Science Adviser to both Secretaries of States; Rice and Clinton





# PROGRAM TAKEAWAYS

## Keynotes

Opening Remarks

Q & A With The Hon. Kirsty Duncun and Mehrdad Hariri

2nd Annual Science Policy Awards of Excellence— Youth Category

Keynote: The significance of fundamental research in economic growth

Keynote: The global struggle for science, human rights and academic freedom

Plenary Presentation: Collaboration and cooperation on the challenge of clean energy: An international perspective

Plenary Presentation: Converging science: Fostering innovation through a new model of transdisciplinary research

## Panels & Symposiums:

### Theme 1: A New Culture of Policy Making and Evidence-Based Decision-Making: Horizons and Challenges

Symposium: Achieving Diversity in STEM – Advancing Innovation

The Canadian Space Policy Symposium 2016

The Science Diplomacy Symposium

Panel: Improving Ocean Management: Critical Insights About Information Pathways to Strengthen Evidence-Based Decision Making

Panel: Building Capacity for Science Policy in Canada

Panel: Evidence-Based Decision Making in Health Policy and Health Care Practice

Panel: A Systems-based Approach to Evidence-Based Policy Decision-Making: Skills, Tools & Mindset for Effective Decision Making - Energy

Panel: Back to the Future: What Ebola taught us about risk communication

Panel: Linking Science Producers to Users, A Case Study: Designing a proposed pan-Canadian oil spill research Network of Expertise

Panel: SciComm as a Strategy: Supporting Evidence-Based Decision Making with Targeted Communications

Panel: Maximizing the Value and Impact of Collaborative Policy-Relevant Research

### Theme 2: A New Innovation Agenda for Canada: What Are We Building?

Panel: Developing Canada's Innovation Talent: How New Directions in STEM Education Can Position Canada for Success

Panel: Fertile Ground: How Incubators and Accelerators Drive Innovation

Panel: Strengthening the Interplay between Discovery and Innovation

Panel: Canada's Climate Strategy: What is needed?

Panel: Driving Innovation: the role of Canada's stem cell & regenerative medicine sector

Panel: Regional Innovation and Socioeconomic Development in Non-Metropolitan Areas

Panel: College of New Scholars: Connecting Academia with Industry

Panel: Disruptive Technologies: People, Policy and Programs

Panel: Unleashing Innovation in Personalized Health Care

Panel – Open Research

### Theme 3: Clean Energy and Climate Change as Global Priorities: Implications for Canada?

Panel: Clean Energy & Climate Action in Non-Metropolitan Areas: Insights and Action

Panel: Scaling Climate Change Adaptation in Coastal Communities

### Theme 4: Canada's Return to the International Stage: How Can Science Help Foreign Policy?

Panel: Science for Diplomacy: Have we got what it takes?

Panel: Canada and the EU: How can we strengthen research collaborations in science, technology and innovation?

Panel: New models for Tackling Global Scientific Challenges: From Collaboration to Capacity-Building

### Theme 5: Science Funding Review: New Visions and New Directions

Panel: Emerging research leaders: a vision for evolving Canada's research landscape

Panel: The Role of Provincial Organizations in Building and Sustaining Competitive Regional Research and Innovation Ecosystems

Panel: Funding Our Future: Policy for sustainable, equitable funding in health research

Panel: Optimizing Benefits from Canadian Research



#CSPC2016

# OPENING REMARKS



## Canadian Science Policy Conference 2016

### The Honourable Reza Moridi, Ontario Minister of Research, Innovation and Science

#### Opening Remarks

Minister Moridi opened his remarks by recognizing the value of CSPC in bringing the Canadian science policy community together, providing a valuable opportunity to share our ideas and develop fresh insights; and an avenue to put forth to new directions to help build our country's innovation driven economy.

The Minister also shared a few thoughts on what the Government of Ontario and the Ministry of Research, Innovation and Science is doing to strengthen Ontario's innovation ecosystem. Firstly, the Minister reminded the audience of the benefits of innovation including it being essential for economic growth, make us more productive and adaptable, and creating a higher standard of living for our citizens. Innovation can also help us address pressing social and global challenges including climate change, resource scarcity and an aging population. Minister

Moridi highlighted that Ontario has all the elements to strive in the 21st century: a highly skilled workforce, a vibrant innovation ecosystem, efficient market access and streamlined business climate. However, we are aware that the global economy is transforming in a very rapid pace.

The Government of Ontario wants to ensure we have the right environment for innovation to flourish, they want to support collaborations between researchers, academia and industry and compete on global level and that's why they recently introduced the Business Growth Initiative. The BGI serves as the government's new economic strategy to fast-track Ontario's knowledge-based economy by tapping into the creativity, education and skills of our people. The Initiative will focus on helping small and medium-sized businesses grow and

expand to compete in international markets; accelerating Ontario's transition to the 21st century, innovation-driven economy that thrives on the initiative, creativity, education and skills of its people and; removing regulatory barriers to growth and establishing new, modern regulatory practices. This strategy supports Ontario's shift towards a high growth innovation economy, so that we can foster a cleaner environment, find new cures and treatment for diseases, develop more disruptive technologies that will change the way we work and live and create high value jobs of our citizens. However, the Government cannot do it alone and requires partnership with its citizens.

Minister Moridi closed by thanking all participants for the work they do to advance science, technology and innovation economy and noted that together we can create a cleaner, healthier and stronger economy for generations to come.



# Q & A WITH THE HON. KIRSTY DUNCUN AND MEHRDAD HARIRI



Canadian Science Policy Conference 2016  
The Honourable Kirsty Duncan, Minister of Science  
Q & A With Mehrdad Hariri (CEO & President, Canadian Science Policy Centre)

On November 10th and as part of the CSPC 2016 luncheon session, the Honourable Kirsty Duncan, Minister of Science, sat down for a Q&A with Mehrdad Hariri, CEO & President of the Canadian Science Policy Centre. The first question posed to Minister Duncan was in regards to creating a chief science officer in Canada. Minister Duncan said that she and her staff have consulted chief science officers in various countries including, the UK, the US, Israel and New Zealand, and have considered more than 80 detailed submissions from experts, stakeholders and the community in order to properly define the position and make it durable and permanent. Minister Duncan has stated that the call to apply for the

position of chief science officer will go out in the next few weeks.

Next, Minister Duncan commented on the science funding review panel set up to independently review science funding in Canada, specifically concentrating, at her direction, on funding mechanisms of early-career researchers as well as multidisciplinary and multinational research. Minister Duncan has stated that the Canadian research community is much appreciated internationally, especially Canada's focus on an inclusive innovation agenda to drive growth. For example, the insistence at the White House Arctic Science Ministerial, which took place on September 28 in Washington DC and was attended by Minister Duncan, that

indigenous and northern communities must be included when discussing the Arctic.

When asked about the importance of equity in science, Minister Duncan has drawn from her personal experience working in science to emphasize how the field is tilted against women – from the lack of mentors and role models to an inadequate work-life balance. “We cannot afford to lose our talent. Science needs women, science needs diversity and science needs to reflect Canada”, she said. Finally, Minister Duncan hopes that her legacy as Canada's Minister of Science will be a science system that is more inclusive, well-funded, and has a strong vision. She also hopes to foster children's innate curiosity and love of exploration to inspire them to pursue science education and a rewarding career in STEM.

## 2ND ANNUAL SCIENCE POLICY AWARDS OF EXCELLENCE—YOUTH CATEGORY



CSDP was proud to present the 2nd Annual Science Policy Awards of Excellence—Youth Category which follows in the spirit of our first Young Generation Award inaugurated in 2013. The award recognized a young individual under the age of 35 who developed an innovative and compelling evidence-based policy that will make a positive difference to Canadians.

Proposals were to be connected to one or more of the themes for the 2016 CSDP Conference. The award was designed not only to highlight innovative, evidence-driven policy ideas, but also to encourage innovative young people who may not currently be studying, or working on, public policy to develop and share their policy ideas.

This year's Selection Committee was very impressed by the quality of the submissions and the dedication of the applicants. Congratulations to Amani Saini whose proposal "Using Genetic Tests to Stop Adverse Drug Reactions" won this year's award. Ms. Saini's award was presented to her by the Honorable Kirsty Duncan, Minister of Science. You can read the full report of the awards here and watch the full video of the presentation as well as Ms. Saini's acceptance remarks on our YouTube channel. CSDP also wishes to congratulate and acknowledge our runners-up, Richard Gooding-Townsend and Jessica Ross.





# KEYNOTE: THE SIGNIFICANCE OF FUNDAMENTAL RESEARCH IN ECONOMIC GROWTH



CSPC 2016: November 8, 2016

Panelists: Dr. Art McDonald, Nobel Laureate, Director, Sudbury Neutrino Observatory (SNO) Scientific Collaboration; Hon. Reza Moridi, Minister of Research, Innovation and Science, Government of Ontario

Moderator: Dr. Victoria Kaspi, Researcher, Neutron Star and Radio Transient Research, McGill University

## Takeaways and recommendations:

- There is a direct link between fundamental science and long-term economic growth
- Strong linkages between academia and industry increases chances for successful commercialization
- A high-growth innovative economy depends on supporting research and innovation throughout the entire lifecycle, from foundational science to commercialization and scale up
- Investments in the social sciences are critical to developing policies that solve complex challenges and promote economic growth
- 21st Century research, more than ever before, relies on policies that are coordinated and evidence-based
- Canada focuses too much on top-down targeted research programs at the expense of discovery programs
- Senior, established researchers are taking a much larger share of the

research funding pie, at the expense of early-career researchers, many of whom are women

- Governments, and government-funded organizations, need policies to attract and retain more women, indigenous people and minorities in research
- In addition to a chief scientist, Canada needs a committee of independent external advisors
- More coordination between the tri-councils and tri-council programs like the Canada Foundation for Innovation
- A formal mechanism is needed to evaluate big science projects

Just after Reza Moridi was appointed Ontario's Minister of Research and Innovation in 2013, he was asked by a journalist if he preferred fundamental science or applied science. His answer was unequivocal: you can't have one without the other.

"Research and innovation is a journey that starts with dreaming and imagination at one end and selling products and services at the other end," Moridi told CSPC delegates. "And we need to invest in and train people ... from basic and applied research through to prototyping and commercialization."

Moridi believes Ontario has got that balance right through its support of basic discovery initiatives like the Perimeter Institute for Theoretical Physics, the Ontario Brain Institute, the SNOLAB physics laboratory and regenerative medicine. On the other end of the innovation spectrum, the province supports applied research in colleges, often in partnership with industry, and increasing the pool of venture capital available to innovators.

He also sees a bigger role for government policy in driving both discovery and innovation. "More research today is done by planning, not like the old days where a lot of discoveries were by accident. Today most of the research is done by purpose and planning ... as a result, government policy becomes more important."

Both Moridi and Nobel Laureate Art McDonald agreed that investments in fundamental research are key to driving economic growth over the long term.

"We need to pay more attention to science and its significance for economic development," says Moridi. "As we move towards a knowledge-based economy, we will require investments in research and innovation, especially in fundamental science or the well will run dry."

McDonald heard similar cautionary tales from across the country as a member of an independent panel tasked by the federal government to review the mechanisms and funding levels—as well as the gaps—related to fundamental science in Canada. A common criticism is that Canada focuses on top-down targeted research programs at the expense of discovery programs.

"The community feels strongly that it's out of whack; that support for fundamental science has been flatlined for the last 10 years," said McDonald. It's particularly difficult for early career investigators to secure funding. "This is also a problem for diversity since more early career researchers are women."

Herzberg Canada Gold Medal winner Victoria Kaspi said funding alone won't solve the gender imbalance in the research community. "The problems are societal, starting at kindergarten, and the different types of subtle messages that people get through their education and

their careers ... things have to be done at every level to address this problem," she said. These include cultural issues like improving the work-place environment, to practical issues like maternity leave and flexible work options.

The application of fundamental research is particularly important in the social sciences, where data are needed to tackle complex policy challenges like reconciliation with indigenous people and laws governing assisted dying. "The social sciences are becoming very important for our nation to make decisions," said McDonald, "and we have a government that is receptive to evidence-based decision making."

Researchers are also calling for more coordination between the three main research granting councils, and tri-agency programs like the Canada Foundation for Innovation. To deal with that longer term challenge, McDonald suggested the creation of a council of independent advisors, comprised of members from across the scientific and innovation spectrum, who could consult widely with the larger research community and report to a chief science advisor.

Similarly, a formal mechanism is needed to evaluate big science projects, said McDonald. This would include determining

when big projects have accomplished their goals so that the money can be freed up for other projects.

"This could be a sub-committee of a broader advisory agency... it has been recommended many times before, going back to at least the 1980s," said McDonald.

But even the best fundamental research doesn't guarantee eventual commercial success, cautioned Moridi. Ontario, for example, has made good progress in supporting start-ups through its 43 campus accelerators, like the DMZ at Ryerson University, and 18 regional innovation centres, including MaRS Innovation in downtown Toronto.

"Last year in Ontario there have been 6,000 start-up companies formed which is quite promising. But we need these companies to scale up to billion dollar companies because in the end, too many are being swallowed by big companies and moving to Silicon Valley or Boston."

In response, he said the Ontario government is creating a new venture capital fund aimed at scaling up small companies. "And we are starting to set up other VC funds to address specific sectors, such as life sciences and regenerative medicine."





# KEYNOTE: THE GLOBAL STRUGGLE FOR SCIENCE, HUMAN RIGHTS AND ACADEMIC FREEDOM



CSPC 2016: November 9, 2016

Speakers: Dr. Homa Hoodfar, Scientist and Professor, Concordia University; Hon. Irwin Cotler, Chair, Wallenberg Centre for Human Rights, McGill University; Viviana Fernandez, Assistant Director, Human Rights Research and Education Centre, University of Ottawa

Moderator: Ivan Semeniuk, science journalist, Globe and Mail

## Takeaways and recommendations:

- Securing the release of political prisoners depends on coordinated public advocacy and private diplomacy
- Understanding a country's geopolitical context is important
- Use a country's own laws to build a legal defence
- Digital technologies can empower citizens but states can also use these same technologies to monitor its citizens, control the media and suppress freedom of expression
- State security is often cited as justification for curtaining freedom of expression
- Academics face greater risks than other citizens because of their ability to publish and disseminate their work internationally
- Educate civil society on the importance of academic freedom and the need to speak out in its defence
- Suppression of academic freedom curtails a country's ability to participate in international research collaborations
- More Canadian academic institutions should join the Scholars at Risk Network and other organizations with

similar aims

Homa Hoodfar credits her scientific training with helping her to survive 112 harrowing days in Tehran's infamous Evin prison, following her detainment while vacationing in Iran earlier this year. Speaking to CSPC delegates, the retired Concordia University scientist described how her unwarranted arrest for "dabbling in feminism" and trying to influence an election provided a unique opportunity to conduct research. After three days of brutal interrogation by Iran's intelligence service, she began scratching the details of her experience, and conversations with other female prisoners, with a makeshift pen on the walls of her tiny 2 by 1.75 metre cell.

"I realized I was an anthropologist and this was field work. I started making notes but had no pen and paper. But I had a toothbrush so started writing on the wall ... I thought I had to make the best of it," recalled Hoodfar, who was released



September 26 on what Iran called “humanitarian grounds”.

Hoodfar participated in a roundtable discussion on science, human rights and academic freedom with former Justice Minister Irwin Cotler, Viviana Fernandez, Assistant Director at the University of Ottawa’s Human Rights Research and Education Centre (HRREC), and Globe and Mail journalist Ivan Semeniuk who moderated the talk.

The Canadian-Iranian professor’s research has focused on reproduction rights, family rights, reform in a Muslim context, refugees, and more recently electoral politics—none of it related specifically to Iran. She admits that academic freedom isn’t something she thought about during her tenure at Concordia University.

“It’s something we accept as a fact and believe as essential for producing knowledge and advancement of our global societies and in communities in which we live,” she told delegates.

That freedom can be comprised by a state’s ability to use digital technologies—often under the guise of national security—to control its citizens, especially academics, public intellectuals and entrepreneurs who do business globally.

“Whenever the issue of human rights came up in these long conversations, they always said we don’t need human rights.

We have Islamic rights, which are God-given and therefore more relevant to our lives. They’re not dismissing human rights, are reframing it as Islamic human rights,” said Hoodfar.

She also noted how authors who are arrested or imprisoned in Iran elicit greater support from the public than scholars or scientists, who the public perceive more often as having done something wrong.

Cotler said securing the release of Canadian political prisoners abroad requires a combination of public advocacy and private diplomacy. Prior to entering politics, Cotler was active in the effort to secure the release of a former Soviet dissident Anatoly (Natan) Sharansky, one of the founders the Moscow Helsinki Group, which united Soviet dissidents. He was later released by incoming president Mikhail Gorbachev. Cotler later had an opportunity to meet Gorbachev and asked if he had any part in that decision.

Cotler recalled Gorbachev saying he had never heard of Sharansky until a 1983 visit to Canada when he was the Soviet Minister of Agriculture. Gorbachev was surprised to be grilled by Parliamentarians and besieged by protesters calling for Sharansky’s release.

Cotler went on to recollect Gorbachev saying, “So, when I became the president

of the Soviet Union a year later, I ordered up his file and saw that yes he was a troublemaker but he wasn’t a criminal’.”

“Then he said the most important thing,” added Cotler, “that this case was costing them politically and it was costing them economically.” Gorbachev released Sharansky within six months of becoming president.

When looking to intervene in such cases, Cotler said it’s also important “to take the legal system of the imprisoning country seriously,” he advised. In helping to secure the release of Egyptian scholar Saad Eddin Ibrahim, Cotler said he based his legal arguments on that country’s laws.

“I didn’t say they were violating Canadian law. I said they were violating their own law. I found that maybe helped in securing his release.” Cotler said negotiators should also, “make the case to them that repression is not in their self-interest”.

Fernandez also represents the University of Ottawa in the Scholars at Risk Network. On October 31, the Network released its “Free to Think 2016” report analyzing more than 150 reported attacks on higher education communities in 35 countries. The report found a broadening crisis of attacks on higher education communities.

“This last report shows that where these attacks are happening in practically every region in the world and the rising numbers are quite concerning,” said Fernandez. “It’s creating a climate of fear and insecurity.”

Fernandez said the risks scholars face in countries like Turkey can lead to a rapid deterioration of research and barriers to international collaboration. “They’re not taking into account the negative consequences this has brought to the Turkish higher education sector. They (the government) are no longer reliable partners for research, teaching and student exchanges ... Down the line you can see it impacting the economy and innovation across the country.”

“If you have people in certain countries who are not participating in exchanges for extended periods of time, it will be difficult for them to re-engage in the scientific debate,” adds Fernandez. “It will be almost impossible to catch up.”

#### References

Free to Think 2016 report, Scholars at Risk Network; [www.scholarsatrisk.org/2016/10/free-think-2016-states-must-respond-crisis-level-attacks-universities-scholars-students](http://www.scholarsatrisk.org/2016/10/free-think-2016-states-must-respond-crisis-level-attacks-universities-scholars-students)



# PLENARY PRESENTATION: COLLABORATION AND COOPERATION ON THE CHALLENGE OF CLEAN ENERGY: AN INTERNATIONAL PERSPECTIVE



CSPC 2016: November 9, 2016

Organized by: CIFAR (Canadian Institute for Advance Research)

Panelists: Alan Bernstein, President and CEO, Canadian Institute for Advanced Research (CIFAR); Jane Kearns, Senior Advisor, MaRS Cleantech; Gabriel Marquette, General Manager, EUROGIA; Frank Des Rosiers, ADM, Innovation and Energy Technology, Natural Resources Canada (NRCan); Gregory Scholes, CIFAR scholar, Princeton; Carlos Ortiz, Director General of Research, Technological Development and Human Resources Formation, Secretariat of Energy, Mexico

Moderator: Gordon Lambert, President and Chief Collaboration Officer, GRL Collaboration for Sustainability

important, he said it's also essential that Canada encourage more scientists, engineers and youth to work in clean tech.

Gregory Scholes, a CIFAR senior fellow at Princeton University, said governments need policies that result in more game-changing scientific advances like the 1991 discovery of low-cost dye-sensitized solar cells which significantly increase the power conversion efficiency of these devices.

"How do you tap into that?" asked Scholes. "It certainly will take policy, mission, strategy and leadership."

Similar messages are coming from consultations from over 350 stakeholders who participated in NRCan's Clean Technology for Canada's Natural Resources Consultation.

"The feedback we're hearing is that we're playing it too safe," said Frank Des Rosiers. "We need to get bolder in terms of our research efforts and tilt it more towards breakthrough technologies," particularly in areas where Canada can compete globally.

"We need to look at leaps ... and right across many industrial sectors. We're looking to shave emissions not just 2 or 3% but by 50, 60, or 80%," said Des Rosiers.

From a policy perspective, he said this requires creating a technology pull from industry, which can be encouraged through mechanisms like carbon pricing and government procurement.

Panelists pointed to the need for more "grand challenge" partnerships, like the

## Takeaways and recommendations:

- Canada has a strong base to become an energy superpower that includes clean energy
- Focus on technology areas where Canada is strong and can compete internationally
- Breakthrough discoveries—not incremental advances—are needed to tackle climate change
- Identify grand challenge research projects involving multiple countries
- Align strategies globally
- Develop models that encourage international collaboration
- Include all stakeholders in a research process that is market-driven
- Grow the talent pool by encouraging young people from other disciplines to move into clean tech
- Create policy and economic incentives that incent demand from industry
- Use science diplomacy when

countries disagree on missions and strategies

- Address structural barriers to financing early-stage clean tech companies
- Ensure policy decisions are informed by evidence

Don't expect climate change to be solved with incremental advances in science and technology. Each of the panelists agreed that countries and scientists need common goals that deliver breakthrough discoveries that can revolutionize energy systems around the world.

"What we need now are bold steps forward in the science. This is not a time for incrementalism. It's a time for breakthrough science that will lead to new transformative approaches," said Dr. Alan Bernstein, whose CIFAR organization represents many of the world's top scientists. And while more funding is

Breakthrough Energy Coalition of high net worth investors led by Microsoft founder Bill Gates, and Mission Innovation launched last year at the Paris Climate Change Conference. Twenty-four countries have committed as part of Mission Innovation to double their national spend on clean energy innovation over five years, while encouraging greater levels of private-sector investment in transformative clean energy technologies. Canada, Mexico and the U.S. are partners in those collaborations.

Canada is also co-chairing a joint research working group to identify collaborative models that see countries develop common global and/or continental strategies, as opposed to national strategies. "That's a pretty significant shift in how we do business," said Des Rosiers.

Changing priorities in the U.S.?

Brokering such partnerships is never easy, Bernstein noted, particularly following the previous day's U.S. election. Donald Trump's unexpected win as president overshadowed the panel discussion in light of his campaign pledge to pull the U.S. out of the global 2015 Paris Agreement that aims to shift the world from fossil fuels to cleaner energy. Here, Bernstein sees an important role for Canada.

"This is an opportunity for Canada, particularly given last night's events... This is a great time for Canada to step in as an honest broker to convince countries to work together to address a common challenge."

Responding to a question from the audience, Scholes said he doubts the Department of Energy will change course radically with the arrival of a new president.

"The DOE is one constant in all of this," said Scholes. "Nobody has any idea what Trump thinks or is going to do so that's the unknown. But for the government as a whole, I can't see radical change at that kind of level. It's a big machine and it's stable so I would be surprised if there were radical changes."

Where sweeping changes have happened is in Mexico, which has moved quickly over the past few years to liberalize its energy sector and open it to foreign investment, a model Carlos Ortiz at Mexico's Secretariat of Energy described as similar to those in the U.S. and Canada.

Ortiz recognized that the transition to clean energy is new territory for his

country. "Mexico isn't a country known to produce and export technology. It would seem that there would be no role for Mexico in this discussion and that we would be a mere spectator than a player," he told CSPC delegates.

Yet, with its energy reforms, Mexico now has one of the world's most ambitious goals for renewable energy, including wind, solar and geothermal. Mexico is also funnelling new tax revenues into clean tech R&D, though he noted that more incentives are needed to strengthen the links between academia and industry.

"There are a lot of questions on how to change that framework to create the right incentives, and how to leverage international platforms of collaboration to build capacity and leapfrog in some of these relevant topics," he said.

Financing early-stage clean tech companies is another major policy challenge, said Kearns, "and this is despite the fact that clean tech punches above its weight on all the important indicators: capital raised, revenue, jobs created and intellectual property created."

She said the MaRS Advanced Energy Centre, a partnership between MaRS Discovery District, the Ontario Ministry of Energy and the private sector, helps small companies overcome barriers to technology adoption, financing and access to global markets. MaRS also manages on behalf of the provincial government the Investment Accelerator Fund—the most active seed-stage investor in Canada. Unfortunately, it invests very little in clean tech.

"There are some structural challenges to clean tech and renewable energy that make it very difficult to invest at the very early stage so when we talk about policies to enable renewable energy we need to make sure we're addressing the full spectrum of funding challenges," she said.

Europe's collaborative model

A collaborative model that has worked well in Europe for over 30 years is EUREKA, which funds joint R&D projects. The majority of EUREKA's €30 billion budget these days supports seven clusters that bring together large companies, along with small and medium-sized enterprises (SMEs), research institutes and universities to develop technologies for strategic industry sectors. Joint projects with Canada represent about \$65 million of the budget. Canada joined EURKEA as an associate member country in 2012.

"Companies have to have access to the research they need, wherever it's available and at the right time, so international collaborations such as this are absolutely key," said Gabriel Marquette, who heads up EUROGIA2020, an industry-driven cluster for low-carbon energy technologies. "We need to work on developing new paradigms between all stakeholders, including industry and academia, but also cities and public authorities."

EUROGIA2020 supports projects at Technology Readiness Levels 5-7, and facilitates access to funding in participating countries. Formed 12 years ago, EUROGIA2020 has expanded its initial focus from fossil fuels to renewables, clean tech and energy efficiency.

"These are full public-private partnership projects," involving the full value chain, including SMEs, said Marquette. "It is a totally bottom up initiative; it is not policy driven. It is coming from industry, from the R&D (community). They define what is necessary to serve the market."

Canada is currently participating in three EUROGIA2020 projects related to high-efficiency hydro generation, energy storage systems for wind, and lower carbon coal plants. Canada is also seeking partners on three other clean tech projects.

Des Rosiers said the focus on clean tech and energy efficiency has become an even bigger priority for his department since the Liberals came to office a year ago to reinvigorate Canada's commitment to reduce greenhouse gas emissions and invest more than \$150 million on clean tech and energy efficiency. In June, Canada, Mexico and the U.S. also agreed to strive to achieve 50% clean power generation by 2025.

"This is something that is very striking in our discussions when we brief ministers, is what about the facts, what about the evidence?" noted Des Rosier, adding that Prime Minister Justin Trudeau sees environmental outcomes and economic growth "as being very much compatible. And that has been driving our (department's) efforts since."

Des Rosiers stressed that any decisions they make on this file will be informed by science. "We're a science-based department and we believe our anchoring of the decision making around science and facts is the right way to go."



# PLENARY PRESENTATION: CONVERGING SCIENCE: FOSTERING INNOVATION THROUGH A NEW MODEL OF TRANSDISCIPLINARY RESEARCH



November 10, 2016

Organized by: Canadian Institutes of Health Research, Genome Canada, Natural Sciences and Engineering Research Council, and Social Sciences and Humanities Research Council

Speakers: Alan Bernstein, President and CEO, Canadian Institute for Advanced Research (CIFAR); Graham Carr, Provost and Vice-President Academic Affairs, Concordia University; Ilse Treurnicht, CEO, MaRS Discovery District

Moderator: Darren Gilmour, Executive Director, Royal Society of Canada

## Takeaways and recommendations:

- Disruptive innovation moves at “warp speed” while universities and governments are constrained by an inflexible, process-obsessed risk-averse culture
- Universities need to rethink their role and mission in society with a view to encouraging convergence
- Build “convergent zones” and an “intellectual ecosystem” within

post-secondary institutions that are cross-disciplinary can flourish around disruptive technologies

- Universities need to become less vertically structured and more horizontal, with multiple faculties committed to a larger vision
- Build a training platform where students, faculty and external collaborators can work in teams and benefit from the diversity of their expertise
- Develop a new system of incentives and rewards to support team-based interdisciplinary academic research
- Granting councils need to figure out how to cross disciplines and focus on problems
- Accommodation may be needed within the peer review system to address the dearth of researchers

- with convergence experience
- Multidisciplinary or interdisciplinary isn't enough—convergence also needs to include stakeholders outside of academia
- Rethink faculty hiring to recruit people with convergence experience
- Identify the problem and then assemble the best talent from anywhere

Team-based learning and research that cuts across scientific disciplines has become critical for solving complex challenges, driving innovation and providing companies with the skilled talent they need to compete. Yet, our post-secondary system and research granting councils continue to rely on outdated models that tend to impede, rather than promote convergence and collaboration.

"Despite extraordinary progress we've made around the world, much of it fueled by science and discovery, there remains some very challenging problems that we still need to address. And, none of these will be tackled by any one scientist, any one philanthropist, any one charismatic politician or ambitious entrepreneur," said Dr. Ilse Treurnicht who heads the MaRS Discovery District in downtown Toronto.

Addressing the problem starts with identifying the problem, she said. "Then assemble a coalition of problem solvers, drawing on the best of our science, the best of our policy makers, big companies, small companies, and do that in the context of shared goals. This is the ultimate challenge of convergence."

The panelists agreed disruptive changes are needed. CIFAR CEO Dr. Alan Bernstein said one of the great strengths of universities throughout history has been their vertical structure. Today, however,

that structure is being challenged by the rise of interdisciplinary science. A similar challenge faces the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council and the Social Sciences and Humanities Research Council.

"Our funders need to find ways to figure out how to cross disciplines and focus on problems," said Bernstein, the founding president of CIHR. He contends the current system actively discourages young people from pursuing careers in science and from participating in interdisciplinary research. "The incentives don't line up."

One success is CIFAR's Bio-inspired Solar Energy program which brings together an international team with backgrounds in nanotechnology, chemistry, biology, biological engineering, materials synthesis and more. "It's the problem that brings these people together—how to solve the problem of renewable energy by figuring out how nature works."

Another convergence success story—albeit with unintended consequences—came from scientists at Concordia University and the University of California, Berkeley. The research team proved that yeast can be engineered to convert sugar into alkaloids — allowing for the production of cheaper, less addictive and safer drugs including opiates, antibiotics and anti-cancer therapeutics.

The breakthrough was hailed as one of the 10 most important scientific discoveries of 2015, and it comes out of synthetic biology, a field Dr. Graham Carr described as "a poster child for convergent science" that includes engineering, biology and chemistry, with applications across a number of industrial sectors. "In this case, it was also a poster child for

inter-institutional and international convergence," said Carr.

However, he pointed out that this disruptive technology also triggered a tsunami of news articles warning of the potential to make "home-brew" opiates. "At the basis of this discovery there was growing a perfect epistemological storm of converging challenges around other disciplinary boundaries—health, ethics, public policy, law and order, business and communication, but also convergence beyond the culture of academia, into government, commerce, media, patenting, markets and global and cross-cultural values."

"The opiates case," he added, "exposed the clash between warp speed, agility and disruptive scope and inter-sectoral impact of exponential innovation on the one hand, and the inflexibility, ponderousness, process-obsessiveness, compartmentalization and risk-averse nature of university and government cultures."

Treurnicht noted that the convergence that is eluding many in academia is becoming increasingly commonplace in the private sector, notably in the area of social impact investing where profit and purpose are converging.

"If you look at the impact investing movement, it is mobilizing private capital for public purpose to tackle some of the most complex challenges." This includes philanthropists like the Gate and Rockefeller foundations and Virgin Unite, and even venture capitalists like the OS Fund, DBL Partners and Horizons Ventures.

"The money is following convergence," said Treurnicht "Even the venture capitalists are taking notice."





# SYMPOSIUM: ACHIEVING DIVERSITY IN STEM – ADVANCING INNOVATION



November 8, 2016

Organized by: Imogen Coe, Ryerson University

Panelists: Kristin Baetz, Interim Director, Ottawa Institute of Systems Biology, University of Ottawa; Jennifer Flanagan, CEO and co-Founder, Actua; Gabrielle Genereux, Student, Carleton University; Emily Haws, Student, Carleton University; Jeremy Kerr, President, Canadian Society for Ecology and Evolution; Annika Pint, FIRST Robotics Administrator, Toronto District School Board; Marisa Sterling, First Assistant Dean Inclusivity and Diversity, York University's Lassonde School of Engineering; Liette Vasseur, UNESCO Chair on Community Sustainability, Brock University

Moderators: Dorothy Byers, Chair, FIRST Robotics Canada; Imogen Coe, Founding Dean, Faculty of Science, Ryerson University

## Takeaways and recommendations:

How can Canada change the culture so that it fully embraces equity, diversity and inclusivity (EDI) issues?

- Use language that is accurate and representative of the issues
- No more “leaky pipeline” metaphor; research shows this metaphor—which suggests women are more likely than men to “leak” from STEM fields after entering post-secondary—is inaccurate and devalues students
- Have ministers (including the Prime Minister) speak the language of science and evidence and engage the public with events that support this culture
- Engage media for change; media is complicit in gender stereotyping
- Encourage institutions to use social media to champion EDI issues
- Invest money in creating a fun, entertaining science culture through events that engage the public and open up the conversation about what is possible for youth
- Engage more men to support and be role models for EDI
- Teach girls to be brave, not perfect, and to embrace failure as necessary to achieving success
- Educate the public and scientific community on implicit biases

What can Canada do to support diversity in STEM fields?

- Develop more programs and support mechanisms that help increase diversity in STEM fields
- Have mentors with certified skills in mental health and first aid to support students with disabilities
- Bolster industry support for students in K-12, the most crucial period when doors to STEM fields are still open
- Adapt K-12 curricula to support a diversity of skills to help students identify areas in which they excel
- Adapt curriculum to embrace EDI issues and awareness
- Create an accountability framework for effecting change (e.g. withholding awards and funding from groups that are not equitable)
- Develop federal policy that pushes for inclusion of underrepresented groups in STEM fields and STEM organizations (e.g. women, lower-income students, minorities, indigenous people)
- Create a lexicon of EDI concepts (eg. imposter, stereotype threat, implicit bias, etc.) to help in the development of policy that uses consistent terminology
- Create content for programs with partners and representatives from under-represented groups
- Organizations should have apprenticeship schemes; sponsorships for long-term and ongoing programs that give students opportunities to develop problem-solving skills and experience
- Integrate social sciences and humanities into STEM fields to better understand why we do things

# THE CANADIAN SPACE POLICY SYMPOSIUM 2016

November 8, 2016

Organized by: Canadian Space Commerce Association

Speakers: Iain Christie, Executive Vice President, Aerospace Industries Association of Canada; Michael Daly, York University Research Chair in Planetary Science; René Doyon, Professor, Université de Montréal; Simon Grocott, Deputy Director, Missions, UTIAS Space Flight Laboratory; Christopher Herd, Associate Professor, Department of Earth and Atmospheric Sciences, University of Alberta; Brodie Houlette, Co-founder and Chief Commercial Officer, Prometheus Labs; Sharon Irwin, Director, Space, Marine and Defence Directorate, Innovation, Science and Economic Development; Adam Keith, Director of Space and Earth Observation, Euroconsult; Hassan Khan, Co-Founder and CEO, Quantius; Dan King, Director for Business Development, MDA Inc.; Sylvain Laporte, President, Canadian Space Agency; Alexander MacDonald, Senior Economic Advisor, Office of the Administrator Washington, NASA; Michelle Mendes, CEO, Canadian Space Commerce Association; David Naylor, Professor, Institute for Space Imaging Science, University of Lethbridge; Jeffrey Osborne, Co-founder and VP Business Development, Kepler Communications; Gordon Osinski, Associate Professor & NSERC/MDA/CSA Industrial Research Chair in Planetary Geology, University of Western Ontario; Christian Sallaberger, President and CEO, Canadensys Aerospace Corp.; Prashant Shukle, Director General of the Canada Centre, Mapping and Earth Observation; James Slifierz, Co-Founder and CEO, SkyWatch Space Applications; Mark Tinkler, COO, Canadian Space Commerce Association; Charity Weeden, Senior Director of Policy, Satellite Industry Association

Moderators: Christian Sallaberger, President & CEO, Canadensys Aerospace Corp; Adam Keith, Director of Space and Earth observation of Euroconsult; Gordon Osinski, Associate Professor & NSERC/MDA/CSA Industrial Research Chair in Planetary Geology, University of Western Ontario; Charity Weeden, Senior Director of Policy, Satellite Industry Association

## Takeaways and recommendations:

### Policy

- Canada's space sector is losing critical mass
- Need a Cabinet minister who will champion Canada's space program
- Implement a national space vision and plan that includes government, industry, investors and academia
- Government needs to act as a facilitator who supports collaborations, particularly with non-traditional sectors that could benefit from space technologies (e.g. agriculture, oil and gas, transportation)
- Support and grow space expertise across the country
- Need for high-level government coordination to support space sector
- Align national goals and contributions to international goals and contributions
- Canada lacks adequate and predictive mission opportunities; balance between affordable, short-term, S&T-driven missions, technology development programs, and long-term "flagship" missions
- Align space priorities with the innovation agenda and other government priorities (e.g. climate change monitoring, northern development)
- Implement a Small Business Innovation Research-type program, building on the work of organizations like IRAP
- Canada's SR&ED program is an advantage, particularly for smaller companies
- Government needs to make its data more open (as NASA does in the U.S.)
- Recognize the role of ground-based space research and coordination between funding agencies (e.g. NSERC)
- Consider incentives to keep space companies in Canada (e.g. flow through shares)
- International partnerships are essential and Canada is a sought-after partner



**Investment**

- Funding support strong for basic research in space and start-ups (e.g. SR&ED), but weak when it comes to scaling up companies
- Canada lacks short-term public and private capital, and adequate and predictive long-term funding for space R&D
- There is a serious lack of early-stage capital from start-up to pre-seed
- Ensure balance in “cradle to grave” government support, from early stage research to demonstration and scale up; strong industry support needed to drive funding programs
- Harness funds for big research (e.g. clusters) as space cuts across several sectors
- More federal funding needed for Space Technology Development Program
- Pursue opportunities for high

net worth individuals to invest in philanthropic or business ventures related to space in Canada

- International competition is driving down cost of accessing and commercializing space

**Procurement**

- Focus on policy/procurement pull as opposed to technology push
- Government needs to shift from being a developer of space technologies to an investor and buyer of services (e.g. data); this demand could come from several departments (e.g. Natural Resources Canada)

**Highly qualified personnel (HQP)**

- Canada’s graduate students and PhDs are leaving Canada for jobs elsewhere, particularly the U.S.
- Space is a highly visible way of inspiring young people to enrol in

STEM disciplines

- Canada lacks a flagship mission that inspires young people to choose a career in space
- Universities are uniquely situated to contribute to training of HQP in the “new space” era
- Having an office within the Canadian Space Agency for small satellites (“CubeSats”) could provide training opportunities for students and faculty
- More programs needed to fund graduate students and post-docs
- No national space education and public outreach program
- Consider including international co-ops as part of national platform
- Produce HQP with deep knowledge of instruments and analysis techniques
- Support academic training opportunities for “new space”

# Find Science Careers.

Subscribe to University Affairs magazine and start reading Canada’s most authoritative information source for and about the university community. Visit our website to read exclusive online content and search academic job postings for science and other disciplines.

[www.universityaffairs.ca](http://www.universityaffairs.ca)

News. Careers. Ideas.



**UA AU**

# THE SCIENCE DIPLOMACY SYMPOSIUM



November 8, 2016

Organized by: Canadian Science Policy Centre

Speakers:

KeyNote Speech:

Stephen McGurk, Vice President - Programs and Partnership Branch, International Development Research Centre (IDRC)

Panel Session 1: Emerging Trends in Science Diplomacy:

Daryl Copeland, Senior Fellow, Canadian Global Affairs Institute; Nabil Ayad, Professor, The Academy of Diplomacy and International Governance, University of Loughborough; Paul Dufour, Principal/Adjunct Professor, Paulicy Works / University of Ottawa; Margaret McCuaig-Johnston, Senior Fellow, Institute for Science, Society and Policy, university of Ottawa and China Institute at the University of Alberta

Panel Session 2: Role of Canada in Global Affairs:

Dimple Roy, Director - Water Program, International Institute for Sustainable Development (IISD); Jocelyn Mackie, Vice President - Operations and General Counsel, Grand Challenges Canada; Nasir Faruqi, Director - Technology and Innovation, International Development Research Centre (IDRC)

Panel Session 3: Building Capacity for Science Diplomacy in Canada: Interactive Session. All Speakers & Audience

Moderators:

Panel Session 1: Denis Robert, Director - Policy Research, Strategic Engagement and Foresight, Canadian Department of Foreign Affairs, Trade and Development

Panel Session 2: Paula Brand, Director- Sustainable Development Policy, Environment Canada

Panel Session 3: Mehrdad Hariri, CEO & President, Canadian Science Policy Conference & Uzma Urooj, Program Officer, Natural Sciences and Engineering Research Council

## Takeaways and recommendations:

- There is a critical need for building capacity in Science Diplomacy within Canada.
- Canada and the world faces critical issues such as water security, climate change and its monitoring, arctic circle etc where science diplomacy can play an important and critical role in establishing a leading role for Canada.
- Lessons can be learned from China's new Technology, Science and Innovation plan strategically devised to help China become a leader in science and technology.
- Lessons can also be learned from Europe, in particular United Kingdom, who are now training scientists and thinkers in policy making process.
- Canada has a massive opportunity to utilize its excellent reputation in scientific excellence with its diplomatic efforts.
- IDRC and GCC play an important role in building regional and global science based partnerships. These partnerships can help pave way for further diplomatic efforts.
- Important to encourage scientists to take part in big science projects such as CERN lab, TRIUMP etc
- Imperative to implement a national vision and plan that includes government, think tanks, academics, scientists and other institutions such as CSPC.
- At government level, this need can be addressed with a priority shift within Global Affairs Canada (GAC).
  - Align diplomatic priorities with the innovation agenda and other government priorities (e.g. water security, climate change monitoring)
  - Align national goals and contributions to international goals and contributions such as sustainable





- Universities (including Ministry of Education) should consider funding chairs in Science Diplomacy.
- Canadian Foreign Office should consider training programs on science diplomacy.
- Convening power of CSPC may be utilized to build consensus across diverse stakeholders including scientists and diplomats as the best way forward.
- Capitalize on massive Canadian scientific diaspora across the globe in Science Diplomacy effort
- Need a Cabinet minister who will champion Canada's Science Diplomacy Initiative
  - Mobilizing and managing forces within leadership while promoting active and meaningful public engagement.



**Possible Next Steps**

- Building Institutions is critical for building science diplomacy efforts. Strong leadership and vision from top management to build institutions is urgently needed.
  - Consider forming a think tank for building capacity in Science Diplomacy.
- Active role for Global Affairs Canada.
  - Work collaboratively with Canadian scientists in diplomatic efforts.
  - Identify Canadian strategic priorities and ensure proper diplomatic efforts including scientific efforts by recruiting and training science policy advisors.
- Governor General of Canada, having a strong interest in innovation and science, should be actively sought for further directions in promoting science diplomacy within Canada.
- Canadian Council of Academies (CCA) may be engaged in performing in-depth assessment on the state of science diplomacy within Canada. This document could be galvanize and influence the government.
- For foreign assignments, a letter could be written to Foreign Minister to find out who is the science advisor for upcoming foreign meetings etc.
- CSPC should consider holding forums on targeted topics in an effort to build consensus on emerging issues related to science diplomacy

development goals (SDGs)

- Build capacity for engaging scientists in foreign offices.
- Build a policy and analytical environment within GAC and other academic institutions.
- A dire need for science diplomacy advisors within the foreign ministry. Such a network of science advisors could feed relevant scientific information with respect to diplomacy into a central system.
- At institutional level, this need may be addressed by creating think tanks and supporting other such institutions who play an active role in building capacity in science diplomacy.
- Such institutions can break barriers between diplomats and scientists by bringing them together on issues.
- Identify “science diplomacy success stories” that can be used as examples to champion the case for science diplomacy (e.g. USA-IRAN nuclear proliferation). Bringing examples to decision makers will make it easier to acknowledge and accept the role of science in diplomacy.
- Within academia, there is a need to develop special programs to train and engage scientists within diplomatic efforts.

# PANEL: IMPROVING OCEAN MANAGEMENT: CRITICAL INSIGHTS ABOUT INFORMATION PATHWAYS TO STRENGTHEN EVIDENCE-BASED DECISION MAKING

November 9, 2016

Organized by: the Environmental Information: Use and Influence (EIUI) research program, School of Information Management, Dalhousie University

Speakers: Christopher Jennings, Chief of Policy, Strategic Planning and Operations Branch, Earth Sciences Sector, Natural Resources Canada; Kevin Quigley, Scholarly Director, MacEachen Institute of Public Policy and Governance, Dalhousie University; Suzuette Soomai, Postdoctoral Fellow, Environmental Information: Use and Influence research program, Dalhousie University; Peter Wells, Senior Research Fellow, International Ocean Institute, Dalhousie University; Lee Wilson, Research Associate with the Marine Environmental Observation Prediction and Response (MEOPAR) Network's Data Management Project

Moderator: Ian Stewart, Assistant Professor, History of Science and Technology Program, University of King's College



## Takeaways and recommendations:

- Understanding how information flows among multiple actors can guide an organization in evaluating or modifying its production and communication practices
- The path from science to decision-making is non-linear and multiple science-policy interfaces exist; the movement of information between scientific and policy groups can follow numerous formal and informal pathways linking a variety of actors in networks of policy- and decision-making at all levels of government
- A main driver for marine environmental information is the top-down pull from federal senior management responding to legislation, regulations, policies and mandates
- Scientists from various institutions (e.g., government and university) may also push to get topics on the policy agenda
- Measuring the use and influence of an environmental assessment report is essential but it can be challenging
- Pursuing timely, continued and targeted consultation that accommodates stakeholder schedules (e.g. fishers' availability affected by weather and tides) is essential.
- Establish committees and working groups involving all stakeholders; this improves focus and coordination and helps to breakdown institutional silos
- Increase funding support for information brokerage/bridging activities among stakeholders
- Translating the influence of brokerage/bridging activities into measurable terms (e.g. a dollar metric) is important; however, this value is often discovered too late, after processes are hindered or have broken down
- Well-defined processes produce credible, relevant and legitimate information for decision-making; however, it may limit the advice necessary to address newer and complex concerns (e.g. climate change and ecosystem approaches)
- Scientific advice is influenced by how the problem is defined; i.e. evidence may be needed to make a development decision or a conservation decision
- Trust relationships between scientists and managers improve understanding of science and management needs
- Leave the door open for hypothesis-driven government research to fill knowledge gaps as they emerge
- There is a higher tolerance for risk and failure when risks are more certain; community engagement becomes more important as uncertainties increase



# PANEL: BUILDING CAPACITY FOR SCIENCE POLICY IN CANADA



November 9, 2016

Organized by: Canadian Science Policy Centre

Panelists: Interactive session

Moderator: Mehrdad Hariri, CEO and President, Canadian Science Policy Centre

## Takeaways and recommendations:

- Define science policy
- Canada lacks strong academic and research groups focused on science policy; fund more science policy research
- Canada lacks a permanent council or other entity for science policy
- Develop a low-cost, easy-to-access program that exposes more students to science policy
- Make Mitacs' Canadian Science Policy Fellowship program permanent and scale up
- Engage policymakers, industry and

- the public in science policy research to improve its translation into practice
- Encourage greater inclusion of social sciences, humanities and arts in science policy and more communication across disciplines
- Include communications in training for future science policy practitioners
- Academics need to do a better job at translating their results to policymakers
- Use social media to engage the public on topical policies
- Future Chief Science Officer can be a focal point of demand-pull for science policy

- Permanence of government science advisory bodies an issue
- Take CSPC Science Policy 101 courses on the road; create a video and circulate to smaller academic institutions
- Pilot CSPC workshops across Canada and seek granting council support to scale up

## For next CSPC conference:

- Structure a panel with the five chief science advisors in Canada
- Allow more time for audience discussion

# PANEL: EVIDENCE-BASED DECISION MAKING IN HEALTH POLICY AND HEALTH CARE PRACTICE



November 9, 2016

Organized by: BC SUPPORT Unit, Bev Holmes

Speakers: Tim Murphy, Vice President, Alberta SPOR SUPPORT Unit; Gail MacKean, Alberta SPOR SUPPORT Unit; Dean Fergusson, Senior Scientist & Director, Clinical Epidemiology Program, Ottawa Hospital Research Institute; Stirling Bryan, Scientific Director, BC SUPPORT Unit; Bev Holmes, Vice-President, Research & Impact, Michael Smith Foundation for Health Research

Moderator: Kuan Li, Project Lead, Strategy for Patient-Oriented Research, Canadian Institutes of Health Research

## Takeaways and recommendations:

- Canada is not making the most of its vast amount of world-class patient data for research, innovation and policy development
- Trust, culture, ownership and access are major hurdles in accessing and sharing secondary use data; we have to be bolder, more ambitious about changing the culture around data
- Data, and access to it, is an asset

- and potentially a distinct Canadian advantage given our universal health care and robust data holdings
- Stakeholders hold different goals, values, needs, demands which contributes to a culture of competition
- Alberta SPOR has succeeded in improving access to certain data sets from years and months to weeks and days; 100% satisfaction from those

- who have utilized its services; capacity growing by leaps and bounds
- Identify what the markers of success will look like
- Establish data portals to ensure researchers have fast and easy access to data
- Coordinate with all stakeholders to implement and measure change
- Ensure patients with lived experience and their families are engaged when planning program directives, research, policy and practice
- Complaint in BC is that authorities still decide when and how patients are to be involved, rather than bringing them in from the start.
- Match the problems with the research data, with emphasis on bodies of evidence, not individual studies
- Develop a stronger evidence base

# PANEL: A SYSTEMS-BASED APPROACH TO EVIDENCE-BASED POLICY DECISION-MAKING: SKILLS, TOOLS & MINDSET FOR EFFECTIVE DECISION MAKING - ENERGY

November 9, 2016

Organized by: Thomson Reuters, Daniel Duguay

Speakers: Graham Campbell, CEO, Energy Council of Canada; Daniel Duguay, Senior Director Business Development, Thomson Reuters; Sergio Marchi, President and CEO, Canadian Electricity Association; Marco Presutti, Director General, Energy Policy Branch, Natural Resources Canada; Oscar Sigvaldason, Director, Energy Council of Canada.

Moderator: Janet Halliwell, President, J.E. Halliwell Associates Inc.

## Takeaways and recommendations:

- Systems perspective essential to establishing and fully leveraging relationships between different data sets
- Foster public and private sectors' increasing use of design thinking and advanced analytics to make more informed system-level decisions
- Holistic view required to effectively apply evidence-based policy to energy sector
- Governments, regulators and the public need to be engaged and aligned to create effective sectoral policies; the sharing of systems-level evidence is an effective method to generate consensus between diverse stakeholder groups
- Incorporate evidence-informed decision making into the current "deliverology" concept to ensure governments "do the right thing by doing things right"





# PANEL: BACK TO THE FUTURE: WHAT EBOLA TAUGHT US ABOUT RISK COMMUNICATION



November 9, 2016

Organized by: Damien Chalaud, World Federation of Science Journalists

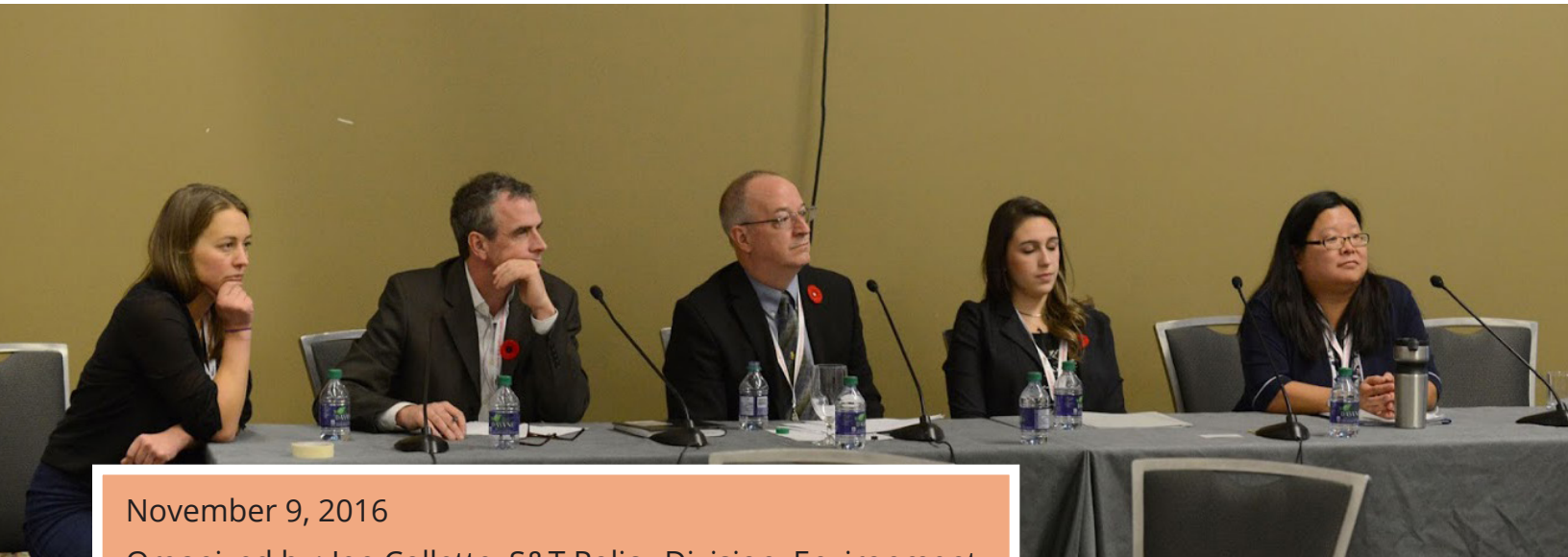
Speakers: David Secko, Associate Professor of Journalism, Concordia University; Damien Chalaud, Executive Director, World Federation of Science Journalists; Alpha Daffae Senkpeni, Liberian Journalist; Theresa Tam, Assistant Deputy Minister, Public Health Agency of Canada; Kahofi Suy, Ivorian journalist

Moderator: André Picard, Public Health Reporter, Globe and Mail

## Takeaways and recommendations:

- Countries need to invest in effective risk communication strategies to deal with health outbreaks or other crises
- Limited access to relevant evidence and capacity to appraise, translate and communicate evidence led to a lot of inaccurate or “fake” news
- Misinformation tends to spread faster than balanced and factual information
- Initial messages about Ebola were didactic and sometimes proved to be more dangerous than they should have been
- Journalists in Liberia relied heavily on regular updates from the U.S. Centers of Disease Control
- Western media was just as faulty as local media when articles were not science-based, and were slow to cover outbreak until it struck closer to home
- Government, scientists and journalists need to work together to provide clear, science-based messages and promote science-based behavioural interventions
- Community radio was often first link to rural areas, but there was a lack of basic equipment, information and health journalists
- Communications messages were being developed with little research into barriers local residents faced; communication improved when social mobilizers engaged with elders, youth, women groups and local opinion leaders
- Engage medical anthropologists early in a crisis to accurately communicate risk
- Training local journalists and editors on the basics of infectious disease, the science behind it, and legal/ethical issues builds trust with local communities
- International responders need to understand local context when crafting messages

# PANEL: LINKING SCIENCE PRODUCERS TO USERS, A CASE STUDY: DESIGNING A PROPOSED PAN-CANADIAN OIL SPILL RESEARCH NETWORK OF EXPERTISE



November 9, 2016

Organized by: Jen Collette, S&T Policy Division, Environment and Climate Change Canada

Speakers: Carl Brown, Research Manager, Emergencies Science & Technology Section, Environment and Climate Change Canada; Jen Collette, Director, S&T Policy, Environment and Climate Change Canada; Marianne Lahaie Luna, Student, University of Ottawa; Katie McPherson, Manager, Community Resilience for the City of Vancouver's Office of Emergency Management; Ian Stewart, Professor, University of King's College

Moderator: Jim Delaney, Senior Policy Advisor, S&T Policy, Environment and Climate Change Canada

## Takeaways and recommendations:

- Oil spills are a top ranking concern for the Canadian public, and figure prominently in issues raised by provincial and municipal governments, NGOs and community organizations concerned about hydrocarbon development and transportation projects in their geographic areas
- The public is increasingly aware, to varying degrees of sophistication, of the significant technological and scientific challenges facing the spill response sectors, both in terms of policy and regulation formation, and performance standards. This can affect what the science ultimately says and how that science affects policy, and raises the need considerably for trusted sources of government science, such as the proposed pan-Canadian Network of Expertise, to take leadership.
- The public has also increased expectations for science to be open and available so that it can inspect and interpret the results and engage in policy and decision-making
- Multi-sectoral research collaborations are essential for effective oil spill response, especially with academia, but also with sectors of the public with environmental science capacity (e.g. ENGOs); such collaborations also enhance the impact of limited research resources
- When dealing with critical or emergency events (e.g. oil spills), ensure the response system is informed by psychological and social realities as well as environmental and economic ones (role for social sciences and humanities research)
- Always involve local potentially affected communities
- Identifying a need and potential solutions is only one piece of the policy puzzle
- Position programs like a proposed research Network of Expertise within current government priorities (e.g. mandate letters)
- A Network of Expertise could establish research priorities that reflect end user needs, build upon existing knowledge, and serve as a single point of contact for stakeholders
- A Network of Expertise could coordinate distributed expertise while also including local economic, environmental and social consequences in assessments; this reflects recent best practices in engagement methodologies
- Linkages to other initiatives already underway can help strengthen policy proposals
- Targeted collaboration can create greater momentum towards achieving a common goal

# PANEL: SCICOMM AS A STRATEGY: SUPPORTING EVIDENCE-BASED DECISION MAKING WITH TARGETED COMMUNICATIONS

November 10, 2016

Organized by: NAPHRO and Canadian Science Publishing

Panelists: Ivy Bourgeault, CIHR Chair in Gender, Work and Health Human Resources and Professor, Telfer School of Management, University of Ottawa; Scott Findlay, Associate Professor, Biology, University of Ottawa; Susanna Fuller, Senior Marine Conservation Coordinator, Ecology Action Centre; Kathryn Graham, Co-founder, International School on Research Impact; Karen Michell, Executive Director, Council of Academic Hospitals of Ontario (CAHO)

Moderator: Tim Lougheed, President, Canadian Science Writers' Association



## Takeaways and recommendations:

- Different consumers prefer different types of sources for their scientific information (e.g. journals and conference most trusted, yet least accessed; social media is least trusted but most accessed)
- Develop plain language summaries that outline policy, regulatory, economic and statutory implications of the research findings; tailor summaries to different audiences
- Post research data in multiple ways on multiple platforms (e.g. free online, open access journals)
- Create training programs to help STEM researchers improve communication skills
- Policymakers would benefit from solution-oriented information
- Strive for early engagement between researchers and policymakers
- Provide grants that support collaboration between communication professionals and researchers
- Fund knowledge generation in areas that policymakers need

**iPOLITICS**  
Proud to announce The Alpheus Group's latest services for Parliament

**iPoliticsINTEL**  
AN INTERACTIVE DIGITAL RESEARCH TOOL FOR ALL PARLIAMENTARIANS

**Legislative Reports**  
CUSTOMIZED COMMITTEE MEETING & QP MONITORING

Contact Yamina for more details:  
yamina@ipolitics.ca | 613.505.0865

**iPolitics: your top political news source and more**



# PANEL: MAXIMIZING THE VALUE AND IMPACT OF COLLABORATIVE POLICY-RELEVANT RESEARCH



November 10, 2016

Organized by: Martin Taylor, Canadian Research Data Centre Network

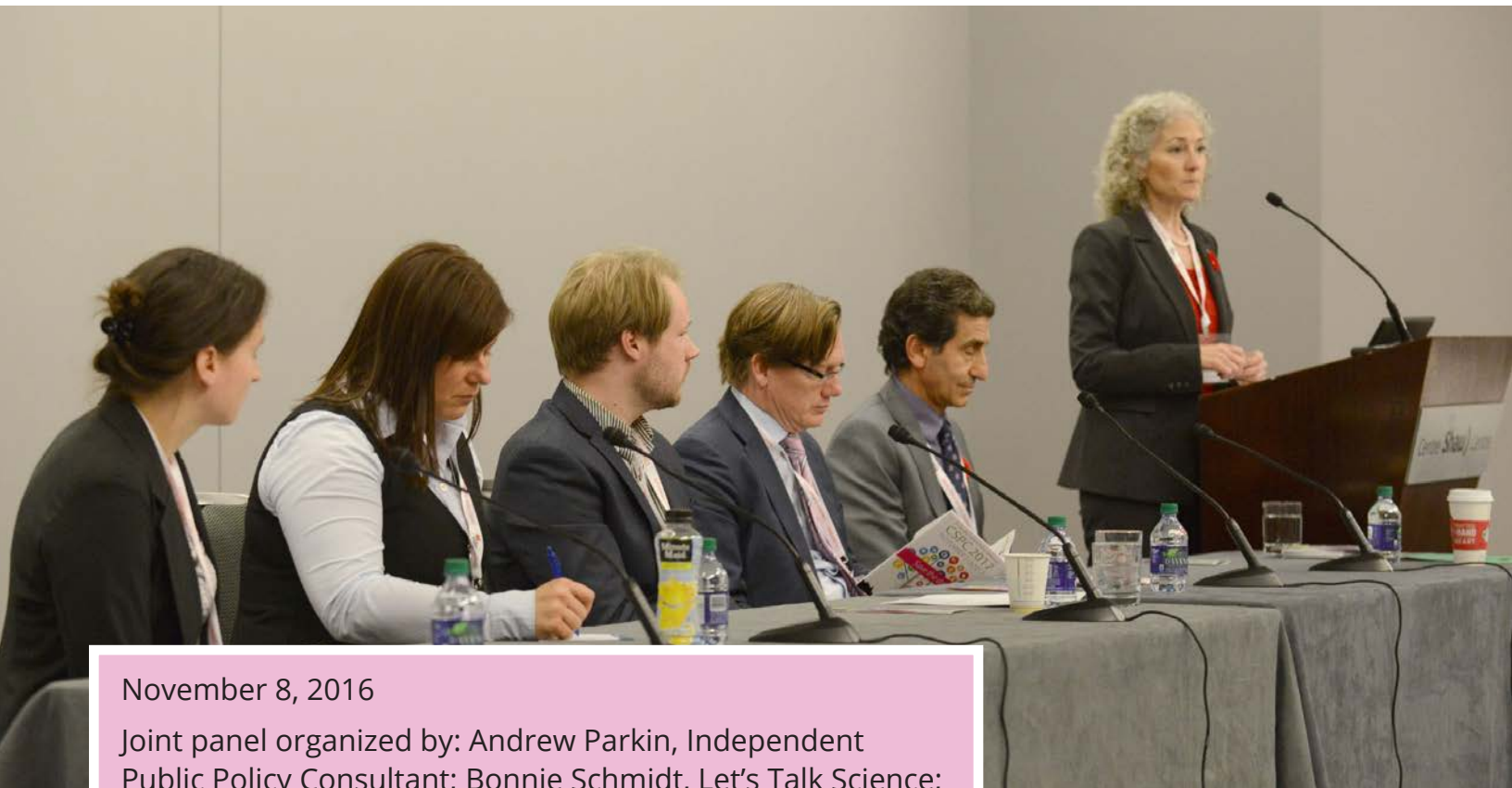
Panelists: Jane Badets, Assistant Chief Statistician, Statistics Canada; Michelle Gauthier, Special Advisor, Canadian Research Data Centre Network (CRDCN); Nancy Ross, Professor of Geography and Canada Research Chair in Geo-Social Determinants of Health, McGill University; Byron G Spencer, Professor of Economics and Academic Director of the Statistics Canada Research Data Centre, McMaster University

Moderator: Martin Taylor, CRDCN Executive Director and Professor Emeritus, University of Victoria

## Takeaways and recommendations:

- University researchers need a secure environment to access microdata records, not just Statistic Canada's aggregate data
- Partnerships, like those with CRDCN, mean data can be used in more ways than originally intended; it can create new linkages (e.g. between health and environment) that have policy implications
- CRDCN allows the government to respond more directly to the current environmental and social realities, and can also prevent duplication of data
- Expand shared resources, mobilize knowledge networks, and leverage collective contributions for public good
- Bring more partners into CRDCN
- Do more to communicate the datasets that Statistics Canada has available to researchers, as many don't know what is available
- Granting agencies can help incentivize academia to use the data by making funding problem-based, and encouraging industry/community partnerships
- Social phenomenon is increasingly complex; we need bigger datasets, more partnerships like CRDCN (or within CRDCN) and more integration of data with reality
- CRDCN is a good model that others should emulate or join
- For research to effectively influence policy, government departments need to be integrated into the process from the beginning and there needs to be ongoing communication on both sides as the research unfolds
- Patience is needed on both sides, as well as a willingness to help with training around potential challenges like differences in research and policy culture, timelines and priorities
- Government departments need to buy into the work that is being done; researchers need to communicate effectively with policymakers to understand the real questions they are trying to address
- Researchers' priorities should not be defined solely by government needs; however, they should be proactive at the early stages of research to identify links between what they are interested in and policy issues (i.e. how their potential results might be relevant to policy)
- Convene panels with researchers and government to explore what the most interesting/relevant problems are and match them to the most useful datasets
- Identify relevant international datasets
- CRDCN should have a public outreach component, especially to celebrate its achievements and communicate them more broadly
- Track and compellingly communicate how CRDCN is impacting policy, though it may be difficult to measure direct impact in many cases
- Even when the policy implications are not immediately relevant, it's important to have datasets and research available to respond to urgent policy issues when the regular research process takes too long

# PANEL: DEVELOPING CANADA'S INNOVATION TALENT: HOW NEW DIRECTIONS IN STEM EDUCATION CAN POSITION CANADA FOR SUCCESS



November 8, 2016

Joint panel organized by: Andrew Parkin, Independent Public Policy Consultant; Bonnie Schmidt, Let's Talk Science; Shawn McGuirk and Liam Crapper, Science & Policy Exchange; Sean O'Leary, Information and Communications Technology Council

Panelists: Namir Anani, President and CEO, Information and Communications Technology Council; Marie-Pierre Cossette, PhD student, Concordia University; Liam Crapper, PhD candidate, McGill University; Rebecca Kapogiannis, Talent Acquisition, Engagement & Diversity Leader, 3M Canada; Andrew Parkin, Independent Public Policy Consultant

Moderator: Bonnie Schmidt, Founder and President, Let's Talk Science

## Takeaways and recommendations:

- Diverse set of skills and talent needed for innovation
- Create incentives by developing instruments and taxation schemes that support innovation
- Develop the talent early to meet specific industry skill requirements
- Start thinking beyond what industry needs today to stay ahead of the curve
- Employers need to be more vocal about what they need so it can be incorporated into the education process

- Increase connections between industry and schools so that students can transition effectively into the labour market
- Have high schools and Chambers of Commerce meet annually to keep students up-to-date on job market trends
- Encourage links with other disciplines to develop the breadth of skills necessary for innovation
- Create multi-disciplinary open innovation hubs as part of STEM education. We need artists, social scientists, and philosophers to help us understand the impacts of our actions.
- Develop a common language to bridge the disparate streams and disciplines
- Adapt grading systems that are more flexible; e.g. inspire and reward innovation and don't penalize creative failure

# PANEL: FERTILE GROUND: HOW INCUBATORS AND ACCELERATORS DRIVE INNOVATION



November 8, 2016

Organized by: Karen Wichuk, TEC  
Edmonton

Speakers: Frank Béraud, CEO, Montréal InVivo; Helen Burt, interim VP Research and International, University of British Columbia; Michelle Miller, Director of Operations, Delta Genomics; Debbie Plouffe, VP Research, Center for Aquaculture Technologies Canada; Chris Plunkett, Director of External Relations, Communitech

Moderator: Chris Lumb, CEO, TEC  
Edmonton

## Takeaways and recommendations:

- Successful commercialization depends on researchers having access to industry partners, business expertise, entrepreneurial talent, mentors and funding
- Build a pan-Canadian network of mentors
- Include entrepreneurship and experiential learning in all student programs; consider developing an Undergraduate Student Entrepreneurship Program (similar to NSERC's Undergraduate Student Research Awards program)
- IP policies should be flexible and responsive to institutional

- needs and best practices
- Accelerators and incubators need a big IP pipeline as only a few technologies succeed
- Focus metrics on company success
- Allow companies to fail fast so their employees and entrepreneurs can move on to new, possibly more successful ventures
- University spin-offs are more likely to be exporters than non-university spin offs
- Invest more in companies that export
- Maintain the Centres of Excellence for Commercialization and Research (CECR) program with renewals dependent on sector-specific outcomes being met
- Allow CECRs (and other innovation centres) to claim soft commercialization costs (e.g. administrative and business leadership, IP protection)
- Establish more flexible innovation/funding programs that span the innovation continuum, from proof-of-concept and prototype development to scale up
- Reduce the number of support programs and focus finite resources on helping scale the most promising companies
- Renew and increase funding for the Canada Accelerator and Incubator Program
- Think long-term when it comes to policy and funding support for innovation centres



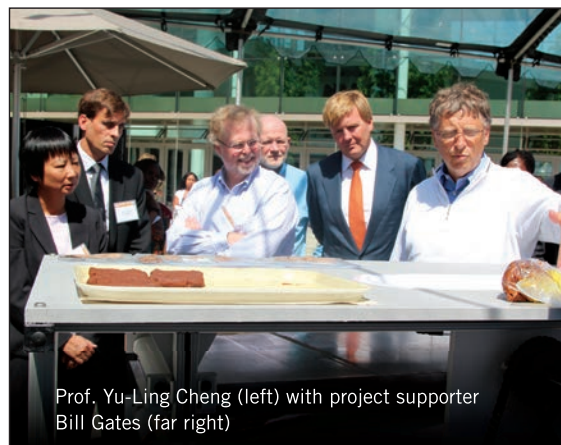
# PANEL: STRENGTHENING THE INTERPLAY BETWEEN DISCOVERY AND INNOVATION

November 8, 2016

Organized by: SSHRC, CIHR, NSERC, Genome Canada

Speakers: Aled Edwards, Director, Structural Genomics Consortium; Elicia Maine, Professor, Innovation & Entrepreneurship, Simon Fraser University; Eliane Ubalijoro, Founder and Executive Director, C.L.E.A.R. International Development Inc.

Moderator: Iain Stewart, President, National Research Council of Canada



Prof. Yu-Ling Cheng (left) with project supporter Bill Gates (far right)



## Takeaways and recommendations:

- Align the passion of scientists with a system that encourages innovation
- Nurture leadership and vision in innovation ecosystem by giving novice innovators/managers access to experiences from seasoned innovators, tools, training and coaching for growth
- Effective technology exploitation can be helped by robust networking and appropriate financing systems, from prototyping and scale-up/clinical trials through to global market penetration and distribution. This requires coordinated programs through multiple ministries.
- Overcome lack of large anchor firms both by encouraging foreign multinationals to conduct R&D in Canada and by innovation incentives aimed at growing SMEs in Canada
- Create mechanisms for leaders of local and global large anchor firms, smaller successful firms, as well as cutting edge Canadian researchers to share lessons learned with students
- Disagreement over whether patents and company formation should be part of granting councils' criteria for grant selection
- Develop more inter-granting system targeted programs that do not filter out interdisciplinary unconventional research

## A GLOBAL RESEARCH POWERHOUSE

Yu-Ling Cheng has designed a toilet that disinfects waste and holds the promise of reducing disease for billions of people in the developing world.



Learn more about our research at [www.utoronto.ca](http://www.utoronto.ca)



**BOUNDLESS**

# PANEL: CANADA'S CLIMATE STRATEGY: WHAT IS NEEDED?



November 9, 2016

Organized by: Russel MacDonald, Royal Society of Canada

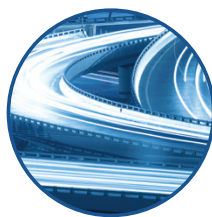
Panelists: Mark Jaccard, Professor of Sustainable Energy, School of Resource and Environmental Management, Simon Fraser University; Catherine Potvin, Canada Research Chair in Climate Change Mitigation and Tropical Forests, McGill University; Arlene Strom, Vice President, Sustainability and Communications, Suncor Energy Inc.

Moderator: John Smol, Canada Research Chair in Environmental Change, Queen's University

## Takeaways and recommendations:

- Develop federal policies that promote collaboration and change behaviour
- Change language around climate change; make it an inspiring challenge that mobilizes people
- Invest in low-carbon infrastructure
- Create a policy framework that makes Canada carbon competitive
- Industry must participate in carbon competition
- Engage all stakeholders in a participatory process that improves social acceptability
- Effective climate policies need a combination of flexible regulations and emissions pricing; non-compulsory policies are not effective on their own
- The international community is hungry for effective climate policies; opportunity for Canada to take a leadership position by helping other countries, particularly low- and middle-income countries

**CANARIE delivers digital infrastructure that strengthens Canadian leadership in science and technology.**



### National Research and Education Network Backbone

connects Canadian researchers to data, tools and colleagues around the world.



### Research Software

funds and supports software to accelerate discovery.



### Identity and Access Management Solutions

provide students and researchers with eduroam and secure access to resources.



### Free Cloud Resources

accelerate Canadian startups' time to market.



  @CANARIE\_Inc

[canarie.ca](http://canarie.ca)

# PANEL: DRIVING INNOVATION: THE ROLE OF CANADA'S STEM CELL & REGENERATIVE MEDICINE SECTOR



November 9, 2016

Organized by: Cate Murray, Stem Cell Network

Panelists: Sharon Colle, President & CEO, Foundation Fighting Blindness; Michael May, President & CEO, Centre for Commercialization of Regenerative Medicine; Lauralyn McIntyre, Senior Scientist, Clinical Epidemiology Program, Ottawa Hospital Research Institute; Michael Rudnicki, Scientific Director, Canadian Stem Cell Network

Moderator: Paul Wells, National Affairs Columnist, Toronto Star

## Takeaways and recommendations:

### Funding and intellectual property:

- Work with scientists at the front end to identify strategies for keeping more Canadian intellectual property in Canada; improve access to capital for homegrown companies
- Develop a coordinated strategy that aligns federal and provincial governments with charities, private sector, investors and academia to create stable and sustainable funding
- Identify federal policies that would incent provinces to spend more on research

- Federal government needs to invest more in health research, including patient registries (currently funded by health charities)
- More public and private funding needed to collaborate internationally

### Maintaining Canada's momentum in stem cell research:

- Continue to educate public about benefits and limitations of stem cell research; be transparent and evidence-based
- Better coordination between pharma and government to create robust clinical trials infrastructure and activity

- Take advantage of a positive regulatory ecosystem
- Look to provincial health systems as first customers of stem cell technologies
- Focus on high-trajectory, winning proposals, and cut them off when they aren't meeting targets; invest returns back into earlier stage research
- Reward teams that are productive
- Involve public and patients in design process by collaborating with health charities with proven record in public engagement
- Involve health charities early in the research process to provide patient perspectives
- Align interests; support the growth of industry infrastructure that can commercialize the process
- Establish protections against genetic discrimination for all Canadians; Canada is the only G7 nation that does not have genetic fairness enshrined in legislation



# PANEL: REGIONAL INNOVATION AND SOCIOECONOMIC DEVELOPMENT IN NON-METROPOLITAN AREAS

November 9, 2016

Organized by: Dr. Deborah Buszard Deputy Vice-Chancellor and Principal, Okanagan Campus, University of British Columbia

Speakers: Deborah Buszard, Deputy Vice-Chancellor and Principal, University of British Columbia, Okanagan Campus; Lincoln Smith, Executive Director, Kamloops Innovation, Thompson Rivers University; Guido Wimmers, Program Chair, Master of Engineering in Integrated Wood Design, University of Northern British Columbia; Terri MacDonald, Innovation Chair, Rural Development Institute, Selkirk College; Jennifer Tedman-Jones, Director of Business Development, Mitacs; Martin Cronin, CEO, Helios Global Technologies

Moderator: Janice Larson, Executive Director, Regional Innovation Initiatives, BC Ministry of Technology, Innovation and Citizens' Services



## Takeaways and recommendations:

- Take a systems approach to innovation that links community, business, academia (all levels) and government through shared interests, objectives and outcomes
- Post-secondary institutions, in particular, play a central role as R&D partners, bringing together communities and industries in their region, and linking needs, goals, training and planning
- Adapt and apply best practice strategies regionally
- Robust digital connectivity and links to global markets important, especially for regions that have traditionally relied on natural resource extraction
- Look for opportunities to engage traditional industries in collaborations that boost their innovation and productivity
- Improve access to early stage financing, including angel investors
- Trusted partnerships with indigenous communities essential to building success across communities; requires education and training for indigenous people
- Establish technology accelerators to start and grow new ventures with a regional focus
- Spread federal support more equitably across the country (majority of funds currently go to Ontario and Quebec) for research, student co-ops and company scale up



Council of Canadian Academies  
Conseil des académies canadiennes

CONVENING  
**EXPERTS**

ASSESSING  
**EVIDENCE**

INFORMING  
**DECISIONS**

Download reports: [www.scienceadvice.ca](http://www.scienceadvice.ca)

Follow us: [@scienceadvice](https://twitter.com/scienceadvice)

Come visit our exhibitor booth

# PANEL: COLLEGE OF NEW SCHOLARS: CONNECTING ACADEMIA WITH INDUSTRY



November 10, 2016

Organized by Russel MacDonald and Alidad Amirfazli,  
Lassonde School of Engineering, York University

Speakers: Satinder Kaur Brar, Institut national de la  
recherche scientifique; Baktash Hamzehloo, Vice President  
Engineering, Aviya Aerospace Systems; Karin Hinzer,  
SUNLAB, University of Ottawa

Moderator: Alidad Amirfazli, Lassonde School of  
Engineering, York University

## Takeaways and recommendations:

- There is an imbalance of supply and demand; more academics want to work with industry than industry with academics
- Address mismatch in incentive programs: universities and professors are incented to work with industry; programs are needed to incent industry to work with academia (e.g. CRIAQ aerospace program)

- Existing programs that encourage industry R&D (e.g. NRC-IRAP, SR&ED) are non-targeted; there is no direct motivation to partner with academia
- Consider making part of SR&ED contingent on partnering with academia
- Review and adapt incentive programs from other countries
- Too many small grants with short term or specific focuses (i.e. one for

equipment, one for trainees, etc.), and therefore too much time is spent on administration

- Funders should implement consortium grants or subsidies that target short term as well as long term, broader objectives
- Foster closer link between national labs, companies, universities and funders
- Implement U.S. initiatives such as Small Business Innovation Research program
- Focus on training aspect of programs as well as R&D goals
- Providing funding (e.g. NSERC Engage grants) for short term projects that allow academia and industry to work together to build the trust and relationships necessary for longer term research

# PANEL: DISRUPTIVE TECHNOLOGIES: PEOPLE, POLICY AND PROGRAMS



November 10, 2016

Organized by: Ontario Ministry of Research, Innovation and Science

Speakers: Foteini Agrafioti, Chief Science Officer, RBC Research; Mo Elbestawi, Director, School of Engineering Practice and Technology, McMaster University; Richard Hawkins, Professor, Science, Technology and Society Program, University of Calgary; Michele Mosca, Founding Member, Perimeter Institute for Theoretical Physics and Co-founder, Institute for Quantum Computing, Duncan Stewart, General Manager, Security and Disruptive Technologies, National Research Council

Moderator: Paul Dufour, Adjunct Professor, University of Ottawa

## Takeaways and recommendations:

- Knowledge generated without application in mind (or with different applications in mind) get applied to help solve important problems in practice
- The questions that emerge from trying to solve important problems

in practice often lead to new and interesting questions that drive the discovery of new fundamental knowledge

- Create opportunities for academic researchers to counter opportunities outside the university
- The potential to translate research into disruptive technologies would

benefit from more systematic communication between government, industry and post-secondary institutions

- Retain disruptive technology expertise by quickly making targeted investments in academic researchers and infrastructure in relevant targeted programs
- Increase the number of programs that incorporate experiential learning for emerging scientists and engineers
- Universities must be equipped and ready to recognize research with the potential to become disruptive technologies
- Canada's open and inclusive research base is a cultural advantage and is well suited to grand challenges



# PANEL: UNLEASHING INNOVATION IN PERSONALIZED HEALTH CARE

November 10, 2016

Organized by: Dana Corsen, Hoffmann-La Roche Ltd.

Speakers: Etienne Richer, Associate Director, Institute of Genetics of the Canadian Institutes of Health Research; Sue Hager, Senior Vice President, Corporate Communications and Government Affairs, Foundation Medicine; Bill Capra, Senior Director and Global Head of Oncology for the Real World Data Science function, Roche/Genentech; Louise Binder, Lawyer, Health Policy Consultant, Canadian Cancer Survivor Network

Moderator: Peter Goodhand, Executive Director, Global Alliance for Genomics and Health; Interim President, Ontario Institute for Cancer Research



*Roche is a proud  
sponsor of the 2016  
Canadian Science and  
Policy Conference*

## Takeaways and recommendations:

- Pan-Canadian commitment and coordination will support policy success
- Back up initiatives with strong political commitment to achieve results; government need champions for personalized medicine
- Identify “moonshot” goals that can catalyze innovation, stimulate R&D and bring stakeholders together in a meaningful way to drive change (e.g. the U.S. National Institutes of Health “Cancer Moonshot”)
- Identify and eliminate the biggest systemic obstacles to change, including jurisdictional
- Broaden engagement of public and private stakeholders, including federal and provincial governments, insurers, industry, and especially patients; ensure clear lines of communication
- Improve linkages between various data systems (including data in physician’s notes)
- Identify and fund paths to reduce roadblocks and the time it takes to get data from research journals into medical practice
- Learn from successful data system models (e.g. Canadian AIDS Information Exchange)
- Study Canadian success stories, such as CARE for RARE and the Ontario HIV Treatment Network; the latter is a good example of how data can be assembled, translated and made available to researchers and medical community
- Revisit relevant recommendations from 2015 report of the Advisory Panel on Healthcare Innovation
- Educate the public, physicians and oncologists of the value of genomics in health care delivery
- Make Canada an internationally recognized centre of excellence for health technology innovation in areas such as genomics

# PANEL – OPEN RESEARCH



November 10, 2016

Organized by: Vivekanandan Kumar, Athabasca University

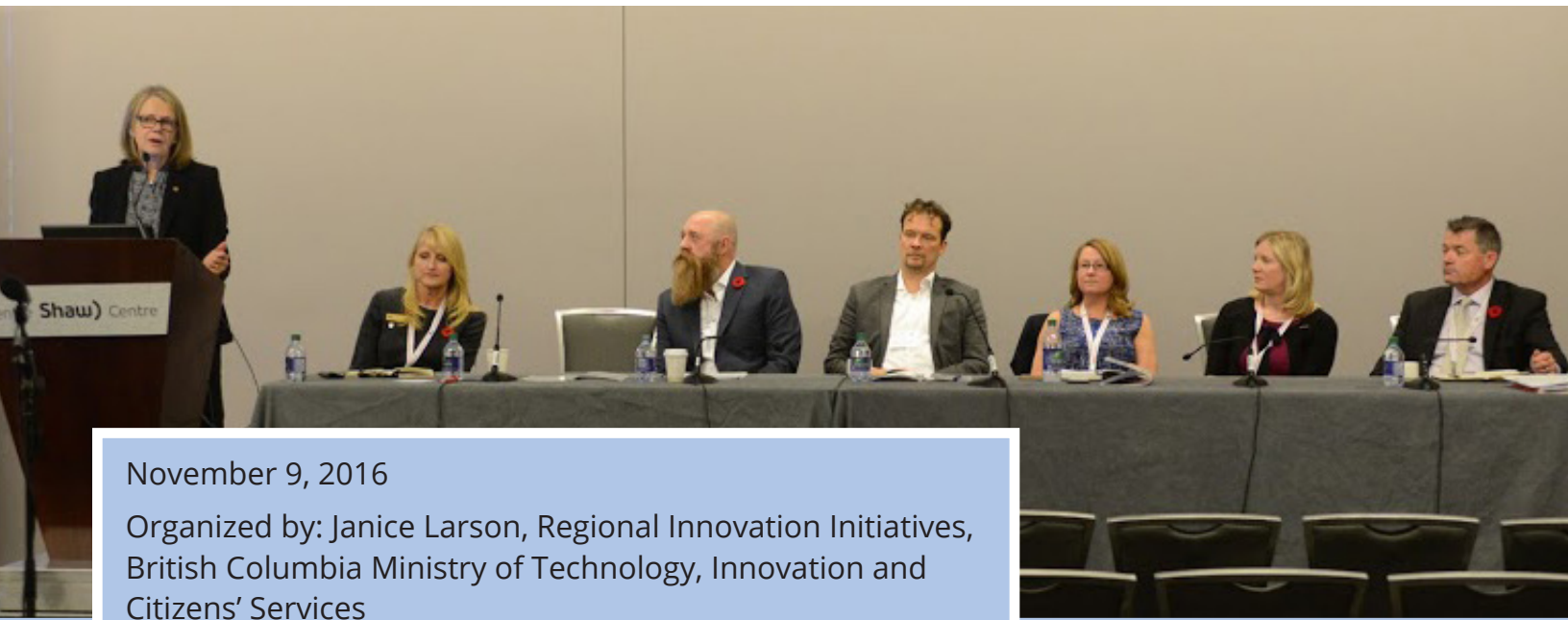
Speakers: Joy Romero, Vice President, Technology Development, Canadian Natural Resources Limited; Donna Romyn, Associate Vice President, Research, Athabasca University

Moderator: Vivekanandan Kumar, Professor, Faculty of Science and Technology, Athabasca University

## Takeaways and recommendations:

- Most research is still disseminated in journals and at conferences, which are not generally available to the public
- Researchers should ensure their work is comprehensible to the public at all stages of their work
- There would be less need for academia and industry to duplicate research if data from previous studies were more open (including from industry)
- Canada's Oil Sands Innovation Alliance is accelerating the pace of environmental improvements to oil sands production by requiring members to share research and engineering data related to tailings, water, land and greenhouse gases
- Companies face legitimate competitive concerns in sharing their data, including challenges to intellectual property rights
- Open research policies aren't enough; academic culture doesn't necessarily reward researchers (e.g. through tenure and promotion) for making their work more open, transparent or reproducible
- Need an academic culture that emphasises and reward reproducibility and innovation
- Journals prefer to publish new research as opposed to reproduced research
- Credibility of science is being compromised by predatory journals who encourage people to publish anything and everything
- Train academics and students on time management, research ethics, research integrity, legislation, and data management planning
- Many questions remain on how to conform to tri-council data management rules, including formatting, tagging, provisions for access, preservation and cost of archiving
- Research Ethics Board protocols for open research can enable transparency of methodology, observations, data, models and outcomes to the public
- HTTP(A) (http with Accountability) web protocol can be used to share data, information and models and allow the researcher to see how their data is being used
- Promote citizen science on socially relevant issues

# PANEL: CLEAN ENERGY & CLIMATE ACTION IN NON-METROPOLITAN AREAS: INSIGHTS AND ACTION



November 9, 2016

Organized by: Janice Larson, Regional Innovation Initiatives, British Columbia Ministry of Technology, Innovation and Citizens' Services

Speakers: Andrew Hay, Vice President, Education, Okanagan College; Neil Huff, Managing Director, Foresight Cleantech Accelerator Centre; Michael Mehta, Professor, Department of Geography and Environmental Sciences, Thompson Rivers University; Rehan Sadiq, Associate Dean, Faculty of Applied Science, School of Engineering, University of British Columbia (Okanagan Campus); Harriet Waterman, Industrial Technology Advisor, IRAP, National Research Council; Guido Wimmers, Program Chair, Master of Engineering in Integrated Wood Design, University of Northern British Columbia

Moderator: Janice Larson, Executive Director, Regional Innovation Initiatives, BC Ministry of Technology, Innovation and Citizens' Services

## Takeaways and recommendations:

- It's often easier to forge partnerships between local governments, academia, industry and other stakeholders in non-metropolitan areas
- BC Accelerator Network and Foresight Cleantech Accelerator Centre's ARCTIC program are good models for encouraging cross-regional and cross-sector connections
- Many of the technologies for a

sustainable future already exist; what's often needed is training, education, funding, political will and local interest

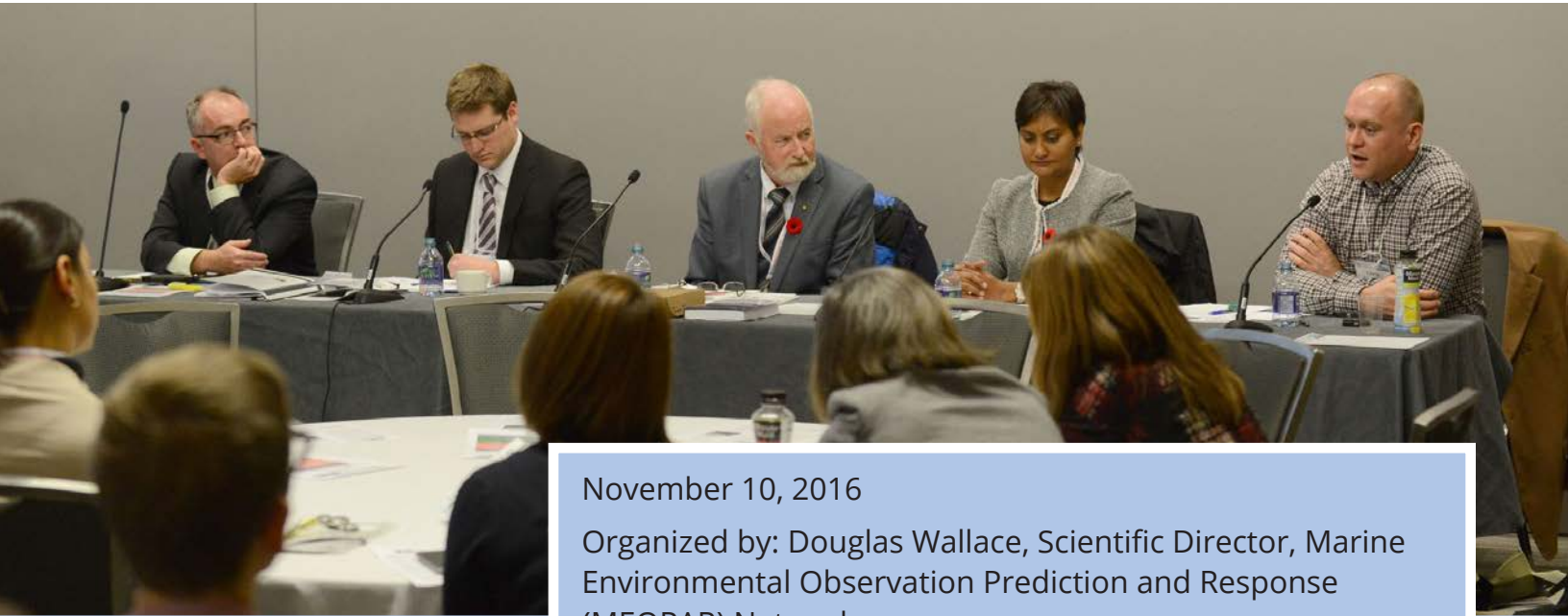
- Ensure community engagement in education and research
- Use existing energy wisely: The greenest energy is the kilowatt hour you don't use (e.g. encourage municipalities to adopt incentives for xeriscaping and making energy and emission plans mandatory for new

urban developments)

- Untapped opportunities exist for more small scale local clean energy and energy efficient projects with good regional expertise and support
- Moving the construction industry to adopt sustainable technologies and building practices will require a carrot and stick approach (e.g. energy prices, tax reductions or exemptions for energy efficiency and clean tech, building code requirements, etc.)
- Small-scale solar systems from low-cost providers can make a significant contribution in numerous regions throughout the country
- Easily accessible biomass sources are running out; British Columbia requires changes in land base management and harvesting costs/incentives to access greater volumes of fiber
- Large scale industrial opportunities include next-generation bioenergy and biochemical products, and perhaps more large scale solar, wind and geothermal
- Take a holistic, triple bottom line/ full-cost accounting approach when considering the costs of clean energy, energy efficiency and climate action, compared to 'business as usual' (e.g. human health, environment, water)
- Use procurement "pull" at federal, provincial and municipal levels to support local clean tech companies



# PANEL: SCALING CLIMATE CHANGE ADAPTATION IN COASTAL COMMUNITIES



November 10, 2016

Organized by: Douglas Wallace, Scientific Director, Marine Environmental Observation Prediction and Response (MEOPAR) Network

Speakers: Thomas White, Manager, Climate Risk Management, Climate Action Secretariat, B.C. Ministry of Environment; Anthony Charles, Director, School of the Environment Professor, School of Business Saint Mary's University; Elizabeth Atkinson, Director of Strategic Partnerships, Interdisciplinary Centre on Climate Change, University of Waterloo; Ursule Boyer-Villemare, Environmental Consultant, Coastal Zone and Climate Change Adaptation, OURANOS; John Charles, Planner, Energy & Environment, City of Halifax; Jamal Shirley, Manager, Research Design and Policy Development, Nunavut Research Institute; Jill Watkins, Senior Scientific Advisor, Ecosystem and Biodiversity Science Branch, Fisheries and Oceans Canada

Moderator: Dr. Douglas Wallace, Scientific Director, Marine Environmental Observation Prediction and Response (MEOPAR) Network

## Takeaways and recommendations:

- Role for federal government in providing funding, scientific experts, organizational expertise, mitigation framework, environmental monitoring and data sharing
- Develop a long-term local plan, share what works nationally (e.g. Halifax policy on setbacks for new developments)
- Consult widely in the planning process, including local communities, planners, geophysical engineers and insurers; use science to inform policy
- Tap into best governance practices (e.g. Community Conservation Research Network, MEOPAR, Climate Action Network Canada)
- Develop system-wide policies that engage all stakeholders early in the process
- Connect local knowledge of changes to evidence base; include local participation, knowledge and experience from the beginning
- Ensure evidence and local experience is communicated in relevant ways to different stakeholders; role for government in providing platforms for information exchange
- Focus research and funding on proactive adaptation responses more than reactive responses; adaptability is key
- Need to move from project-based science to management programs.

There is a lot of knowledge available but applying it is often an issue. Champions of adaptation to help build new infrastructure for day to day operations; centralized management could reduce fragmentation of parts.

- Mobilizing people a big challenge in northern communities; findings

from reports need to be followed up, evaluated, and resourced

- Provinces should consider transferring responsibility for land use to local governments in coastal communities; local needs and responses to climate change will differ depending on coastal conditions

# PANEL: SCIENCE FOR DIPLOMACY: HAVE WE GOT WHAT IT TAKES?



November 8, 2016

Organized by: Rainer Engelhardt, Public Health Agency of Canada

Speakers: Camille Mageau, Canadian Secretary, International Joint Commission; Michael Byers, Canada Research Chair in Global Politics and International Law, University of British Columbia; Theresa Tam, Assistant Deputy Minister, Public Health Agency of Canada; David Kendall, Chair, U.N. Committee on the Peaceful Uses of Outer Space

Moderator: Rainer Engelhardt, Former Assistant Deputy Minister and Chief Science Officer, Public Health Agency of Canada

## Takeaways and recommendations:

- Canada has been held in high regard internationally when it comes to scientific excellence and science diplomacy
- Political leadership is important to enhance and support Canada's effective utilization of scientific activity for diplomatic means
- Link Canada's scientific strengths (e.g. Arctic research, global health, space science/technology) to international issues (e.g. climate change, space governance)
- Scientific facts augment statements of opinion and political considerations in discussions, though they are often technical and may promote the voices of experts over the varied policy perspectives
- Science diplomacy can be an effective counterbalance to polarized political positions
- Ministerial mandate letters should include the importance of science diplomacy to achieving goals for certain issues (e.g. climate change, people migration, food)

- Large-scale bilateral or multilateral science projects can act as glue to keep nations working together during times of geopolitical stress
- Science diplomacy is an effective tool for dealing with emerging world threats that transcend borders, such as infectious diseases, bioterrorism and cybersecurity
- Engaging development agencies through Global Affairs Canada helps ensure that science is used to inform policy decisions
- Continue to identify and promote appropriate international and diplomatic forums where Canada can play a larger role
- Develop policies and strategies that enable Canada to better utilize science diplomacy
- Successful examples of science diplomacy: Human Genome project, International Space Station, the search for the Higgs boson, and the International Joint Commission science's 107 years of bilateral problem-solving with the U.S.

# PANEL: CANADA AND THE EU: HOW CAN WE STRENGTHEN RESEARCH COLLABORATIONS IN SCIENCE, TECHNOLOGY AND INNOVATION?



November 9, 2016

Organized by: Viktoria Bodnarova, EURAXESS Links North America

Speakers: Catarina Ferreira, Post-doctoral fellow, Trent University; Martin Geiger, Assistant Professor of "Politics of Human Migration and Mobility", Carleton University; Claire Millington, Senior Policy Analyst, Universities Canada; Leslie Reissner, Director, Science, Technology and Innovation Division, Global Affairs Canada

Moderator: Viktoria Bodnarova, Regional Representative, EURAXESS Links North America

## Takeaways and recommendations:

- New EURAXESS Links North America website helps North American researchers find European collaborators, partners, host institutions and funding
- Global Affairs Canada discussing new research areas for European cooperation (e.g. climate change, bio-economy, security/first responders, microbiome)
- International collaboration and researcher mobility are core values

among European researchers, but not instilled in Canada

- Mobility is important for education, career advancement, innovation and science, yet there is little funding for Canadian students to travel abroad for research collaborations
- Canada could do more to link its diaspora researchers with collaborative opportunities in their home countries
- One of the main benefits of international collaboration is the ability to share data to address

complex challenges more rapidly

- Need common infrastructure and data management practices to share data across borders, disciplines and sectors
- Processes like the federal government's review of fundamental science are looking at ways to support more international collaboration
- EURAXESS Service Centres help foreign researchers deal with logistics of working and living in a European country; open something similar in Canada?
- Dedicate more matching funding for international research collaborations; better alignment between Canadian and EU grant competition deadlines
- Need joint inventory and maps of innovation expertise and clusters
- Need additional support to identify funding programs in Europe and how to navigate them



# PANEL: NEW MODELS FOR TACKLING GLOBAL SCIENTIFIC CHALLENGES: FROM COLLABORATION TO CAPACITY-BUILDING



Organized by: IDRC (International Development Research Centre)

Panelists: Frederico Graef, Deputy Director, Regional Development, Mexican National Council for Science and Technology (CONACYT); Aldo Stroebel, Executive Director International Relations and Cooperation, National Research Foundation (NRF); Philip Landon, Vice President, Governance and Programs, Universities Canada; Claire McNult, Director of Science, British Council

Moderator: Naser Faruqi, Director of Technology and Innovation, International Development Research Centre

## Takeaways and recommendations:

To the international science stage it is important to consider:

- Global view – focus on Africa
- IMPACT orientation;
- Truly global and effective partnership
  - Human capital development
- Competitiveness
- Innovation
- Reviews and evaluation with and for partners
- Longer deeper and more robust research projects
- Theme-based/ multi-country funding beyond bilaterals
- Coordination and alignment
- Beyond funding
- Leverage resources from multiple investments
  - Pragmatic approach to funding and budgeting
- Combined approach for enhancing impact and effectiveness
  - Economies of scale
- Quality and inclusivity
- Foresight and planning – capacity at the organisational level to influence impact, capacity and approach
- Increasing evidence pull: scientists (and others)
  - Evidence summaries that

provide a (dispassionate?) analysis of current state of the evidentiary nation respect to a particular question/hypothesis, including both positive and negative evidence and associated uncertainties.

- Explicitly outline policy/regulatory/statutory implications of the evidence as it currently stands.
- Communicating Complex
  - There is an inherent challenge in how complex and complicated matters of science and technology be presented in concrete terms for the benefit of policy-makers & the public.
  - Especially challenging in fields where the nature of research is

highly abstract

- Science funding & Decision-maker needs
  - There is a pre-requisite for there to be funding to generate the knowledge in areas of decision-maker needs;
  - There needs to be a more systematic approach to research funding so that research has a role in forming policy;
  - Conversation is timely in light of Canada's fundamental science review.
- Growing demand around the world requires researchers and others to effectively assess and communicate their impact, particularly their contributions to broader health, social & economics benefits.

# PANEL: EMERGING RESEARCH LEADERS: A VISION FOR EVOLVING CANADA'S RESEARCH LANDSCAPE



November 9, 2016

Organized by: Rees Kassen and Jeremy Kerr, University of Ottawa

Panelists: Maria DeRosa, Chair, Partnership Group for Science and Engineering, and Associate Professor of Chemistry, Carleton University; Karly Kehoe, Canada Research Chair in Atlantic Canada Communities, Saint Mary's University; Jeremy Kerr, President, Canadian Society for Ecology and Evolution; Andrew Pelling, Scientist, Entrepreneur and TED speaker; Valerie Walker, Vice President, Innovation and Skills Policy, Business Council of Canada

Moderator: Rees Kassen, University Research Chair in Experimental Evolution, University of Ottawa

## Takeaways and recommendations:

- Support academics at the beginning of their career (e.g. a living wage) where they have the highest chance of impact
- Embrace the concept of mentorship
- Redefine "impact"; change people's thinking about the challenges they
- Invest sustained funding in basic research
- Scale up funding for large projects with the best scientific excellence
- Partner more internationally
- Increase government appetite for disruptive technologies and approaches; new technologies attract talented people
- Consider alternative models for research funding (e.g. DARPA, crowd-funding)
- Make research more accessible to the general public:
  - Speak with the general public, not at them
  - Connect more with communities that will benefit from research
  - Make research more inclusive by including non-academics in the research process
  - Incentivize scientists and researchers to do outreach and communication
  - Feed impacts from outside the institution or academy back into the academy (e.g. Citizen Science)

# PANEL: THE ROLE OF PROVINCIAL ORGANIZATIONS IN BUILDING AND SUSTAINING COMPETITIVE REGIONAL RESEARCH AND INNOVATION ECOSYSTEMS



November 9, 2016

Organized by: National Alliance of Provincial Health Research Organizations (NAPHRO)

Speakers: Christina Weise, CEO, Research Manitoba; Allison Barr, former Director, Ontario Ministry of Research and Innovation (now leading process to set up Office of Chief Scientist of Ontario); Krista Connell, CEO, Nova Scotia Health & Research Foundation

Moderator: Diane Finegood, President & CEO, Michael Smith Foundation for Health Research

## Takeaways and recommendations:

- Canada needs a national discussion and systems approach to planning that involves federal and provincial governments, research agencies, universities and industry
- Many provinces are consolidating various funding programs to streamline process and reduce costs. There is also a desire to remove silos and focus on priorities.
- The system needs to be modernized including more coherence between objectives and structures within
- Government must provide leadership on structure, governance and system improvement
- Provinces struggle to find matching funds for all the federal initiatives requiring them
- Need better coordination between the provinces and the federal government on federal funding programs and more consultation on program changes
- There is an increasing focus on demonstrating the impacts of research and research funding and NAPHRO has been using the Canadian Academy of Health Sciences Framework for measuring return on investment and extending it beyond health research.
- Indirect and operating costs big irritants for provinces and researchers; federal government does not contribute enough



# PANEL: FUNDING OUR FUTURE: POLICY FOR SUSTAINABLE, EQUITABLE FUNDING IN HEALTH RESEARCH



November 10, 2016

Organized by: Jennifer Zwicker, School of Public Policy, University of Calgary

Speakers: Krista Connell, CEO, Nova Scotia Health Research Foundation; Danika Goosney, Director General, Science, Knowledge Translation and Ethics, Canadian Institutes of Health Research (CIHR); Michael Hendricks, Assistant Professor, Department of Biology, McGill University; Holly Witteman, Assistant Professor, Faculty of Medicine, Université Laval; Jim Woodgett, Director, Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital

Moderator: Jennifer Zwicker, Director of Health Policy, School of Public Policy, University of Calgary

## Takeaways and recommendations:

- Often politically easier to allocate one-time funding for big ideas (e.g. Cancer Moonshot in the U.S.) than sustainable, incremental funding
- Large programs like the Canada Excellence Research Chairs and Canada First Research Excellence Fund favour established male researchers
- Canada Research Chairs program consistently fails to reach achievable targets for representation of women, Indigenous scholars, members of visible minorities and people with disabilities
- CIHR Foundation grants favour male over female researchers
- CIHR Foundation and Project grants

- favour senior over mid- and early-career researchers
- Recent \$30-million boost in CIHR funding for young researchers a “band aid solution”; need funding to support a larger base of scientists, including through mid-career
- Study of U.S. National Institutes of Health funding found the return on investment in research diminishes when resources are concentrated around fewer, larger labs; the highest returns come from sustaining a broad and diverse portfolio (e.g. scientific questions, institutions and investigators)
- Unilateral decisions made in Ottawa can strain provincial systems (e.g. matching funding requirement;

- SSHRC’s decision to no longer fund health research); better alignment needed on programs and priorities
- Sustained funding needed for national resources that fall outside of CIHR’s funding structures (e.g. Canadian Longitudinal Study on Aging and Cochrane Canada)
- Diversity of researchers leads to more meaningful research outcomes; solutions to improve diversity include:
  - Track funding rates, amounts by equity dimensions (sex, gender, race/ethnicity, Indigeneity, (dis)ability) and publicly report results
  - Fix structural problems with programs that show imbalances
  - Automatically balance programs when feasible (e.g., Stage 1 of CIHR Foundation grants)
  - Implement anti-bias training for all reviewers and evaluate results of training
  - Reward fairness with more money to more equitable programs and institutions
- Avoiding bias in funding decisions helps to ensure that we fund the best research

# PANEL: OPTIMIZING BENEFITS FROM CANADIAN RESEARCH



November 10, 2016

Organized by: Consortia Advancing Standards in Research Administration

Panelists: Dominique Bérubé, Vice President, Research Programs, Social Sciences and Humanities Research Council; Jim Woodgett, Director of the Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital

Moderator: Janet E. Halliwell, President, J.E. Halliwell Associates Inc

## Takeaways and recommendations:

- Ongoing problems with tri-council's Canadian Common CV
  - Complex and technical difficulties
  - Standards, guidelines and rules for software management could lead to better data
  - Redesign CCCV as open source
  - Too much laborious and unnecessary information required; review U.S. National Institutes of Health "biosketch" allowing for abbreviated record of achievements
  - Adopt International Standard Name Identifier (ORCID);
- provides each researcher with a persistent digital identifier
  - Too many partners are defining parameters; CCCV should set rules of play
- More harmonization needed between tri-councils and other funding agencies (e.g. coordinate funding opportunities, perhaps based on topics, and make administration data available in open and comparable formats)
- Reinstate face-to-face peer reviews
- Following a peer review selection of fundable proposals, experiment with a "lottery system" for allocating grants; do not do for the whole system;
- perhaps try with new applicants
- Do not use externally imposed evaluation criteria or metrics that do not relate to proposal
- Use ISO model; evaluate a proposal as it proceeds
- Develop a portal to help identify relevant funding opportunities
- Redesign web forms
- Disconnect of what researchers expect to submit as applicants and what researchers demand of the granting agencies in terms of proposal content
- Confirmation of continuing eligibility of applicants is unduly complex. Should have a simpler way of confirming with a single click in a web-based system
- Building larger research teams could reduce number of applications and reduce pressure on the application process
- Converging funding opportunities by topic or keyword could make it easier for researchers to locate funding opportunities



**PUBLISHER/  
FOUNDER**  
James Baxter

**IPOLITICS LIVE**  
Andrew Beattie  
Amanda Keenan

**EXECUTIVE EDITOR**  
Stephen Maher

**VP DIGITAL**  
Ian Shelton

**DEPUTY EDITORS**  
Doug Beazley  
Lisa Van Dusen

**BUSINESS TEAM**  
John Butterfield  
Sally Douglas  
Callie Sanderson  
Yamina Tsalamlal  
Don Turner  
Emily Francis

**ALPHEUS GROUP**  
Danelia Bolivar

**NEWS TEAM**  
Beatrice Britneff  
Amanda Connolly  
Ainslie Cruickshank  
Janice Dickson  
Kyle Duggan  
Kelsey Johnson  
Holly Lake  
James Munson  
BJ Siekierski  
Kirsten Smith

**PHOTOGRAPHER**  
Matthew Usherwood

**GRAPHIC DESIGNER**  
Sarah West

**CONTACT**  
201-17 York Street  
Ottawa, ON K1N 9J6  
Canada  
Office: 613-789-2772

**ipolitics.ca** | info@ipolitics.ca   

This Magazine was created by iPolitics under contract.

iPolitics is Canada's top digital source for independent, up-to-the-minute coverage of Canadian politics and the business of government.



**Stem Cell Network**  
Réseau de **cellules souches**



 @StemCellNetwork

 @CanadianStemCellNetwork

**stemcellnetwork.ca**



# 8TH CANADIAN SCIENCE POLICY CONFERENCE





# 8TH CANADIAN SCIENCE POLICY CONFERENCE





# 8TH CANADIAN SCIENCE POLICY CONFERENCE





# 8TH CANADIAN SCIENCE POLICY CONFERENCE



9<sup>th</sup> Canadian Science Policy Conference

# CSPC 2017

NOVEMBER 1-3•2017

*Save the date!*

**Shaw)** Centre  
55 Colonel By Drive  
Ottawa, ON

 CSPC

OTTAWA, ON