



Special Workshop on / Atelier spécial sur

**Knowledge Translation and Brokering / l'adaptation
des connaissances et le courtage du savoir**

October 20, 2010 / le 20 octobre 2010

PROCEEDINGS

Montréal, Québec
October 20th 2010

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These proceedings – produced by the Workshop Committee - are written reporter style in an attempt to capture the variety of perspectives provided by speakers, facilitators and participants. Complementary information about the event is available on the Workshop’s O3 site (<http://researchimpact.othree.ca/ktkb2010>).

This report can be cited as follows: Knowledge Translation and Brokering Workshop Committee. 2011. Proceedings of a Special Workshop on Knowledge Translation and Brokering. Held 20th October 2010 preceding the Canadian Science Policy Conference in Montreal, Canada. 55 pp.

K* - An Overview of the Special Workshop on Knowledge Translation and Brokering. Where Next for Knowledge?

Alex Bielak, Past Director S&T Liaison, Environment Canada (until September 2010), and currently Senior Fellow and Knowledge Broker, United Nations University – Institute for Water, Environment and Health (UNU-INWEH)

In my introductory remarks to the 2010 workshop on knowledge translation and knowledge brokering, I used the metaphor of a voyage, noting every memorable journey needs bold patrons, outstanding logistics and great travelling companions.

Our 2010 voyage was a success. We achieved our goal of providing a dynamic and interactive multi-sectoral forum for participants to network, share experiences and explore the role of KT/KB in strengthening science-policy linkages. We attracted slightly over our target number of one hundred participants, our travelling companions, most of whom gave the event excellent reviews.

Before we cast off, I thanked the Canadian Science Policy Conference organizers for allowing us to hold the workshop under their aegis, and our various partners¹ for their generous support. I also thanked fellow members of the Workshop Committee for the work and ideas that helped make the event what it was. I acknowledged the dedication and hard work of the Science and Technology Liaison staff of Environment Canada (EC) (particularly Jaime Dawson and Sheila Allan) in organizing the workshop. And after a plug for my new organization (UNU-INWEH) as a leader in knowledge management and mobilization, I introduced the keynote speaker, my friend and colleague, Andrew Campbell. And it was time to sail... for some of us at least, into uncharted waters.

But where did this voyage begin?

The workshop had its genesis in the work of the talented team I used to lead, EC's S&T Liaison Division, the first dedicated knowledge translation (KT) and knowledge brokering (KB) unit in the Canadian federal government. Embedded in the Department's Science & Technology Branch, and, after a bit of a tussle, acknowledged as distinct from Corporate Communications, we customized and targeted science knowledge to user audiences, developing integrated mechanisms and innovative tools for sustained interaction between science and policy/program decision makers.

In the beginning we didn't realize we were a KT/KB shop. We knew we were a different breed of science communicator but we tended to define ourselves as what we were not – Corporate Communicators – rather than what we were. It wasn't until we discovered the world of KT/KB that we fully recognized who we were, and so were able to characterize our work with definitions that have now entered the federal lexicon. These are:

- **Knowledge Translation:** Science information packaged to meet the preferences, channels and timescales of the intended audience; and
- **Knowledge Brokering:** Process used in connecting producers and users of knowledge to strengthen generation, dissemination and use of shared knowledge.

¹ For a full listing of the hosting and collaborating partners please see the Acknowledgements section.

We became fearless knowledge translators and brokers within the Canadian federal family, spreading the word among other departments and agencies, taking a lead role in an inter-departmental initiative on science-policy linkages, and organizing a workshop on KT/KB for government personnel. Eventually, we succeeded in getting KT/KB on the agenda of an inter-departmental committee of Assistant Deputy Ministers who all work in federal departments dealing with science at some level or another.

We began to probe the world of intermediaries and intermediary organizations, in Canada and abroad, discovering fellow travelers with similar issues and agendas. Learning much from what had already been accomplished in the health field, we codified the work of S&T Liaison and publicized our findings, making valuable contacts as we went.

It was to those contacts we turned in organizing the Montreal event. Whether long-standing, like the Canadian Water Network, or new, like ResearchImpact, our friends and colleagues readily agreed to partner with us and serve on the workshop committee; identify other key players; help organize workshops; and participate as panelists and keynote presenters.

S&T Liaison staff and colleagues in EC enthusiastically took on more than their regular duties to ensure the success of the workshop. This included active outreach to potential attendees through a variety of social and other, more traditional, media, gathering feedback that helped shape the agenda.

The Montreal workshop was always a waypoint. Several of us had long since recognized the need to develop a broader community of practice where experiences could be shared; indeed, one of the particular pleasures of the Montreal workshop was that it presented the opportunity to re-unite with Canadian and international colleagues with whom I had co-authored a paper² related to knowledge brokering. That they all made time to come to Montreal speaks volumes about the importance and timeliness of the workshop.

In our paper we wrote:

“Finally, given the interest in the emerging field of knowledge brokering for environmental sustainability, and our experience that this is a diffuse domain where the players are often working with little support, publishing in a multiplicity of forums, perhaps with few contacts in the field, we consider that it would be very beneficial to see a broader community of practice established to help bring people together. We propose the creation of a regular forum dedicated to knowledge brokering, where the community can meet and exchange information and experiences.”

Montreal was one of the first steps toward creating the space where the knowledge community could meet; the next was a meeting held shortly after in the UK on improving the impact of development research through better communication and uptake³. Attended by two of the Montreal Workshop Committee members and facilitated by one of our “friends”, the London

² Bielak, A.T., A. Campbell, S. Pope, K. Schaefer and L. Shaxson. 2008. From Science Communications to Knowledge Brokering: The Shift from Science Push to Policy Pull. In Cheng, D., M. Claessens, T. Gascoigne, J. Metcalfe, B. Schiele and S. Shi (eds.), *Communicating Science in Social Contexts: New models, new practices*. Dordrecht: Springer. pp. 201-226.

³ For more on the meeting convened by the Australian Agency for International Development (AusAID), the UK Collaborative on Development Sciences (UKCDS) and the UK Department for International Development (DFID) see: www.researchtoaction.org/donor-meeting (accessed 07-02-11).

workshop built, in part, on some of the outcomes from Montreal. Now, an international initiative to build on this momentum is underway catalyzed by several of the Montreal workshop partners and participants including UNU-INWEH.

As became clear during the efforts to organize the workshop, there is a whole universe of knowledge activities out there beyond the Knowledge Translation (KT) and Knowledge Brokering (KB) terminology we in EC had adopted and used in framing the meeting. Other participants were attached to different nomenclature including Knowledge Mobilization (KMb); Knowledge Transfer & Exchange (KTE); Knowledge Management (KM); not to mention, Integration; Exchange; Adaptation; Contextualization; Adoption; Transmission; Dissemination; Generation; Application; and Synthesis!

During the workshop and in a small meeting held later to discuss next steps, there was a consensus that rather than trying to parse the subtle nuances of the terminology, we should accept that these appellations are largely variations on a theme, and we should concentrate our efforts on the bigger issues, not least actually getting things done in what I've come to refer to as the K* (KStar) field.

So, broadly, we need to continue to:

- learn from one another and build and use toolkits;
- avoid further divergence in the K* field by moving beyond debates related to terminology, and think systematically about advancing our common K* activities;
- define and develop appropriate metrics to demonstrate the impact of what we do;
- legitimize the field (particularly in the Government of Canada where lack of equity in job classification is likely to prove a barrier to retaining talented people); and
- help build K* communities of practice and venues for discussion, at the national and international levels.

In his closing remarks in Montreal, Andrew Campbell spoke of the need for mavericks and the role they play in moving things forward. I know that resonated with some of us who might recognize such tendencies in ourselves. Ultimately I suspect more of us in the K* field should be asking for forgiveness and not permission.

To end as I began with the metaphor of the sea voyage, here, from the vantage point of my crow's nest at INWEH, is a wish list for our future. We want to see a conference convened in the next year or so that brings together existing global expertise. We'd like to encourage a broader dialogue that draws from a wider, international set of stakeholders including some of the folk convened for the London meeting. And, ultimately, we'd like to see the formation or consolidation of a more formal international network or forum, and a series of policy briefs/publications related to best practices and other seminal K* topics.

A tall order? Perhaps, but one that the community is ready for. Thus, to conclude, I commend these proceedings⁴ to you as an excellent record of an event we hope will spur new and exciting growth in the burgeoning K* field, in Canada and abroad.

⁴ These workshop proceedings are attributed to the workshop committee as a whole, rather than any organization in particular. I, however, take sole responsibility for comments made in this introduction, which has benefited from review by several colleagues to whom thanks. Thanks also to Leah Brannen who worked her editorial magic to help make my thoughts more cogent.

Background

The Special Workshop on Knowledge Translation and Brokering (KT/KB) was the first multi-sectoral event of its kind, certainly in Canada; a dynamic and interactive forum for participants to network, share experiences and explore the role of KT/KB in strengthening science-policy linkages. Participants were given the opportunity to develop new networks and knowledge, exchange best practices, and contribute to an active and growing KT/KB community.

The full-day workshop directly preceded the official opening of the Canadian Science Policy Conference (October 20-22, 2010). With a focus on engagement and learning, the workshop featured a keynote address by Dr. Andrew Campbell, an internationally recognized leader in KT/KB. This was followed by a Knowledge Café designed to engage participants in a facilitated and dynamic discussion. A skills and capacity building session with three main themes resulted in vigorous dialogue. The skills sessions were designed based on input solicited from participants registered for the workshop: they were intended to provide hands-on learning experiences for a diverse range of needs and interests. Three of Canada's KT/KB leaders participated in a lively, moderated panel discussion which featured perspectives in the field of Knowledge Translation and Brokering.

The keynote speaker provided an "observer's report" in a summary of the day and the moderator outlined next steps to ensure a continued dialogue among workshop participants and a legacy of outcomes and actions.

The workshop had limited participation to foster an environment of exchange and learning. It was designed to be relevant to those working at the science-policy interface, operating as knowledge brokers and/or translators, or seeking to develop contacts and greater awareness in this field. The highly publicized event attracted 108 participants from universities, research institutes, health agencies, governments and industries across Canada, England and Australia. Over 60 organizations were represented from a range of sectors (including environment, agriculture and health).

What is Knowledge Translation and Knowledge Brokering?

While we chose the terms Knowledge Translation and Knowledge Brokering for the workshop, there are several analogous and/or related terms such as Knowledge Transfer, Knowledge Mobilization, Knowledge Exchange, and so on. Knowledge Translation (KT) is an activity where science information is packaged to the preferences, channels and timescales of a given audience. In Knowledge Brokering (KB), an intermediary, whether an individual or a specialized group, actively links the producers and users of knowledge to strengthen generation, dissemination and eventual use of that knowledge.

Workshop Committee

The Workshop Committee was responsible for organizing this event. The Workshop Committee was comprised of the following members:

- Jaime Dawson, A/Head, Strategic Science-Policy, S&T Liaison Division, Environment Canada (Chair)
- Alex Bielak, Senior Advisor, United Nations-Water and Senior Research Fellow and Knowledge Broker, United Nations University Institute for Water, Environment & Health
- David Clements, Director, Corporate Planning and Accountability, Canadian Institute for Health Information
- Bernadette Conant, Executive Director, Canadian Water Network

- Eric Gagné, Director, Science Policy Division, Environment Canada
- Elin Gwyn, Research Analyst, Knowledge Management, Ontario Ministry of Agriculture, Food and Rural Affairs
- David Phipps, Director, Research Services & Knowledge Exchange, York University
- David Yetman, Director, Programs & Knowledge Transfer, Canadian Institute for Advanced Research

Acknowledgements

The Workshop Committee expresses sincere gratitude to the great number of people who contributed time, experience and knowledge towards making this workshop a success.

The workshop would not have been possible without the support of host partners, Canadian Water Network, ResearchImpact, and Environment Canada, and collaborating partners, Canadian Health Services Research Foundation, The British High Commission Ottawa, and York University. Thanks to the event host, the 2010 Canadian Science Policy Conference, for their valuable logistic support.

Particular thanks go to our keynote speaker, Dr. Andrew Campbell, our eminent speakers and facilitators, Dr. Louise Shaxson, Dr. Melanie Barwick, Dr. David Clements, Dr. David Phipps, Dr. David Yetman, Dr. Alex Bielak, Dr. Javier Gracia-Garza, Eric Gagné and Karl Schaefer, and our valued colleagues who volunteered as rapporteurs.

Most of all we would like to thank all of the participants in the Workshop. Each of them contributed actively to a lively and stimulating event. The valuable insights and lessons that have emerged from the workshop would not have been possible without their participation and commitment to engagement and learning.

Event Host



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Keynote Address – The Getting of Knowledge, Knowledge Brokering and Knowledge Translation

Keynote Speaker: Andrew Campbell, Triple Helix Consulting

Synthesis by Kristin May, S&T Liaison Division, Environment Canada

Australia's Andrew Campbell of Triple Helix Consulting⁵ delivered the Keynote Address, which covered practical experiences with knowledge brokering and knowledge translation strategies and tools, using Land and Water Australia as a case study. The presentation was divided into four sections: the context of his keynote address; the science policy interface; knowledge translation and brokering (drawing on his experience at Land and Water Australia); and finally tips and tools for practitioners.

Dr. Campbell was invited to deliver the keynote address because of his reputation as an excellent speaker, his extensive qualifications, and his ability to bring an international dimension to the KT/KB workshop discussions.

Context

Dr. Campbell comes from a farming background, managing his own farm in southeast Australia since 1987. He holds a Bachelor of Forest Science and a Masters in the Management of Agricultural Knowledge Systems. After a series of forestry, farming and land care positions, he was the CEO of Land and Water Australia from 2000-2006.

He outlined 4 converging insecurities: climate change, water, energy, and food. Climate change, according to Dr. Campbell, will be the biggest impact in our lifetime, through both direct impacts and the indirect impacts of climate change policies. He advised that one litre of water is used for the production of every calorie of food we consume. One litre of water weighs one kilogram making it energy intensive to distribute. The era of cheap, abundant fossil fuels is coming to a close. For the general population, energy problems will rise harder and faster than climate change.

For food, there is a need to increase world production by 70% by 2050. Agriculture is increasing its footprint and there is a need to now double food production with less land, water and energy, using less carbon. There is a massive distribution problem.

Australian (and Land and Water Australia's) Perspective

Australia is a small, young nation on a vast, ancient continent. It has unique biological and cultural richness and diversity. A highly urbanized population is concentrated in the southern and coastal regions, while the interior is vast and remote. Northern Australia is associated with disadvantages and dysfunctional Indigenous communities. The federal government is cumbersome, and the culture is very influenced by American culture. Australia has experienced rapid, pervasive climate change. There has been a drop in water availability in the last 15 years despite an increase in the frequency of storm events.

Messy, ill-informed debates around climate change and water illuminate and exacerbate the science-policy divide. Science is increasingly presented as if it's just another opinion, fed by

⁵ Dr. Campbell is currently Director of the Research Institute for the Environment and Livelihoods (RIEL) at Charles Darwin University, Darwin, Australia

sophisticated, well-funded campaigns by vested interests disputing mainstream science. The media is feeling bound to present both sides of the story symmetrically and impartially. There is decreasing scientific literacy in politics and the media. At one point there was one scientist in the federal parliament, none in the press gallery, and few science journalists. The science literate commentary resides on the Internet in blogs.

Land and Water Australia (LWA) was a statutory corporation within the Commonwealth of Australia, and was one of 14 Rural research and development (R&D) Corporations and related companies. LWA undertook research to support sustainable resource management; it brokered and managed research but didn't do the research. Managed corporately with an independent board, it had a \$13M budget and more than 45 co-investing partners. LWA was abolished in May 2009. The status of LWA made it vulnerable to being cut, because it was at the minister's discretion and no legislation change was required. This is a strategic error that needs to be fixed.

The Science/Policy Interface

The interface between science and policy is always messy. The stakes are high, decisions urgent and facts uncertain or disputed. Science thrives on a contest of ideas which can be problematic in public debate. Public officials are just one of many sources of advice. Ministers and governments prefer wins, credit and initiatives. The last thing ministers want is conflict and confusion. Durable relationships based on mutual respect and trust are crucial to overcome these challenges. I.

Policy issues tend to be in the applied research domain: who are the losers going to be and how much will it cost me? Key questions revolve around "What should we do?" What policy settings or actions will have what impact, and who will be affected, how, how much, when and where? Scientists entering policy debates are often ill-equipped.

Knowledge

According to Brian Head there are three lenses through which policy professionals get their knowledge. These are political judgment, scientific research and professional practices.

Knowledge fit for purpose requires us to understand the knowledge need in the application context. Basically, what type of information is needed, by whom, when and in what form? Being on time is more important with respect to making a decision. Do you need to put a dollar figure on everything to make a better decision? How good does the information need to be? The answer is good enough! This includes the process used to generate the numbers. The political players want to know how the numbers are derived. Having the science won't necessarily win the argument; there is a need to understand the politics and economics.

Cullen et al described the knowledge-seeking behaviour of policy makers. Senior policy makers are time poor, information overloaded and don't read much. They only know what they need to know when they need to know it. They have a very short-term, reactive perspective and deep content knowledge is rare as they frequently move jobs. There is an appetite to summarize information into one page for the top brass. Policy makers are averse to anything too complicated. They default to trusted sources even when they suspect those sources may be out of date or incomplete. They may have a jaundiced opinion of science believing it is too slow and expensive and that it is answering questions no one has asked.

The worlds, values, norms and languages of science and policy are very different, and could be argued to be diverging. Scientists and policy makers are both time poor. Few have the aptitude,

skills, commitment and time to excel in both domains at the same time. There is a real need for intermediaries dedicated to work between knowledge generation and its use. This works best not as an add-on but in a supportive overall system. This is where knowledge translation and knowledge brokering enter!

Knowledge Brokering and Translation

Knowledge Brokering

Defined as processes used by intermediaries (knowledge brokers) in mediating between sources of knowledge (usually science and research) and users of knowledge. It is iterative, two-way, involves negotiation and intervention and goes beyond matchmaking.

Knowledge brokers help people ask the right questions and identify the best sources of information needed. They work with knowledge sources to get information into forms designed around end users' needs (preferences, channels, timescales). They also facilitate feedback from both parties.

Knowledge brokering is an inherently strategic activity, demanding technical knowledge, credibility and trust of all parties. It is more challenging for researchers than for adopters of research.

Knowledge Translation

This is literally translating research or other scientific outputs into language or forms that can be better understood by, and are more useful for, the intended audience. It is less interventionist in the research process than knowledge brokering but still demands deep understanding of the application context of the end user.

Knowledge translation can involve synthesis products that draw on a range of research outputs or projects to package information in more useful and applicable forms.

Knowledge translation depends on the knowledge needs of end users, and then package accordingly; it's not just publishing outputs. Best practice is to consult with the end users early in the process, work out what they need, and use this as the design criteria for the product. It is important to think about the application context of the user so the product is one which they can use in their environment.

KT/KB

The best knowledge translation and knowledge brokering won't make irrelevant research useful and adoptable. It is difficult to retrofit a research program; it needs to be hardwired from the outset. In the absence of trusting relationships with both the generators and users of knowledge, brokers will struggle to be effective. KT/KB works best as an integral component of an intelligent, patient knowledge system, from research procurement to adoption.

The LWA Perspective

LWA was a research funding body with a budget of \$12-13M, established in 1990. By 2000 the Board perceived that the science was good but its profile and research uptake were low; not enough people had heard about it. Dr. Campbell was recruited as the new CEO and was tasked with improving communication. He worked on how to leverage their capital asset, by getting the knowledge used and applied. Soon many wanted to partner with them. They were seen as doing communications better than anyone else. Stakeholders liked what they saw. Over 7 years LWA moved from communication to knowledge and its adoption (K&A). The K&A expenditure

increased by more than 20% and the team grew to greater than 10 people. The research budget increased because the overall budget increased.

Moving from Communication to Knowledge and Adoption

Applied research and development is no good unless it is adopted. To do so it must be well communicated. K&A needs to be made real, instilled in the culture of the organization, and resourced properly.

If K&A is planned from the start it will influence research methodology; encourage involvement of stakeholders in design and management of research; target research questions to user needs; and improve the adoptability of research results.

This is not an insignificant undertaking, it requires changing the DNA of an organization.

Evaluation

Evaluation needs to be thought of on day one. It is not just accountability, it is intelligence through time. It needs to be resourced and instilled in the culture of the organization.

One can start with a simple framework: what knowledge assets have we created; how adoptable are they; what do we know about their adoption levels; what do we assume will be the benefits from adoption; and can we measure those impacts. Projects should be viewed through an adoptability filter: are these outputs likely to be adopted? If no, don't promote it.

LWA tried several approaches to KB and KT. They made a high-level commitment explicit (at the CEO and Board level) and allocated human and financial resources accordingly. Knowledge brokers were embedded within research programs. A specialist knowledge brokering team was initiated and K&A plans were mandated for all research programs. A shift was made from completing research reports to synthesis reports. Knowledge management systems were improved. The arrows were funded!

Tips and Tools

Infiltrating Power with Science

LWA compiled a list of 100 key influencers which was constantly updated. This was to try to build relationships and move beyond just marketing products.

Ministers and other officials hate surprises like finding out key information from the media. LWA always respected the "no surprises" rule. If this is done well then even crises can become advantageous.

They became expert at producing synthesis products – distilled, digestible information to targeted end users.

Timing is everything and timescales for information requests can be very short. Face-to-face interaction is best and LWA learned that breakfast meetings are most useful.

Develop adoptability filters. Don't promote information or products that are not useful.

Knowledge brokers are best placed within target end users.

Leverage other vehicles such as blogs, social media, research networks, etc. This will help feed material to the public in thoughtful ways.

Organizational Knowledge Check List

Dr. Campbell provided a check list that organizations can refer to in order to get a feel of where they are on the curve.

- How easy is it for staff or the public to find out what the organization knows about a given issue?
- How easy is it to find out what has been funded, and to access those knowledge assets?
How useful is the website for staff?
- How well does the organization tap into and share the tacit knowledge of experienced people before and after they leave?
- How many people are trained in the web content management system and can upload and manage web content?
- How well does the organization fund the arrows?
- What is a typical Knowledge and Adoption (or Communications) budget for programs or major projects?
- What is a typical evaluation budget (as a % of the total program budget)?
- Are there generic templates for evaluation plans and K&A plans?
- Can the knowledge system handle diverse knowledge assets?
- How many staff routinely use the library?
- Is reading, knowledge and learning valued?

Take Home Messages

Dr. Campbell concluded his talk by offering these sage points for the audience to ponder during the remainder of the workshop:

- We are in a period of rapid environmental change. Not predictable, disconcerting and with huge implications.
- The world needs much smarter policies. This means improving the science policy interface.
- Intermediary people, processes and tools have a crucial role.
- Knowledge brokering and translation within a well-designed system can be immensely useful and valuable. It cannot be an add-on; it needs to be part of the organization.
- A good knowledge broker doesn't have to come from a specific educational or work background. Modern librarians have sophisticated search skills and are great at finding information. You need someone who can understand the knowledge needs of end users and interrogate researcher to see if they can meet that need, and if not, consider dropping it.

Knowledge Café Session

Facilitated by: Eric Gagné, Director, Science Policy Division, Environment Canada

Video introduction: Javier Gracia-Garza, Director General, Science and Technology Strategies Directorate, Environment Canada

Rapporteurs:

Evelyn Allen, Ontario Ministry of Agriculture, Food and Rural Affairs/University of Guelph

Katrina Goreham-Hitchman, Canadian Water Network

Kim Jusek, Canadian Water Network

Claire Kaufman, Environment Canada

Janice Levangie, Canadian Water Network

Kristin May, Environment Canada

Yannik Melançon, Environment Canada

Courtney Price, Environment Canada

Elizabeth Shantz, Canadian Water Network

Scott Unger, Environment Canada

Synthesis by Shannon deGraaf, Science and Technology Liaison, Environment Canada

Recognizing that there is much to be gained by sharing experiences, the Knowledge Café was developed to engage participants in a facilitated and dynamic dialogue. The flexible format enabled participants to broaden their knowledge, make important connections, and identify potential collaborative opportunities and outcomes. The session was set before lunch, so that conversations initiated during the Café could be followed up over lunchtime discussions.

The nine priority topics below (as identified in the earlier federal Interdepartmental Dialogue on Knowledge Translation and Knowledge Brokering) were placed on a forum on the O3 Collaboration Network site, and participants were invited to provide feedback on the posted topics and suggest any of their own as alternatives or additions. The items in bold in the list are the topics that were finalized through comments and discussion on the forum.

1. Community of Practice
2. Suite of Products and Tools
3. Current Practices and Future Direction of KT/KB
4. Targeted dissemination
5. Legitimizing KT/KB
6. Tapping into other sectors
7. **Human Resource Issues and Training (combined)**
8. **Performance Metrics (new)**
9. **KT/KB Program Design (new)**
10. **Current Research on KT/KB (new)**

During the Café, each participant was able to choose three of the ten topics and participate in a 20-minute discussion on each topic in a group of up to ten colleagues.

In a pre-taped video message Javier Gracia-Garza, Director General of Science & Technology (S&T) Strategies Directorate, Environment Canada, welcomed participants to the session, and outlined his Department's history, involvement and commitment to KT/KB. Eric Gagné, also of S&T Strategies Directorate, introduced and facilitated the 1.5-hour session.

Each table was provided four general questions to form the basis of their discussion.

1. Why is this topic a priority?
2. What are the tools available?
3. What are barriers?
4. Is there engagement?

The major points and themes that resulted from each question from the ten topic discussions are highlighted below (as based on rapporteurs' notes).

1. Community of Practice

Priorities

- We need to create bridges between KT/KB being done within specific disciplines to allow sharing of best practices, ideas and lessons learned
- Brokers need to be able to better define themselves and validate the work they are doing through the support of a community

Tools

- Organize regular face-to-face meet-ups or events to foster networking and connections
- Create more conferences and workshops like the Special Workshop on Knowledge Translation and Brokering
- Social media is a great tool for enhancing collaboration and conversation

Barriers

- The field is very spread out across disciplines
- Uncertainty of value of a Community of Practice and of using the tools
- Need to institute Knowledge Broker as a full-time job, not just side of desk work
- Need leadership from upper management, including funding and access to tools

2. Suite of Products and Tools

Priorities

- You need a variety of flexible, adaptable tools – not a one size fits all approach
- Tools need to be in a central location so that people know where they are
- Networks can identify issues earlier – you don't know what you don't know

Tools

- Depends on the audience
- Variety of tools: electronic, workshops, 1-on-1, face-to-face, listservs

Barriers

- No toolbox available to see what is out there
- Insufficient resources
- Lack of institutional support – informal is okay but could get more support if formalized
- Technology changes quickly or some technology is difficult for some to use
- Lacking the opportunity to provide feedback from users into products (e.g., how the tool was adapted to different circumstances); important to include end users' input early

Engagement

- If tools are tailored, they will be well received
- Engaging scientists with end users does happen but takes time, money, effort (e.g., workshop) – help define the problem at the start, people then buy in
- Do we have connections to share tools? Do we have mechanisms to share between organizations? Find out who is doing it well
- Hard to track performance measures – think about impact

3. Current Practices and Future Direction of KT/KB

Priorities

- KT/KB is currently a very cross-disciplinary field and should remain so in the future
- KT/KB is about people – building relationships and networks
- KT/KB initiatives should be planned out early and integrated throughout the organization
- KT/KB is a rapidly developing field with many varied approaches and definitions

Tools

- There is a need for case studies of successful KT/KB, but also when it was unsuccessful
- A knowledge broker is, in a sense, a useful tool because they are an entity that can bridge the gap between researchers and research users

Barriers

- Researchers may have a negative perception or low understanding of KT/KB
- There are no established metrics to evaluate KT/KB work or to measure impact

Engagement

- Yes, there is engagement

4. Targeted dissemination

Priorities

- Targeted dissemination should be part of an overall KT/KB exchange process and seek to deconstruct the roles of users and producers
- Important to use organizations' resources efficiently and effectively
- It is important to incorporate the values and needs of the user into your process
- Connect user groups for their own benefits

Tools

- Best has been face-to-face, others include: web, wikis, Facebook, Twitter (not yet adopted, proven or trusted by many)
- Secondary audiences have been effective: friends, colleagues, junior staff, advocacy groups
- Integrate a methodology into existing systems (grants, funding, rewards systems)
- Consider other methodology that traditionally ignore social sciences: commercialization, social marketing

Barriers

- Many institutional barriers – rewards system, financial systems, time, resources
- Dissemination can't only benefit your organization

Engagement

- Engagement can be thought of as utilization or uptake of a message, product or knowledge
- Difficult to measure

5. Legitimizing KT/KB

Priorities

- Because there is a large volume of knowledge, KT/KB folks are needed to wade through the vast amount of information that exists
- Time pressures on researchers and policy leaders mean that KT/KB is an essential service
- If we do not connect research to users, others will – to their own benefit (e.g., think tanks)
- There is a disconnect – scientists are good at science and policy people are good at policy, but don't often make the connections, neither scientists nor policy people are good at KT/KB

Tools

- Metrics are essential – showing impact, especially for demonstrating value to researchers
- Linking KT/KB to existing processes in an organization
- Promotion of KT/KB that is consistent and relentless

- Expertise directories (e.g., Environment Canada's S&T Expert); policy, science and article summaries (e.g., Environment Canada's Science Alert); newsletters (with project and contact names)

Barriers

- Turf wars between existing structures (e.g., scientists say "We're already doing it," Communications, Human Resources, etc.)
- Metrics are underdeveloped – it takes time to show impact
- Difficult to promote KT/KB and the concept that "collective knowledge is power"
- Organizational culture – changes are seen as "risky" because of public accountability, want to stick to old structures

Engagement

- Yes, when the impacts of KT/KB can be demonstrated
- Conventional metrics make it difficult to measure "are people engaged"

6. Tapping into other sectors

Priorities

- One size does not fit all
- Tackle tough cross-sectoral issues that can't be tackled by just one sector (e.g., climate change)
- Multiply efforts by working together and build on previous work in other disciplines
- Connecting end users

Tools

- Communities of practice
- Incentives
- Ability to take risks
- Having high-level champions

Barriers

- Lack of support from high-level management
- Current incentives structure
- People are overwhelmed/overloaded by too much information

Engagement

- Communities of practice – connecting people with like minds

7. Human Resource Issues and Training

Priorities

- Definition of a KT/KB worker is not clear
- Human resources (HR) and training are important to fill the gaps that exist between researchers' skills and getting information to the end user
- There are currently no career rewards for researchers to complete KT/KB

Tools

- SickKids (The Hospital for Sick Children, Toronto) offers a 'Scientist: Knowledge Translation Training course' and will be offering a week-long professional certification course on knowledge translation
- University courses embedded within graduate programs
- Conferences
- Community of practice

Barriers

- Need commitment of higher management for funding and HR capacity
- Courses offered are too theoretical, need more practical tools

8. Performance Metrics

Priorities

- Justification for research funding
- To ensure effective research
- To improve organizational practices
- To engage stakeholders
- To show the value added/impact of KT/KB
- To see if the information transferred/brokered has been used

Tools

- Noted that few tools are available (case studies were noted, and their validity was discussed)
- More quantitative tools are considered hard to get

Barriers

- Measuring impacts requires engagement and time to evaluate – no best practices available
- Performance measure is more related to traditional/linear models of knowledge development, a “cultural change” is required
- KT/KB is often done through face-to-face or network interactions

Engagement

- Most felt that measuring KT/KB performance was important and something they should do in the future

9. KT/KB Program Design

Priorities

- People are starting from the ground up, and aren't always sure what KT/KB program design is or should look like
- Some are already flying blind, while others want to ensure they have the right resources from the very beginning
- Want to show impact, value of their program to ensure future funding
- Want to change culture – recognize the need for KT/KB

Tools

- Want to see what tools others are using that might apply to own situation
- Human resources, champion, social media
- Informal networks in absence of communities of practice (which are desired, but not established yet)
- Training programs in KT/KB are needed

Barriers

- Culture change – move from “knowledge is power” to “knowledge sharing is power”
- Budget – need to fund the arrows
- Support of senior management

Engagement

- There is some engagement – there are people who want to be involved, but not everyone
- People who want to collaborate/participate may not know how – need tools to help engage

10. Current Research on KT/KB

Priorities

- A synthesis of work done across all sectors needs to happen
- There is a need for more research in this field as its popularity and demand increase
- Establishment of KT/KB as a field is important – recognition in order to be taken seriously
- Multi-sectoral – means different terminology and re-inventing the same concepts

Tools

- Funders have a key role to play including funding KT/KB research and practices in research and incentives for academics and practitioners
- Looking at existing organizations' work (Canadian Institutes of Health Research, etc.)

Barriers

- Needs to be recognized as a discipline in order to get credit/respect, but research thus far has been highly multi-disciplinary leading to practical challenges for researchers in KT/KB (e.g., terminology)
- The right people are not invited to speak at the appropriate events – lack of awareness out there
- Tools across sectors are not necessarily transferable
- Walking the walk as KT researchers – funding incentives from funders

Engagement

- It is hard for non-KT/KB researchers to see the value in it

At the end of the session the main themes emerging from each topic were determined by each rapporteur based on the discussion. A PowerPoint [presentation](#) with these emerging themes was created and shown to all participants during the lunch hour to inform participants of the major discussion points from the topics that they were not able to choose.

Skills and Capacity Building Sessions

The Skills and Capacity Building Sessions consisted of three sessions. The first was “Making Sense of Knowledge Mobilization and What it Can Do for Me” which introduced participants to the concept of knowledge mobilization (KMb) in context of three professional perspectives and then opened the floor to stimulated discussion and questions from the audience. The second was titled “Effective Written Communication to Targeted Audiences” and was designed to give participants increased insight into knowledge translation and knowledge brokering activities and provide tips to increase audience receptivity and clarity of message through effective writing. The third session was titled “Finding the Right Tools: Putting Knowledge Translation and Brokering into Action.” In this skills session, participants explored the boundaries of a KT/KB toolkit and discussed what types of tools might populate such a toolkit. The session was structured to provide participants with a broad overview of five different KT/KB tools currently in use at five different organizations, followed by a facilitated plenary discussion focused on developing a framework for a potential KT/KB toolkit.

Making Sense of Knowledge Mobilization and What it Can Do for Me

David Phipps, York University

Melanie Barwick, The Hospital for Sick Children

David Yetman, Canadian Institute for Advanced Research

Synthesis by Sheila Allan, S&T Liaison Division, Environment Canada

A combination of structured and improvised learning, “Making Sense of Knowledge Mobilization” introduced participants to the concept of knowledge mobilization (KMb) in context of three professional perspectives and then opened the floor to stimulated discussion and questions from the audience. The session commenced with presentations by Dr. David Phipps on academia’s perspective, Dr. Melanie Barwick on the scientist’s and David Yetman on the practical and innovative application of knowledge mobilization. A panel-led question and answer period provided participants with an opportunity to challenge the experts, ask personally relevant questions and exchange ideas with their colleagues. The session attracted an audience with a broad spectrum of interests and experience and was particularly relevant to individuals trying to integrate knowledge mobilization as a relatively new field within their organizations.

The session began with a quick poll of the participants, which revealed they were primarily from government and academia and a sprinkling of other fields such as education, consulting, communications and non-government organizations. The three speakers then presented overviews of their respective organizations and knowledge mobilization experiences.

Part I: Organizational Perspectives on Practicing Knowledge Mobilization

David Phipps: York University and ResearchImpact

To give the audience an understanding of KMb in practice, Dr. Phipps described KMb activities at York University and the affiliated ResearchImpact, which he referred to as Canada’s leading KMb network. In addition to its research/user “matchmaking” services, ResearchImpact produces numerous research snapshots written in clear language and conducts regular Lunch and Learn sessions – two prime examples of the “producer push” aspect of KMb. York University’s KMb Unit facilitates “user pull” by brokering its academia to governments and other clients seeking knowledge from the University. Dr. Phipps explained that it is not always clearly

evident to the inquirer as to where certain expertise may reside; for example, the University's leading expert on homelessness is in the Faculty of Education. In addition to brokering numerous research requests (180 this past year) the Kmb Unit is assisting faculties in crafting mobilization strategies.

York University Knowledge Mobilization Unit also conducts research forums typically on behalf of an external organization, such as a provincial ministry, that identifies its priority topics for discussion. In addition, the Unit provides collaborative opportunities to develop social media networks for a variety of fields and institutions that include social sciences, humanities, environmental science (e.g., climate change research and IBM). Dr. Phipps offered some wisdom on ensuring success in knowledge exchange, citing York University's "KM in the AM" series that facilitates round table discussions between knowledge users and experts from within and external to the University. He advised that success is driven by location – off campus locations are preferable – and having sufficient time for conversation around the table. Success is indicated by conversation continuing after the session is over.

Melanie Barwick: The Hospital for Sick Children

Implementation scientist Dr. Melanie Barwick gave a brief overview of her work at The Hospital for Sick Children (a.k.a. SickKids) in Toronto, where she studies how best to help health services get "evidence-based into practice." She drew attention to the valuable role of the intermediary to close the gap between research and practice. She stressed that the intermediary, or knowledge translation (KT) practitioner, has a key role to play and a recent survey of KT practitioners across Canada identified that they would like to be recognized professionally and receive additional training for their role. A professional development course, the [Knowledge Translation Professional Certificate™](#) is being offered at SickKids for KT practitioners beginning January 2011. Dr. Barwick also leads the Scientist Knowledge Translation Training™ course at SickKids, designed to build KT practice competencies and know-how among researchers in health, education, and other disciplines. The course covers how to develop a KT plan and how to communicate research findings beyond academic audiences, among other skills. She emphasized that one of the most important drivers for securing funds for research is the success of scientists in demonstrating how their work will make a difference on the ground. She anticipates that researchers will soon be encouraged by research funders to demonstrate not only top level science, but to describe how their research will be shared with relevant audiences, and how they will demonstrate the impact of their science.

Dr. Barwick emphasized the importance of knowledge translation in moving science into policy. Comparing the rate of current policy development to Britain's ponderous response to significant losses of ships' crews to vitamin C deprivation, she illustrated society's growing recognition of the benefit in advancing science to inform and expedite policy decisions. Despite Vasco da Gama's 15th Century discovery of the power of citrus fruits to ward off scurvy at sea, a concept that was reinforced around 250 years later by James Lind's Treatise of the Scurvy (1753), Britain took 368 years to adopt a policy that citrus must be provided on all naval ships. We have come a long way in closing the gap; however, best estimates now argue that it takes approximately 17 years for science to inform practice in the developed. Can we shorten this gap even further and what will it take?

David Yetman: Canadian Institute for Advanced Research

David Yetman started off by explaining the perceived differences between basic, applied and advanced research. He explained that many people outside of academia prefer "applied" research because they view the results to be more directly related to their needs. David Yetman

explained to the audience that it is important to view all forms of research as applicable, with consideration for the time it takes to produce impact from the research. For example, a lot of advanced research is applied, but the timelines are much longer, and the primary intent is not to fulfill a specific need in the short term (e.g., superconductivity). A lot of applied research can also be basic but the timelines are shorter and the connections between research outcomes and potential use are immediate (e.g., engineering projects). The important thing for governments and universities is to create spaces where basic, applied and advanced research can occur without pressure from outside users to produce immediate results.

David also described the Canadian Institute for Advanced Research (CIFAR) and discussed some examples of their research projects and impacts. CIFAR's mandate is to bring together a group of international leading experts to deal with some of the world's biggest questions, such as, "how to build a quantum computer?", "how can superconductivity work at room temperature?" and "what does the future hold for the planet?" By building research capacity and nurturing early research that shows promise, CIFAR advances innovative research and assists in making Canada globally competitive.

Part II: Exchange with the Audience

Knowledge Mobilization by any other name...

The next part of the session was devoted to audience interaction and considerable debate ensued about the most appropriate terms to apply to knowledge mobility. Melanie Barwick reflected on a survey she'd conducted that revealed "knowledge mobilization" was the most commonly used term among 130 responses; however, there are numerous synonymous and related terms that equally or more appropriately apply depending on circumstances. Among these are: knowledge translation and brokering, dissemination, knowledge exchange, knowledge extension, knowledge integration, knowledge sharing, knowledge transfer. Despite its flexibility in terms, knowledge mobilization is *not* knowledge management. Terms related to knowledge translation (KT) include tech transfer, commercialization, and translational research.

The audience was asked for an opinion on whether we have too many terms or not enough, which led to discussion about whether this terminology really matters. Slightly more than half the room felt terminology is not an issue because it's more important to "just do it" rather than quibble about semantics. Others felt that establishing common terminology is necessary to ensure everyone is talking about the same thing and so funders clearly understand and support proposals for this kind of work. The following statements were heard during the exchange:

"There is a reason for different terminology; it arises from differing disciplinary origins. And the words are not entirely synonymous so they can't always be replaced or interchanged."

"When people generally endorse a concept the terminology doesn't matter"

"It's important to use consistent terminology within an organization, but having differing terms among organizations is enriching."

"Terminology can have specific legal implications."

"In Humanities, language means everything."

"I see a definite need for common terms but establishing those is an academic process that generally doesn't matter to practitioners, unless there's political connotation to certain terms."

"I envision a K meeting in future that encompasses all terminology."*

The audience also posed a number of questions and comments to the speakers:

Audience: How does York/ResearchImpact determine what research to focus on?

Phipps: I divide my faculty into three groups: Those who do KMb, those who never will, those who could but are new and need support. We sometimes support research our partners are seeking, sometimes support researchers and sometimes what we support depends on the research itself.

Audience: What if your organization doesn't have the expertise being sought?

Phipps: York University doesn't always have the required expertise, for example, on literacy, and that's why we network with other academic institutes.

Audience: How does CIFAR communicate advanced science to users that may not exist yet?

Yetman: It's difficult to relate some research findings to target audience but CIFAR holds findings with varying degrees of applicability. It's important to be realistic about the utility of the information.

Audience: How does your KMb plan differ from a classic communications plan?

Barwick: The KT activities in which a scientist engages relate to their research. Beyond sharing that work with appropriate audiences, this often goes to encouraging behaviour, practice, or policy change. Moreover, the KT activities of individual scientists are often integrative, weaving through the beginning, middle, and end of the research process. Communications also seeks to share the results of research with multiple audiences, but there is less focus on behaviour, practice, or policy change. As well, communications professionals are often tasked with presenting communications on behalf of the corporate entity, not the individual scientists. While they often assist with press releases, they will not take on the work of brokering, linkage, exchange, and implementation of research findings.

Phipps: The difference between communications and knowledge mobilization is that KMb is interactive; however, there are a lot of similarities such as knowing audience, choosing the right medium and using the right language.

Yetman: In government, communications and knowledge mobilizers are often at loggerheads. In CIFAR, we work closely with communications.

Take Home Messages

Throughout the session, the presenters offered take home messages to the audience. Here are the key points:

1. Know your KMb goals and prepare a plan
 - It's important to know your knowledge mobilization goal at the get-go, e.g., to inform ongoing research, to build awareness or share knowledge, for behaviour change, for practice change, for policy change, for commercialization/patent.
 - Establish KMb impact or outcome indicators to demonstrate whether you achieved your goals.
 - Decide which knowledge translation strategies to use; recognize that the evidence-base for KT is nascent and not entirely specific or prescriptive. Be creative.
 - Build in mechanisms to record data, even if you don't have an immediate need for it.
2. Determine how to implement your plan
 - When building KMb programs, think about how you're going to implement them. It is not sufficient to simply develop strategies – processes for getting results need to be

considered, too. KMB strategies need to be paired with implementation strategies for effective change.

- Determine space and time in which you need to operate; for example, health policy that typically takes 10-15 years to develop might be reduced to months in response to an emergency.
 - We are moving into era of practice-based implementation.
 - Starting small can be okay, especially if it helps get you going.
 - Determine whether you will need an implementation team.
3. Know your audience and how to engage it
- Know who your target audiences are – once this is established, it might be necessary to revisit your goals. You may wish to aim for practice change with a practitioner audience, and awareness building with the public – each requires tailored strategies.
 - Determine how and when to engage your audience. The earlier you engage, the more likely you'll get buy-in.
 - Tailor your main messages for each of your audiences.
4. Understand your organization
- It's important to understand “boxes” or compartments within your own organization and how they work. The analogy of the “box” implies that research disciplines are all different in the same way that departments within governments are different. The important thing for a knowledge broker is to understand the make-up of each box, that they are unique and different, and then understand how to navigate within them.
 - The [Ontario Knowledge Translation Community of Practice](#) doesn't discriminate on the basis of discipline and encourages involvement from individuals working in health, education, agriculture, etc. We need to learn from each other.
 - Leadership and organizational/individual readiness for change are important factors for implementation success.
 - Organizations depend on reputation. What stakeholders say about our work has more impact than what we actually do.
5. Assess the outcomes
- Establish indicators to verify whether users are actually getting the information.
 - Know how you will assess and learn from your outcomes. Involve your users in the evaluation.
 - Knowledge can be effectively translated on the basis of one study – but key is to remember intent. The extent of the knowledge required for this is governed by how it is to be used.

In closing, the speakers invited the audience to continue the conversation with them following the workshop.

Effective Written Communication

Dr. Leah Brannen, Environment Canada

Courtney Price, Environment Canada

Andrei Sedoff, York University

Synthesis by Courtney Price, Science and Technology Liaison, Environment Canada

This session was designed to give participants increased insight into knowledge translation and knowledge brokering activities and provide tips to increase audience receptivity and clarity of message through effective writing. Whether a practitioner, or new to the knowledge translation and brokering field, the session was designed for participants to learn from examples, but also from each other, in an open discussion forum during and after a practical exercise.

Dr. Leah Brannen welcomed everyone to a very hands-on session and conveyed the importance of clear and concise writing. She acknowledged that KT/KB operates on a spectrum of involvement, practices and activities. The literature describes the ideal, in some cases, to be a multi-directional sharing between policy and researchers, where each party exerts influence on each other to formulate a more streamlined exchange of knowledge. However, as we move towards these activities we have to continue to act, and to push our organizations into these activities. The more simple actions of targeted writing and dissemination are one such way of pushing the field of KT/KB internally in your organization.

Afterwards, facilitators Courtney Price and Andrei Sedoff each provided an experience-based example of applied methodology when disseminating a third party's research results. These examples were given from a government and academic perspective, and covered the fields of environmental sciences and social sciences/health, respectively.

The session then divided into two round-table breakout groups to tackle two different subject areas—wetland degradation and homeless people. The groups were instructed to consider a body of scientific work and produce a cohesive plan for audience identification, key finding summary, message development, avenues of dissemination and finally, to draft a lede that would help convey the message of the research to the target audience. Once finished, members of the respective groups then presented the results to the broader group and discussion ensued.

Part I: Examples of Applied Methodology to Disseminate a Third Party's Research Results

Wetland Degradation: Courtney Price

Courtney acknowledged that there are several different approaches to dissemination, and for the purposes of the exercise, she asked that the group work through the methodology that she and Andrei Sedoff had developed, as they found it applicable to their diverse needs.

The example of research to be disseminated was an extensive 20-year study of wetland degradation in the Prairie provinces due to agricultural impacts. After briefly introducing the research, she described her process of determining key findings and audiences. To determine what may be topical for different audiences, she used the principles behind common news values. To organize her thoughts, she completed a chart (Figure 1) that helps identify the steps and chronology of the KT/KB process.

Courtney then went into detail about key message construction, and the importance of its construction on the characteristics of different audiences. She relayed that the literature discusses three types of key messages; instrumental, where the message conveys information for specific direct use; conceptual, where a message is designed to construct the framing around an issue, and; actionable, where the research conveys a direction to be taken.

After she identified her senior management as the audience, she then worked to deliver the key message based on their needs. This audience prefers relevant actionable messages, delivered through existing internal communications channels, from credible sources. She had determined that the best channels for distribution were reports to senior management and advisory staff.

After working through each step, she summarized her entire strategy to the audience below.

Figure1

Our Dissemination Methodology			
Audience	Specific Findings of Interest	Key Message	Means of reaching your intended audience
Senior management at Environment Canada Deputy Minister And those in the Science and Technology Branch: ADM, DG wildlife, DG strategies	High rates and incidence of wetland impact in conjunction with low recovery rates clearly demonstrate the need for stronger wetland protection in prairie Canada	Stronger wetland protection is needed in Alberta, Saskatchewan and Manitoba. Current agreements and partnerships are not enough action to protect these ecosystems from agricultural impacts.	S&T report to the ADM DM Brief Junior staff ESTR report

She then explained that a lede, a journalistic term describing the first paragraph of an article, was the crux of what you want to convey to your audience. It captures the reader’s attention, establishes focus, sets the tone and guides the reader into the rest of the document.

Homeless People and Health Perspectives: Andrei Sedoff

Andrei Sedoff described his work at York University, and proceeded through an example that would demonstrate how he was charged with conveying research results to a wider audience.

He described research on the topic of homeless people and the perceptions and priorities they had about their own health. The results determined that the issue of housing was closely linked to homeless people and their health; without stable housing they were at greater risk of developing chronic health problems. Andrei described how this finding ultimately led him to identify provincial decision-makers in the Ministry of Health and Long-Term Care as the key audience. A second audience that he identified was health practitioners.

He then conveyed his thought pattern behind the same methodology that Courtney had described; keeping in mind his particular audience’s needs and key message construction (Figure 2). He determined that the findings would best be presented as part of a clear language research summary series. This series, called Researchsnapshot, consists of two-page documents that convey the key aspects of over 100 research projects, and have proven very successful with their main audiences. These summaries allow readers to determine the problem, what the research recommends and what aspects they may have the capacity to act upon.

Figure 2.

Our Dissemination Methodology			
Audience	Specific Findings of Interest	Key Message	Means of reaching your intended audience
<ul style="list-style-type: none"> - Policymakers - Healthcare professionals 	<ul style="list-style-type: none"> - Homeless people suffer from many chronic health problems which are made worse by their poverty. Some of the conditions included seizure disorders, chronic respiratory disorders, arthritis, and mental distress. - Homeless people want to work, be housed, and be respected. - Homeless people need employment, affordable and safe housing, and expanded addiction services when they are ready 	<ul style="list-style-type: none"> - The first step to combating these health problems is an open and accepting attitude towards the homeless from support workers and the general public. The social exclusion which homeless people experience every day leads to, and further reinforces, stress, addictions, and mental health problems. 	<ul style="list-style-type: none"> - clear language research summary

Part II: Breakout Sessions

Presenters then broke the audience into two groups and had each group conduct the same exercise while facilitating discussion. Presenters each provided their respective groups with a package of information designed to convey research on an environmental topic (Courtney) and the same homeless/health topic presented earlier (Andrei). Packages included the academic journal articles, video interviews with the researchers, and subsequent written materials including fact sheets, news articles, etc.

Both groups had very different results, with Andrei’s group completing the exercise as described, and Courtney’s group completing the majority of categories, but finding valuable discoveries in extended conversation about the first steps of the process described in the examples.

Breakout Group 1: Monitoring Work on Waterbirds in the Great Lakes (Courtney Price)

The group watched a video about monitoring work on colonial waterbirds in the Great Lakes.

The group first felt that a goal was necessary. What did we want to achieve? Who were 'we' anyway? For clarity, it was decided that 'we' were acting in the capacity of a knowledge broker for the organization putting out the science, and as such, wanted to represent the scientific findings, which stated a reduction of contaminant levels was recommended to maintain ecosystem function.

Discussion centred how the work represented the 'classic' scientific finding: some things are good, some things are bad, and more research is needed. For that reason, there were many aspects of the research that could be found to be useful to various audiences. Eventually a finding of key interest was decided on.

Group discussion centred on determining and prioritizing potential audiences. Key messages were framed and the group decided on a conceptual message, to frame the discourse around the issue, as opposed to an action-based message.

When communicating the message to target audiences in general, the group discussed the following factors: timing, audience values, credibility of the researcher and messenger, the importance of third-party and advocacy groups, and the difficulty in communicating nuances and risk. Greater discussion ensued on the use of emerging technologies. Several participants suggested how they were able to successfully use Facebook, text messaging and Twitter to convey important information to their audiences in a health related context, and that given the right topic, audience, and willingness of the organization, it can be a very effective tool.

Our Dissemination Methodology

Audience	Specific Findings of Interest	Key Message	Means of reaching your intended audience
<p>GOAL = reduce levels of contaminants/chemicals in the environment</p> <p>So what?</p> <p>Regions hotspots are in (Lake Ontario, most of Lake Erie, Detroit River)</p> <p>Policy and decision-makers for environmental regulations/standards</p> <p>Local MPs and community groups (are my constituents living in a clean community or a dirty community)</p> <p>-other environmental departments, health, agriculture</p> <p>General public (share good news story)</p> <p>Really need context for decision-makers local politicians</p>	<p>-Relationship/w bird health and human health</p> <p>-success story – levels have gone down dramatically = demonstration of policy effectiveness</p> <p>-plateau in levels over past 10 years – we’re in a holding pattern, but raises more questions – implications for human health?</p> <p>-emerging compounds</p> <p>-message = success story + next steps and rationale</p> <p>-geographic scope – focus resources on more contaminated areas and emerging chemicals</p>	<p>-things are good, could be better, need more resources to keep doing valuable work</p> <p>-review of regulations</p> <p>-your community has level of contaminants that is ? high vs other communities</p> <p>- health hook, legacy issue</p> <p>-international collaboration, well respected researcher</p> <p>-new contaminants, don’t know effects</p> <p>-conceptual message Series of community discussions around...</p> <p>Some big species increased, at cost to other species = systems thinking perspective/approach</p> <p>Dynamic species interactions</p>	<p>- depending on audience social media, communities of practice, linkedin group, wikipedia,</p>

Breakout Group 2: Accessible and Safe Housing (Andrei Sedoff)

After watching a video on the research, the group found that accessible and safe housing was actually a health issue. The group then brainstormed about the audience that would be able to act most meaningfully using this finding. A wide selection of possible audiences was considered. The group ultimately determined that their target audience was provincial health ministers who would work with their housing counterparts, as this audience would be able to have the most immediate impact on potential actions that the research recommends. They developed their key messages with these particular audiences in mind, making sure to demonstrate cost savings through collaboration.

Knowing that action-oriented messages and credible messengers are vital to their audience’s uptake of the message, the group decided that the best way to reach this audience is through a team of ambassadors, consisting of community leaders, health practitioners, the business community and authorities on housing.

Our Dissemination Methodology			
Audience	Specific Findings of Interest	Key Message	Means of reaching your intended audience
Provincial Health Ministers	<p>Homeless priority is finding food and safe shelter</p> <p>Social requirement not met for homeless to address their health</p> <p>Fear and social exclusion are major barriers for their health</p> <p>Homeless have a chronic diseases, including mental related diseases</p>	<p>Safe shelter is not available for homeless</p> <p>Need for alternative ways to deliver health services</p> <p>Housing and social support would reduce health care cost and social support to the homeless communities</p>	<p>Provincial Ambassadors (like business leaders or other publicly known figures) to convey the message through :</p> <p>-1st a brief, preferably coordinated with all the provinces</p> <p>-Face to face meetings</p>

Andrei’s group developed a lede for the group, which was critiqued.

Part III: Group Discussion

Follow-up discussion centred on a dissection of the results both groups presented. It gave each group another opportunity to further justify their thoughts and proposed actions. The session closed with the distribution of the take home package and closing comments from Dr. Leah Brannen.

Take Home Messages

To increase audience receptivity and clarity of message through effective writing, you need to produce a cohesive plan for:

- audience identification
- key finding summary
- message development
- avenues of dissemination
- drafting a lede to help convey the message of the research to the target audience(s).

To determine what may be topical for different audiences, you can use the principles behind common news values.

Construction of key messages vary depending on different audiences. The literature discusses three types of key messages:

- instrumental, where the message conveys information for specific direct use
- conceptual, where a message is designed to construct the framing around an issue
- actionable, where the research conveys a direction to be taken.

A lede, is a journalistic term describing the first paragraph of an article; it is the crux of what you want to convey to your audience. It captures the reader's attention, establishes focus, sets the tone and guides the reader into the rest of the document. It could be called a 'summary statement' or 'take home message.' It should be written with the following considerations: generally one sentence, 30 words or under, uses plain language and active voice, answers the 5Ws (or at least several of the most relevant ones), applies inverted pyramid writing structure (avoids chronology of the event and leads with the most important information), and avoids redundancies and jargon.

When communicating the message to target audiences keep in mind the following factors: timing, audience values, credibility of the researcher and messenger, the importance of third-party and advocacy groups, and the difficulty in communicating nuance and risk.

Action-oriented messages and credible messengers are vital to audience uptake of the message.

Finding the Right Tools: Putting Knowledge Translation and Brokering into Action

Facilitated by Louise Shaxson, Director, Delta Partnership (London, UK)

Presenters:

Kristin May, Environment Canada

Dariusz Burzynski, Natural Resources Canada

Sarah Bovaird, SickKids Hospital

Elin Gwyn, Ontario Ministry of Agriculture, Food and Rural Affairs

Louise Shaxson, Delta Partnership

Synthesis by Katrina Goreham Hitchman, Canadian Water Network

The "Finding the Right Tools: Putting Knowledge Translation and Brokering into Action" session was moderated by Louise Shaxson, Director of the Delta Partnership (London, UK). Louise introduced the session by highlighting some key questions that are currently the topic of much attention in KT/KB circles and the broader literature, both in Canada and internationally. These questions include:

- Who are knowledge brokers, and where do they "sit"?
- How do brokers add value?
- Who is the target audience?
- How to avoid "mission creep"?
- How can knowledge brokers illustrate their worth to the unconverted, and to potential funders?
- What is a KT/KB tool?

For the purpose of the session, Louise provided the group with the following working definition of a KT/KB tool:

"...a strategy, approach or process that facilitates the exchange of knowledge between producers and users. It may be an event or a series of events, an organisation operating under particular TORs, a job description for an individual, a style of report, an engagement process, a map or another form of knowledge

exchange. Knowledge brokering serves two purposes: first, to improve the utility of knowledge such that it actively informs decision-making and has a noticeable effect on the quality of decisions, policies and processes. Second, it aims to improve the receptivity of decision-makers to new knowledge.”

In this skills session, participants explored the boundaries of a KT/KB toolkit and discussed what types of tools might populate such a toolkit. The session was structured to provide participants with a broad overview of five different KT/KB tools currently in use at five different organizations, followed by a facilitated plenary discussion focused on developing a framework for a potential KT/KB toolkit.

Panel Presentations

To begin, five panelists briefly presented their tools in plenary, with an emphasis on describing what problem their tool was designed to address, in what situations the tool does and doesn't work, what groundwork is required for using the tool, and how the impact of the tool is being assessed. Participants subsequently broke into small groups and engaged in focused discussions about how each tool was being used.

Panelist	Tool	Implementing Organization
Kristin May	Environment Canada's S&T Expert	Environment Canada, Science & Technology Liaison
Dariusz Burzynski	Science Policy Integration Nexus of Expertise (SPINE - REISP)	Natural Resources Canada, Strategic Science-Technology Branch
Sarah Bovaird	Knowledge Translation Planning Template	SickKids Hospital
Elin Gwyn	Knowledge Translation and Transfer Plan	Ontario Ministry of Agriculture, Food and Rural Affairs
Louise Shaxson	Mapping the Evidence Base for Environmental Policy	Department for Environment, Food and Rural Affairs, United Kingdom

Participants with a more general interest attended a sixth breakout group, where they attempted to populate a theoretical KT/KB toolkit. Summaries of discussions within the six breakout groups are provided below.

Breakout Groups

EC S&T Expert (Environment Canada, Science and Technology Liaison Division)

Kristin May, Science and Technology Liaison Officer with Environment Canada's S&T Liaison Division, described Environment Canada's S&T Expert, which is a system of online staff profiles. Each expert's profile provides their job title, role, work location, current research/S&T, statements of what the person does, key publications, affiliations, awards, education, contact info and an action shot. Profile owners select expertise categories to be linked to. Users of the system have three ways to search expertise: they can see the entire list and search by specific expertise category, browse through a list (by hierarchy), or do a full body text search.

S&T Expert was created to address an appetite for quickly locating science and technology subject matter experts and other information. It is a matchmaking tool for informed users, allowing them to engage with scientists who wouldn't normally make those connections.

One of the strengths of EC S&T Expert is that it is available online, at the users' fingertips. In addition, in cases where experts contacted through EC S&T Expert are unable to answer a user's question, they are often able to redirect users to someone else who is able to help them.

Because the system collects personal information, a Privacy Impact Assessment was completed. EC S&T Expert is voluntary and staff fill in only the information they want to provide (e.g., no photo is fine). Some judgment is exercised to determine where to draw the line with respect to who qualifies for a profile, as well as how much information is too little to be useful.

Within Environment Canada and beyond, S&T Expert is promoted by hyperlinking to experts' profiles in all S&T Branch products such as newsletters, reports and websites.

There are currently 375 profiles, representing 62% of Environment Canada's S&T Branch researchers. EC S&T Expert was recently used as the basis for the federal government's Directory of Scientists (www.science.gc.ca). In a future phase, EC S&T Expert will be connected to EC Science Alert to enable users to view recent publications in real time.

www.ec.gc.ca/scitech/S&TExpert | www.ec.gc.ca/scitech/expertens-t

SPINE (REISP) (Natural Resources Canada, Strategic Science-Technology Branch)

Dariusz Burzynski, Manager of Natural Resource Canada's Science & Technology Cluster, discussed SPINE (Science Policy Integration Nexus of Expertise). SPINE was created by NRCan staff with support from Environment Canada, Fisheries and Oceans Canada and other science-based federal departments and agencies. It is designed to help public servants connect, interact and learn from each other's experience integrating science and policy. SPINE offers practical tools that can help enhance communication, broker knowledge, and increase performance. SPINE provides a digital platform for science-policy integration. It offers three easy to use tools that can help public servants do their job and have more impact. These tools are a story registry, a directory of experts, and a knowledge platform.

SPINE's on-line registry of best practices can help users find answers to questions such as: what is the best way to bring science knowledge and policy advice together in a briefing note? How can you build a high performance interdisciplinary team to deliver results? What are the tricks to communicating better between social and applied scientists?

The SPINE knowledge platform is a centralized hub that will help connect public servants to links of interest, learning opportunities and legacy perspectives.

Building on EC's S&T Expert, the Directory of Scientists and Technical Professionals houses profiles of staff from science-based departments. It can be searched by expertise category, body text, or by browsing expertise categories.

<http://spine-reisp.science.gc.ca> | <http://reisp-spine.science.gc.ca>

Knowledge Translation Planning Template (SickKids Hospital)

Sarah Bovaird, Knowledge Translation and Exchange Specialist at SickKids Hospital, presented the Knowledge Translation Planning Template, which is a practical tool developed for SickKids

scientists. The template is designed as a brainstorming tool to get researchers thinking about their KT plan or strategy from the outset of their projects, and to help them pull the necessary KT tools together.

During the small group discussion, Sarah walked the participants through the thirteen elements of the KT Planning Template. Specifically, the template urges scientists to identify the main messages of their research, what audiences they will target, and what methods they will use to reach these audiences. It also prompts researchers to think about their KT process, how their partners will assist in this process, how they will evaluate the impact of their KT work, and how they will resource KT within their research budget. SickKids scientists are asked to complete the template at the outset of their projects and revise if needed as the projects evolve.

Following the presentation of the template, participants commented on and asked questions about the tool. Sarah informed the group that completing the template is voluntary, and that many versions have been used, although it is currently only available in English. The template is also flexible, in that scientists are able to identify audiences before partners (or vice versa), and that partners can be involved in different ways at different times throughout the project.

In addition to the KT Planning Template, SickKids offers a two-day KT training course as well as a week-long Knowledge Translation Professional Certificate that are available to SickKids scientists and external participants. Sarah is also currently developing “Our KT Stories,” which will profile the KT work of several scientists on the SickKids website.

Knowledge Translation and Transfer Plan (Ontario Ministry of Agriculture, Food and Rural Affairs [OMAFRA])

Elin Gwyn presented the OMAFRA Knowledge Translation and Transfer (KTT) Plan, which is a toolkit to assist researchers in accelerating their research into action. The plan is now in its first phase of development. Currently, the main goal of the KTT Plan is to raise awareness of KTT among researchers, as there is still a cultural change that needs to occur within government and the academic community about the importance of KTT. Through a partnership between the University of Guelph and OMAFRA, researchers can apply for grants for KTT strategy funds. The funds can either be for research on KTT or for practicing KTT within their research projects. Since funding through this partnership requires a KTT plan, this toolkit assists researchers in developing their plan.

The toolkit was developed based on seven best practices found in the literature on the use of research knowledge. It is structured as an 11-page document that briefly describes what a KTT Plan is, why it is important, and how to build a successful plan. There is a KTT template to identify user groups and their involvement, KTT methods, and the expected benefits for users. It also includes best practices and a checklist for the KTT Plan with guiding questions. The toolkit is divided into several categories, including events, publications, meta tools, and sustainability, and displays information in various formats to encourage researchers to think about KTT from various angles.

Elin discussed how the OMAFRA/University of Guelph Partnership approach to KTT has affected research funding programs. The ultimate goal of the KTT Plan is to help broaden the impact of research and better connect researchers to user groups in agricultural extension, policy and commercialization. She highlighted that within the OMAFRA/University of Guelph Partnership, demand-driven research is prioritized over curiosity-based research, and user engagement is crucial.

Future directions for the next phase of the KTT Plan include helping researchers to frame communication and engagement, and to develop key messages, similar to the SickKids KT Planning Template. Other areas for development will be building KTT budgets and adding an impact evaluation component to the KTT Plan.

<http://www.omafra.gov.on.ca/english/research/ktt/kttplan/buildkttplan.pdf>

Mapping the Evidence Base for Environmental Policy (Department for Environment, Food and Rural Affairs, United Kingdom)

Louise Shaxson spoke about mapping the evidence base for environmental policy for the United Kingdom's Department for Environment, Food and Rural Affairs (Defra). Louise developed this tool as a consulting project in response to Defra's need for a strategic analysis of the evidence base for their environmental policies.

The purpose of this tool is to provide visual maps displaying which topics have good coverage in the existing evidence base, as well as what topics have mixed coverage with conflicting or incomplete evidence, and where gaps in understanding exist. The maps were developed in consultation with policy makers and their technical specialists through a series of workshops, and through consulting a database of environmental research and monitoring projects.

When developing the tool, Louise put a great deal of attention into organizing the available evidence around clear policy goals. As a result, the evidence maps allow Defra to speak to policy makers about what is known and what is not known, and to support its scientists in conducting policy-relevant research. They also serve as "boundary objects" by allowing people from different communities, with different worldviews and different languages to describe their work to speak comfortably with each other.

To date, the maps have shown significant impacts for Defra by pointing out areas in need of cross-policy collaboration, and serving as source documents to inform papers being presented at global conferences.

Populating a KT/KB Toolbox

Katrina Goreham Hitchman, Programs Development Coordinator at the Canadian Water Network, led the sixth breakout group in populating a theoretical KT/KB toolbox. The toolbox was designed to test a framework currently under development by Louise Shaxson, which is based on Sarah Michaels' (2009)⁶ work examining the functions performed by knowledge brokers.

This framework describes six functions of knowledge brokers: informing, linking, matchmaking, focused collaboration, strategic collaboration, and building institutions (see Figure 3). The functions are listed in order of increasing intensity of relationship building, such that the inner functions are characterized by linear dissemination of knowledge, and the outer functions move toward co-production of knowledge by knowledge producers and knowledge users. In addition, the outer functions incorporate aspects of the inner functions, as demonstrated by the use of nested circles in Figure 3.

Brokers need not engage in these six functions in the demonstrated order—it is possible to invest in any of the functions at any time. However, because the outer functions incorporate

⁶ Michaels, S. (2009). Matching knowledge brokering strategies to environmental policy problems and settings. *Environmental Science and Policy*, 12, 994-1011.

aspects of the inner functions, these foundational elements must be in place before engaging in more collaborative work.

As a visual aid for the breakout session, a chart showing the six functions and their relation to one another was displayed on the wall. Participants engaged in a brainstorming task, during which they wrote down as many KT/KB tools as they could think of—including the tools presented by the panel during plenary—and placed these KT/KB tools on the wall to show where they thought these tools belonged in relation to the six knowledge brokering functions. Upon completing the brainstorming task, participants discussed how each tool they had placed on the chart could be used to facilitate the knowledge brokering functions, and several tools were rearranged to reflect group consensus. Examples of tools generated by the group are shown in Figure 3.

Plenary Discussion

Following the breakout groups, participants came back into plenary to engage in a group discussion moderated by Louise Shaxson. This discussion focused on Louise's adaptation of the Michaels' framework, and its usefulness for mapping the activities of knowledge brokers as well as the suite of KT/KB tools that had been discussed throughout the session. Participants examined the work that had been done by the sixth breakout group, and commented on the structure and content of the framework.

To begin, the list and placement of tools generated by the breakout group was examined, and a few additional tools were added to the framework. The group noted that as well as building relationship intensity, the outer functions also required greater time and monetary resources.

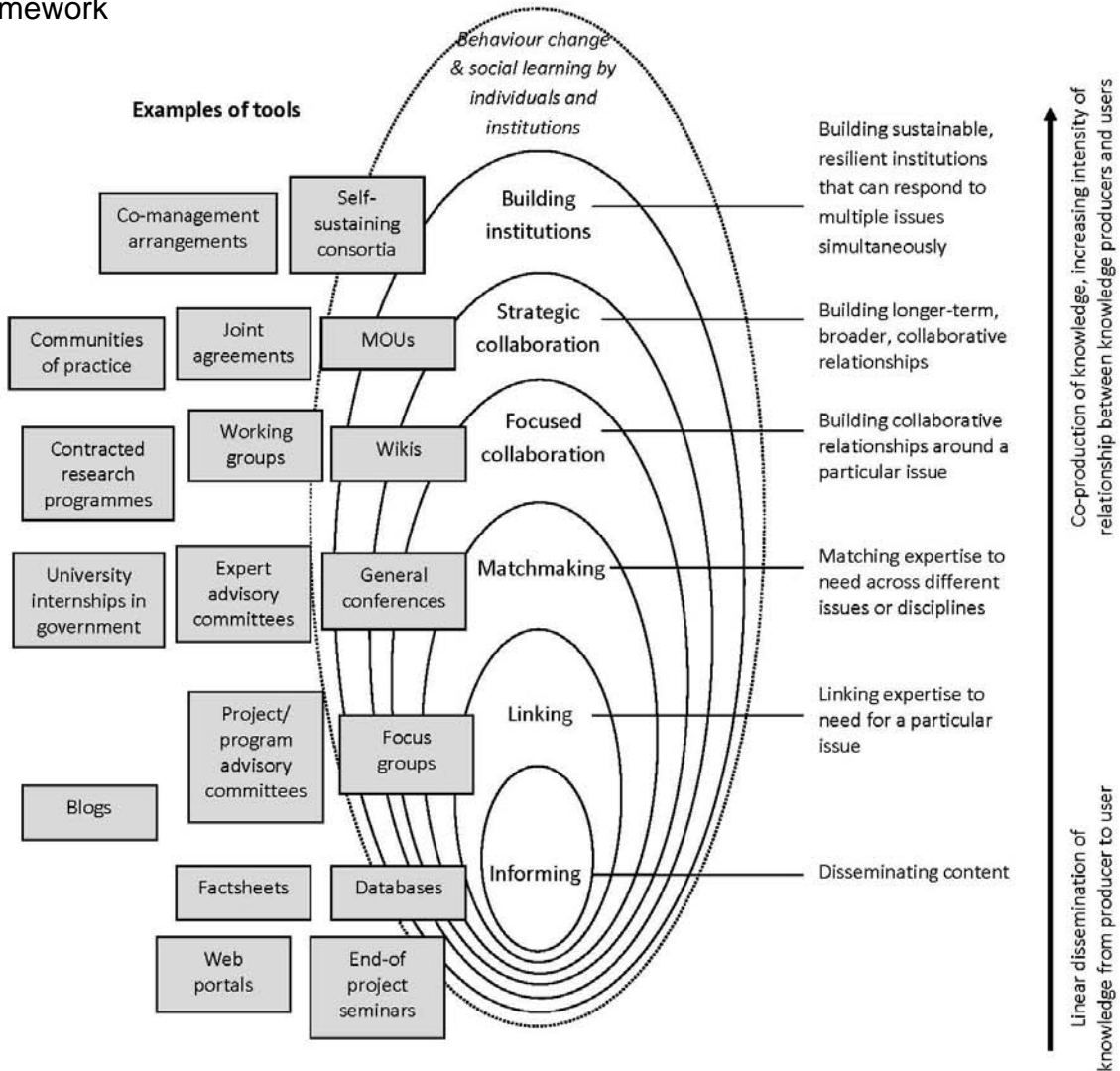
There was some debate about the visual presentation of the model. Several participants thought the model would be best presented as a linear progression for some audiences (e.g., the policy community), whereas others thought that nested circles, rather than ovals, would provide a better illustration of the non-linearity of the functions. Participants agreed that the model could be adapted to fit the needs of knowledge brokers serving different audiences.

Louise acknowledged that the names of the functions aren't important, and that they can be changed to avoid confusion with terms that have different meanings for different communities. Rather than presenting the model with only the names of the functions, participants thought that presenting brief descriptions of each function would be helpful (as in Figure 3), especially given that the names are less important.

Participants noted that evaluation of KT/KB activities and impact was not explicitly mentioned in the model. Louise agreed that evaluation should be a step within each oval. A final outer oval representing behaviour change and social learning by individuals and organizations was added to the model to indicate the desired higher-level outcome of the knowledge brokering process.

Figure 3:
The Montreal
Framework

Six functions of knowledge brokering and examples of associated tools
generated by skills session participants



Framework adapted from Michaels, S. (2009). Matching knowledge brokering strategies to environmental policy problems and settings. *Environmental Science and Policy*, 12, 994-1011.

Knowledge Translation and Brokering Expert Panel

Panelists:

Dr. David Phipps, York University

Karl Schaefer, Environment Canada

Dr. David Clements, Canadian Institute for Health Information

Moderated by Dr. Alex Bielak, United Nations-Water and United Nations University Institute for Water, Environment & Health

Synthesis by Courtney Price, Science and Technology Liaison, Environment Canada

The KT/KB expert panel featured three of Canada's leading experts in the field of knowledge translation and brokering. Their diverse range of expertise represented academia, the federal government, and an independent, not-for-profit organization. The expertise varied in disciplines as well, covering social sciences, environmental sciences and health sciences, respectively.

The Moderator briefly introduced the panelists, noting how they had become involved in and contributed to the field of knowledge translation and brokering and how his and their paths had come to intersect. He then invited each of them to make a brief opening statement.

Opening Comments

Karl Schaefer

The good: My experience in government tells me the link between science and policy is generally good when it is part of a major regulatory process or departmental program—in other words, when we have a mandate to engage. Assessments of toxic substances under the *Canadian Environmental Protection Act* provide a good example. I remember very well a specific research manager at the National Water Research Institute who used to meet with regulatory folks on a regular basis on the topic of emerging chemicals of concern. By default, this made him a broker. Also, when I worked in the Great Lakes Program, there were many instances of science-policy linkage successes under the Great Lakes Water Quality Agreement, where we brought together researchers and negotiators to discuss the state of the science and how this could help drive the government's activities.

The bad: Where we often need improvement is when a regulatory driver is not present and where there is no common ground. The renewal of some of our programs could serve as an example. There seems to be no one playing the broker role that would help ongoing interaction between groups.

The ugly (that ended up good...): One place Environment Canada Science and Technology Liaison was able to make a difference was on the issue of pharmaceuticals. For four years only the researchers gathered in an annual conference to discuss issues of concern. After we got plugged in, we opened it up to provincial and municipal governments, associations and other user groups, with the result that the user groups outnumbered the researchers at the last conference. Too often we don't engage the user, we need to find out how they communicate? How they prefer to receive information?

David Clements

I have a dilemma. My former organization, Canadian Health Services Research Foundation (CHSRF), did a lot of work for about eight years in this field across Canada and in the literature. The reaction we got was cathartic; lots of people were doing this type of work and they sought recognition and reassurance. So there is huge value in recognition.

But, the best knowledge brokers I ever encountered were the medical consultants I worked with in the provincial ministry of health, one in particular— a doctor who had served in Vietnam who was also a helicopter pilot, deep sea diver, and more. As much as his knowledge, it was these personal qualities that made him unique and a successful broker; he had flair, was able to make connections with people, was engaging, etc. I think these intangible qualities, and a desire to work somewhat on the fringe, even subversively, helped make him successful as a broker. So although I am very proud of the work done to legitimize the field, I also see the importance of being subversive and operating on the margins.

David Phipps

This role has always existed, but what is new is the level of support behind these activities now. We came into existence after we applied to the Intellectual Property Mobilization program and were funded by the Social Sciences and Humanities Research Council (SSHRC) and Canadian Institutes of Health Research (CIHR) in 2005 that clearly articulated a need for knowledge mobilization (KMb). To further establish the field, we need to look towards the funding organizations to have those opportunities as drivers, much like industry does with technology transfer. Traditionally, social sciences hasn't benefited as other science and technology/input sectors have, but social sciences contribute to the Canadian economy and are top of mind to Canadians.

Timing may be right as the technology transfer industries have had a shake-up after a major supporting initiative was terminated in 2009. It was felt that the technology transfer industry had grown and should be mature enough to be on its own.

We need to institute tenure, promotion, evaluation and rewards for this type of activity.

The moderator then asked panelists several questions based in part on suggestions solicited from registered participants prior to the workshop. They answered, providing their experiences, thoughts and current discourse in the field. Questions were then opened up to the audience.

Question: KT/KB... Or KM, or KA, KTE, KMb, KE or whatever... How about K*? Does the terminology REALLY matter?

Clements: Terminology is a pre-occupation of the academics, and the discussion and 'fights,' while necessary for the research community, can get pretty fatiguing for lay people, and even for some academics as well. Personally, I gave up at the introduction of knowledge integration.

Phipps: It is important to have knowledge of the discussion around terminology, but as practitioners, we just get on with it and leave that discussion to academics. Our mobilization name was the result of the word being used by SSHRC.

Schaefer: Let's just do it. We had the same difficulty surrounding the definition of 'sustainability' and ended up losing some time on the issue.

Audience: It is important to recognize that the different terms originate in different sectors, and the subtle constructs and connotations may be different between them (i.e., health, education, environment, etc.). While some are synonymous, other terms imply subtle differences in definition, reach, diffusion, implementation and other associations.

[For further discussion on this issue and linear, relationship and system models, please see the O3 site here.](#)

Question: How can one appraise and assess the impact for intermediary functions or systems? What is the return on investment? What performance metrics should we insist on? How can KT/KB be legitimized in an organization?

Schaefer: There is a shift in ‘Big C’ communications and ‘little c’ communications⁷. We can’t expect this from the top down. ‘Little c’ needs to continue to chip away and focus on that middle ground between bibliometrics on the one extreme and patents and commercialization at the other end of the spectrum. Metrics on the utility and usefulness of science knowledge, and these typically ‘unmeasured’ areas is important. Collect data on how products have been received, if they’ve been understood, and if it was digestible. Land and Water Australia did this work very well. The U.S. Environmental Protection Agency has used a user questionnaire in the past; these are good examples and should be inspiration. We’re in the process of developing this. We went back to the Canadian Council of Ministers of the Environment (CCME) workshop participants and found that 90 per cent of the policy folks said that the information they received was helpful at informing a given decision. Also, 90 per cent of the researchers said they were able to adjust their research to better reflect policy needs.

Clements: At the CHSRF, an arms’ length funding organization, we were able to apply a logic model for the purposes of focusing the organization’s activities as contributing to longer-term outcomes. Metrics can be very helpful, and these days they are necessary evils as well. However, we ought to push back on the idea that return on investment is the only way to justify our KT or the existence of KT/KB programs. We can’t forget that much of this is about making cultural change, which takes a very long time, and we probably don’t have a complete set of metrics to measure success or failure yet.

Phipps: We have to be careful that this rigidity in measuring/metric development doesn’t constrain innovation, or you might miss real opportunities. Impact is measured in the user, so this can be anecdotal, but is coming from other people. Get your stakeholders to tell your senior management about how useful the activities have been.

Bielak: We’ve experienced something similar. It was only when other departments told our managers what we were doing well did our department really begin to take notice. We also knew we were making progress when Big C developed a communications framework that delineated Big C and little c activities as distinct.

Question: What are the opportunities for academic institutions in Canada to better and more consistently help make the links between what their researchers do and target audiences?

⁷ ‘Big C communications’ refers to large-scale communications activities related to broad organizational needs, like branding and consistent messaging, while ‘little c’ communications refers to more targeted approaches to specific audiences comprising of specific users of the information. Broadly Big C equates to Corporate Communications and little c to K* activities.

Phipps: Universities and colleges are a must-be player in the field. Academia can establish incentives and rewards and to ensure the discourse around KMB continues. ResearchImpact is a group of six universities working together to support community engaged scholarship and knowledge mobilization. Currently there are no rewards in tenure for non-academic research, so faculty currently don't have a need to do it, so the first step is to create demand for KMB activities.

Schaefer: After some research on how Conservation Authorities received federal science (<http://www.ec.gc.ca/scitech/default.asp?lang=En&n=BCABA058-1>), we found that engaging a third party group, like the Canadian Water Network, is a good place to start getting the academic word out.

Clements: We all know that recognition, incentives and rewards for KT/KB is a long-term issue in the university sectors. While we are making progress, it won't be solved overnight. However, KT granting initiatives through CIHR and other funders are an important step in providing recognition for researchers.

Phipps: Getting unions to understand the importance of including this in things like tenure remains a real challenge.

Question: What needs to happen in Canada for this field to really take off beyond the medical sphere and outposts like Environment Canada's S&T Liaison group in the federal government? What needs to happen internationally?

Schaefer: The federal Science and Technology secretariat needs to do more to recognize and support these activities.

Phipps: This workshop has been great; it is the perfect size. Any larger and it might be too unwieldy. Let's organize meetings like this one in a roving manner and then bring it to an international forum. It would be exciting growth, to have it at an international step, but I don't think we're ready yet. Let's focus on local issues before we divide up our focus.

Clements: We have a lot to learn particularly from other sectors. Personally, I am amazed at some of the creative KT that is going on with relatively small investments from organizations such as the International Development Research Centre (IDRC) and things like the World Health Organization's EVIPNet. I think we can learn a lot about not only what KT is happening in villages but also in governments.

Phipps: Other challenges include languages and a clear understanding of various contexts.

Bielak: At United Nations-Water the international voice of water issues is English.

Phipps: The language in which to converse may be English, but when materials are taken home and communicated to the local communities, language may be an issue in the practice.

Audience: The concern is that dialogues are quite different in international discussion; they are focused on power dynamics and practitioners must remain neutral and give a voice. The only concern I have is that during the time you are working to consolidate your national voice, we may diverge in focus. I think we should push faster. We are organizing a workshop in London with our southern partners; Latin America, Pacific, and Southern Asia.

Clements: In the international context we have to be very adaptable. I think we have to acknowledge that the situation is very different and we need to question our assumptions. Their institutions are very different; the power dynamics, rules of engagement are very different. We mustn't over simplify.

Audience: As we sit here I am receiving Twitter updates on another conference on water in Ethiopia. They are walking around with water pots and giving and taking water every time knowledge was exchanged. My question is about approvals. Every year we are legally required to produce a forest report. However the materials that are submitted from researchers get massaged and re-written so much in an extravagant approvals process that they don't waste a lot of time on the writing submission. How do we fight approval fatigue?

Schaefer: In the past we've asked our users how they get their water information. They said it was through a professional organization, so we wrote smaller more digestible pieces for inclusion into their newsletters and communications materials. This takes deliberate work and effort to get to the right constituency.

Phipps: We do need to send messages out but also have to engage the researchers in getting their messages out more broadly.

Audience: Our approvals aren't a problem because we've found that if we go to those people approving the material beforehand and 'pre-sell' they have already been explained and the benefits highlighted.

Audience: We know how this exchange should work, and it all looks good in theory, but policy successes are snowflakes; no two are alike – they have different context, players, jurisdictions, etc. How do we deal with the fact that maybe there's no formula, no blueprint?

Clements: Case studies and collected anecdotes are all different, but I don't necessarily see this as a bad thing. Things don't look the same in other places, at other times, and stories would be different anyway. Context is important.

Audience (responding to initial question): Change the idea of an annual report, re-actualize the process (response: cannot very easily, it is written in the law that it be produced).

Audience: Often, researchers work with others in different countries. In these cases who do we need to acknowledge?

Phipps: Right now researchers are limited in their ability to mobilize their research to non-academic audiences; you need to work closely with them to avoid the frustrations they feel with (Big C) communications departments. Research staff that have organized or coordinated the research or knowledge mobilization project can be very useful.

Audience: Often policy folks want someone to come in and tell them what the sum total is of the research; how the research answers a particular question. What is the role of synthesis?

Clements: Instead of training researchers, take the policy folks and assign them an academic mentor to show them how to access the research that they need for their particular area of interest. We did this through the EXTRA Program. It is a two-year program with an excellent

track record of success – the biggest limitation may be that it can only accept up to 26 fellows per year.

We have a tendency to bang our heads against the wall in frustration that the world doesn't understand how it can be better if they just listen to our solutions. I want to caution us. Coca-Cola didn't build an elaborate theoretical framework like rational choice theory when it sold its products; it pushed ideas and "potential": Coke is "the real thing." Can we work to understand our customers' needs and position our ideas as solutions? Although it is not totally a transactional process, there are 'customers' already out there.

Schaefer: We should consider what marketing does. They find out what their users need and want and they cater it to them. We need to better demonstrate the value to the user.

Audience: The variety in this meeting is wonderful. A community of practice is useful. There are lots of tools emerging, and the ability to share those tools is increasing. Let's move on from the terminology debate. Although there may be an inherently subversive nature of KT/KB activities, we must work to legitimize the process (standards, norms, etc.) without stifling the innovation process. The performance issue is a critical need. I like the snowflake analogy because it also identifies that the activity is transient, ephemeral and unique. I don't think it is exceptionally hard to demonstrate the value of the activity. You get the feedback from your 'customers,' quantify what you can, and develop some narratives. There is cyclical support for these types of activities. We must remember that it will swing back. I support the idea of creating smaller discussions at national levels before engaging an international audience.

Further questions for consideration (items were not discussed during the panel due to time constraints, but were prepared/submitted for panel consideration)

- Can you provide an example or two where Knowledge Translation and Knowledge Brokering activities have been well funded in Canada (or internationally), why they were well-funded and where the push came from (for example, enlightened management)?
- How do you shift from Big C to little c communications in the federal government given the commitment of budgets, people time, etc.?
- There are those that say the job of Knowledge Broker should not exist as a standalone, whilst acknowledging the necessity of an intermediary role. How do you resolve this discrepancy?
- Incentives for knowledge intermediaries: good idea, or bad?
- Should KB be embedded in the science or the policy shop? Or should it be completely apart...
- Does equilibrium exist between the 'interest' of Knowledge Intermediaries (KIs) and the 'optimal' levels of development in the target group? OR would a KI maximize his/her efforts to bring about the maximum (or optimal) possible development when his/her role and recognition might not be defined? Would the KI be more assertive, had s/he been a stakeholder in the process of development?

Social Networking in support of the Special Workshop on Knowledge Translation and Brokering

Synthesis by Scott Unger, Science and Technology Liaison, Environment Canada

The workshop was supported through a number of social networking initiatives intended to draw together interested people across a broad set of backgrounds and to generate more interest in the topics and understanding of the knowledge translation and brokering field.

Using Twitter prior to the workshop, messages composed by Environment Canada's Science and Technology Liaison Division were tweeted by workshop partner, ResearchImpact, via @researchimpact. We saw great success in the uptake of over 120 messages prior to the workshop, which were retweeted by colleagues, workshop participants and collaborating partners, reaching an audience of over 2000 followers. On the day of the workshop we also saw excellent engagement from participants who produced over 30 tweets to add their observations and additional context to the ongoing conversation about knowledge translation and brokering.

Efforts at using Twitter to create a community and foster conversation were supported through blog postings created in collaboration between Science and Technology Liaison and ResearchImpact, which discussed the workshop in the weeks prior, as well as postings that came out after the workshop.

ResearchImpact provided space on their O3 Collaboration network to create a website (<http://researchimpact.othree.ca/ktkb2010>) to support the workshop and information transfer to participants and the broader community. Content was created and administered for this website by workshop partners and was broadcast to participants who engaged in discussion on the site as well as gaining access to valuable documents in support of discussions that took place at the workshop.

Through these efforts using social networking tools, a greater deal of interest in the knowledge translation and brokering field has been generated, drawing together a more diverse community of practitioners, and providing forum for conversations on best practices among the participants in this community of practice.

Special Workshop on Knowledge Translation and Brokering Observer's Report

Dr. Andrew Campbell, Managing Director, Triple Helix Consulting, and former Executive Director, Land and Water Australia, was the invited Keynote Speaker for the Special Workshop on Knowledge Translation and Brokering. As both a speaker and participant, Andrew Campbell accepted a request from the workshop organizers to provide an Observer's Report as part of the workshop closing. The key points from his report are indicated below.

Overwhelming impression of the workshop was very positive.

The cross-sectional nature of the participants in the workshop has been an enormous strength and there is a lot to be gained through ongoing networking and communities of practice across the mix of sectors and organizations and institutions in the room.

There are lots of tools emerging and there is an enormous benefit through sharing those and we have an unprecedented ability to do so.

It is really important to legitimize the KT/KB activity within government and other institutions without stifling innovation. You do want people who can straddle boundaries and they probably won't be people who come out of a cookie cutter mold.

It isn't hard to show how this work gets you a better return on investments from research and how research outputs can be better applied and more useful for the end users. Just get the feedback from the customers who will say as a result of that activity, this is much more useful for us.

Narratives from the real world about how this has helped us are important, particularly if they go directly to the people higher up. They can be very powerful.

Asking the right questions from the outset and gathering baseline data any way you can is very important.

Currently science policy development is a bit "ugly" but it comes in cycles and the pendulum will eventually swing back if we are patient.

Hope that this sows some seeds and sparks innovation in organizations.

Appendix I

SPECIAL WORKSHOP ON KNOWLEDGE TRANSLATION AND BROKERING AGENDA

0800 Registration and Continental Breakfast

0845 Welcome and Introduction

Alex Bielak, Senior Advisor, United Nations-Water and Senior Research Fellow and Knowledge Broker, United Nations University Institute for Water, Environment & Health (Moderator)

0900 Keynote Address: The Getting of Knowledge

Andrew Campbell, Managing Director, Triple Helix Consulting and former Executive Director, Land & Water Australia

1000 Refreshment Break

1030 Knowledge Café

Introduction: Javier Gracia-Garza, Director General, Science and Technology Strategies Directorate, Environment Canada

Facilitator: Eric Gagné, Director, Science Policy Division, Environment Canada

1200 Lunch

1300 Skill and Capacity Building Sessions

- ***Making Sense of Knowledge Mobilization and What it Can Do for Me***
David Phipps, York University; Melanie Barwick, The Hospital for Sick Children; David Yetman, Canadian Institute for Advanced Research
- ***Effective Written Communication to Targeted Audiences***
Leah Brannen, Environment Canada
- ***Finding the Right Tools: Putting Knowledge Translation and Brokering into Action***
Louise Shaxson, Delta Partnership, UK

1500 Refreshment Break

1530 KT/KB Expert Panel

David Phipps, Director, Research Services & Knowledge Exchange, York University
Karl Schaefer, Senior Advisor, Water Science & Technology Directorate, Environment Canada
David Clements, Director, Corporate Planning and Accountability, Canadian Institute for Health Information

Moderated by Alex Bielak, United Nations-Water and United Nations University Institute for Water, Environment & Health

1700 Workshop Closing

Andrew Campbell, Triple Helix Consulting
Alex Bielak, United Nations-Water and United Nations University Institute for Water, Environment & Health

Appendix II

SPECIAL WORKSHOP ON KNOWLEDGE TRANSLATION AND BROKERING PARTNERS

Event Host / Hôte de l'événement

The Canadian Science Policy Conference

The Canadian Science Policy Conference (CSPC) provides a unique opportunity for various science policy stakeholders to get together at the national level to network and discuss the present and the future of science policy in Canada, a future based on a strong and dynamic science policy community that projects an innovative Canada for all Canadians.

www.cspc2010.ca



Hosting Partners / Partenaires d'accueil

Canadian Water Network

The Canadian Water Network (CWN) was established in 2001 to connect Canadian and international water researchers with decision-makers engaged in priority water-management issues. CWN plays a vital role in ensuring that Canada benefits from its investments in research to manage our water resources more effectively and becomes a world leader in water management. CWN applies scientific excellence, communications and network activities within three complementary programs of research — protecting watersheds and ecosystems, protecting public health, and ensuring sustainable water infrastructure.

www.cwn-rce.ca



Environment Canada

Environment Canada's Science and Technology (S&T) Liaison Division is a knowledge translation and brokering unit. The Division engages in building, strengthening and expanding the linkages between Environment Canada scientists and the science-user, policy and decision-making communities across Canada and internationally. S&T Liaison develops and implements a suite of specialized S&T tools, products and processes that recognize different users prefer to receive science information in different ways.

www.ec.gc.ca/scitech



Environment
Canada

Environnement
Canada

ResearchImpact

ResearchImpact is Canada's knowledge mobilization network that connects university researchers with community and government organizations to support the use of research in decision-making about social programming, public policy, and professional practice. With the belief that knowledge has a greater impact when it is shared and implemented, ResearchImpact supports the active, two-way exchange of information and expertise between knowledge creators and knowledge users.



www.researchimpact.ca

Collaborating Partners / Partenaires collaborateurs

British High Commission Ottawa

The British High Commission is the principal United Kingdom Diplomatic post in Canada and is responsible for all aspects of the bilateral relationship with Canada. The United Kingdom and Canada work together on many bilateral and international initiatives including: science and innovation, social policy, and defence. Recognizing that collaboration in science and innovation is vital for meeting policy challenges on a global scale, the Science and Innovation Network was created. The Network in Canada fosters strong synergies between UK and Canadian science in all areas of strategic importance to the advancement of technology development and related policy making.



British
High Commission
Ottawa

www.ukincanada.fco.gov.uk

Canadian Health Services Research Foundation

For more than a decade, the Canadian Health Services Research Foundation (CHSRF) has brought together researchers and decision-makers to help them understand each other's goals, forge new partnerships and influence each other's work. CHSRF's goal is to support the creation and application of knowledge that contributes to timely, appropriate and high-quality services that improve the health of all Canadians.



www.chsrf.ca

York University

York University is Canada's third largest university, with a unique, interdisciplinary approach that encourages students to study issues from all angles, and enables researchers to spearhead innovation by pushing beyond traditional boundaries to develop real world solutions to real world problems. York's research tackles global challenges in areas such as health, environmental sustainability, science, ethics and social justice, international studies, and culture and entertainment.



www.yorku.ca

Appendix III

SPECIAL WORKSHOP ON KNOWLEDGE TRANSLATION AND BROKERING SPEAKER AND FACILITATOR BIOGRAPHIES

MELANIE BARWICK, Ph.D., C.Psych.

Melanie Barwick is a Registered Psychologist and Associate Scientist at The Hospital for Sick Children in Toronto Canada. Situated both within the Sickkids' Learning and Research Institutes, she is Scientific Director of Knowledge Translation for the Child Health Evaluative Sciences program and has a program of research in implementation science and knowledge translation (www.melaniebarwick.com). She holds appointments as Associate Professor in Psychiatry and Dalla Lana School of Public Health at the University of Toronto. She also leads the province of Ontario's outcome measurement data initiative for children's mental health and provides training in knowledge translation internationally through the Scientist Knowledge Translation Training™ (for researchers) and the Knowledge Translation Professional Certificate™ (for KT / KM practitioners) courses (<http://bit.ly/dc2L1R>). She consults to government and service providers in the child and youth mental health sector and is a regular contributor to *Weekly Check Up* on the CBC Health website (<http://bit.ly/dexU2i>).

ALEX BIELAK

Dr. Alex Bielak has recently taken a leave of absence from Environment Canada to become Senior Fellow and Knowledge Broker with the United Nations University's Institute for Water, Environment and Health (UNU-INWEH) freshwater programme. He is also serving as Senior Advisor to the Chair of UN-Water. Until very recently Alex was Environment Canada's first-ever Director, Science and Technology Liaison leading a small dynamic team with a mission of communicating science knowledge to targeted audiences and linking science with policy development. In that role he was a key architect of Environment Canada's Publishing Policy, led the development of acclaimed science-policy linking initiatives and tools, and was at the forefront of promoting knowledge translation and brokering in the Canadian federal government.

Prior to that Alex spent over a year as A/Director General, Science and Technology Strategies Directorate, where he set up the Directorate and led the team developing Environment Canada's new Science Plan. A NATO Scholar, he previously held senior positions with Canada's National Water Research Institute, NGOs, and other federal and provincial government departments. Alex is a dynamic and widely published speaker and an alumnus of the Banff Centre's inaugural Science Communications Residency. His expertise is sought in Canada and internationally as an authority on science communications, and knowledge translation and brokering.

Alex holds a PhD in Freshwater Biology from the University of Waterloo and has served on numerous Boards and Committees. Recent recognition of his professional and volunteer activities includes a University of Waterloo Science Faculty "Distinguished Alumni Award" on the occasion of the University of Waterloo's 50th Anniversary.

LEAH BRANNEN

Dr. Leah Brannen has been a scientific editor and writer for 30 years. She has taught English writing skills in Great Britain and Canada to students in science, social science and humanities. For the last 10 years she has worked full-time in the writing/editing component of knowledge translation and brokering. She holds a Ph.D. in English from the University of Saskatchewan and a Masters in Information Science from the University of Western Ontario. Her latest

publication, somewhat incongruously, is titled “Oh My Aching Back: A Guide to Stretching For Gardeners.”

ANDREW CAMPBELL

Andrew Campbell is the Managing Director of Triple Helix Consulting (www.triplehelix.com.au), an independent Australian consultancy that works in the interstices and intersections between sustainability, knowledge and public policy. Recent work includes the drafting of a National Water Knowledge and Research Strategy for the Council of Australian Governments (comprising the Prime Minister and the Premiers/First Ministers of all States and Territories), leading an Operational Review of the National Climate Change Adaptation Research Facility, reviewing the research strategy for the Challenge Program on Water and Food for the World Bank’s Collaborative Group for International Agricultural Research (CGIAR), and developing policy propositions for sustainable food systems in a carbon-, energy-, water- and nutrient-constrained world (for the Australian Conservation Foundation).

Andrew Campbell was formerly the Executive Director (CEO) of Land & Water Australia (www.lwa.gov.au) from 1999-2006. He led a transformation of this Australian Government research funding agency from a traditional focus on contracting research and publishing research outputs, to much more pro-active engagement in understanding the knowledge needs of target audiences and brokering research and other learning processes to meet those knowledge needs. With no increase in its core budget appropriation, the annual research investment of the corporation doubled during this period through a wide range of collaborations, and the relative ‘communication’ effort quadrupled to more than 20% of total expenditure. Insights from this experience were documented in *The Getting of Knowledge* (<http://lwa.gov.au/products/pk071243>), one of very few published ‘how to’ guides on the practice of investing in and managing applied research.

Prior to leading Land & Water Australia, Andrew was a Senior Executive in the Australian Government’s environment portfolio, after returning from four years post-graduate study and research in The Netherlands and southern France. In the late 1980s, Andrew was instrumental in the development of the community-based Landcare movement in Australia. Originally a forester, with degrees from the University of Melbourne and the Victorian School of Forestry at Creswick, Andrew moved into rural sociology and knowledge management with a MSc in Management of Agricultural Knowledge Systems from Wageningen Agricultural University in The Netherlands. He is a Fellow of the Australian Institute of Company Directors, Chair of the Terrestrial Ecosystem Research Network (<http://www.tern.org.au/>), a Director of the Cooperative Research Centre for Future Farm Industries (<http://www.futurefarmonline.com.au/>) and on the Editorial Board of *ECOS*, the CSIRO magazine of sustainability science (<http://www.ecosmagazine.com/>).

Andrew is still involved with his fifth-generation family farm in south-eastern Australia, which combines prime lamb production with farm forestry (finally green again after more than a decade of drought). He manages the farm (with the help of a neighbour) from 1000km away, from his home office on a bush block at Queanbeyan, near Canberra, where he lives with his partner Kate, two children and a menagerie of animals.

DAVID CLEMENTS

David Clements is recognized internationally as expert in issues related to the communication and use of research and knowledge for healthcare policy and management. He has worked in healthcare since 1998, and is currently Director of Corporate Planning and Accountability for the Canadian Institute for Health Information. He has also worked for a number of other national

organizations, including on the executive teams of the Canadian Coordinating Office for Health Technology Assessment and the Canadian Health Services Research Foundation (where he held responsibility for policy, planning, communications and knowledge exchange). Mr. Clements has worked as a journalist and as a communications and media relations advisor to senior staff at the British Columbia Ministry of Health. He is currently pursuing a doctorate in innovation studies at the Vrije Universiteit Amsterdam. He holds a master of public administration from the School of Policy Studies at Queen's University with a concentration in health policy, and an undergraduate degree from the University of Victoria.

ERIC GAGNÉ

Eric Gagné is currently Director of Science Policy at Environment Canada, where he oversees policy development for the department's science. He brings with him a strong commitment to science for the public good and solid experience in policy development. He is currently implementing a series of measures to gauge the effectiveness of the scientific work known as "Related Scientific Activities" or RSA at Environment Canada. He led a team of representatives from eight federal departments in developing these measures for this non-R&D federal science, with a particular focus on regulatory and statutory data-gathering. The "RSA Toolbox" will demonstrate the importance of this critical scientific work, which is often overlooked in favour of R&D.

Eric is a trained facilitator, and is an expert in leading organizations through change. He holds an undergraduate degree from Concordia and a Masters degree in environmental science from Louisiana State University.

JAVIER GRACIA-GARZA

Dr. Gracia-Garza is currently the Director General, Science and Technology (S&T) Strategies at Environment Canada where he is responsible for providing advice and recommendations to the Minister of the Environment, Deputy Ministers and Assistant Deputy Ministers of Environment Canada on S&T issues of strategic concern to the Department and the federal S&T community. He also ensures strong links between the science and policy communities within and outside the Department; provides support to the S&T Branch by communicating and promoting the results of its S&T efforts; provides expert advice on current and emerging environmental technological innovations and, oversees the management of environmental arm-length organizations.

Previously, Dr. Gracia-Garza was the Senior Advisor on domestic S&T policy issues to the National Science Advisor to the Government of Canada (Privy Council Office/Industry Canada); Policy Director on the Ontario Federal Council (OFC) Secretariat and later Regional Director, Strategic Policy and Intergovernmental Affairs, Ontario and Nunavut Region with Health Canada. He started his career in the Federal government as a scientist with Agriculture and Agri-Food Canada (AAFC).

DAVID PHIPPS, Ph.D., MBA

Dr. Phipps received his Ph.D. in Immunology from Queen's University (Kingston, Ontario) and undertook post-doctoral studies in HIV research at the University Health Network (Toronto). After leaving the lab he built a career managing academic research holding successively senior positions at the University of Toronto Innovations Foundation (Manager of Biotechnology and Life Sciences), Canadian Arthritis Network (Director of Business Development) and Canadian Institutes of Health Research (Director of Partnerships). In 2001 Dr. Phipps completed his MBA from the Rotman School of Management (University of Toronto). Dr. Phipps is the Director,

Research Services & Knowledge Exchange at York University where he manages all research grants and contracts including and knowledge and technology transfer.

Dr. Phipps authored the first grant offered by the tri-council Intellectual Property Mobilization program funding knowledge mobilization in partnership with the University of Victoria to build the infrastructure for a KM network. He also authored York's Knowledge Impact in Society grant piloting local KM operations. As Principal Investigator on these 2 grants funding York's KM activities Dr. Phipps is leading York's KM Unit that provides services to researchers, community organizations and government agencies who wish to use policy and practice related research to inform public policy and social programming. Dr. Phipps has also been awarded a SSHRC grant to evaluate the utility of research summaries to communicate the outcomes of social sciences and humanities research to research users.

KARL SCHAEFER

Karl Schaefer has spent several years as Head of Strategic Science-Policy with Environment Canada's Science & Technology Liaison Division in Burlington, Ontario. In this capacity, his work served to strengthen the science-policy link. He led in bringing Environment Canada's environmental research to a multi-sector policy and program community, and explored ways in which the science needs of this community better inform the development of research priorities. Recent published work focuses on the science seeking behaviour of conservation authorities in Ontario. He has a keen interest in developing better measures to gauge research impact. Karl was previously an Environmental Economist and Binational Programs Coordinator with the Great Lakes Corporate Affairs Office of Environment Canada in Ontario Region, where he worked on Great Lakes issues. He is a past member of the International Joint Commission's Council of Great Lakes Research Managers. Karl has an MA from the University of Waterloo, in water resources management and environmental economics. He is currently on assignment as Senior Advisor to the Director General, Water Science and Technology Directorate of Environment Canada's Science & Technology Branch.

LOUISE SHAXSON

Louise Shaxson is a director of the international management consultancy company Delta Partnership. Based in London, her work focuses on improving public sector policy and strategy, developing tools to better support evidence-informed policy making. Following several years as a natural resource economist on projects in Africa and Latin America she moved into research management and became particularly interested in how people, teams and organisations can be cost-effectively arranged to deliver the evidence needed for interdisciplinary research. This led to work in Whitehall on how to construct a robust evidence base for policy; and how government departments can better scope, assemble and interpret evidence for increasingly interdependent policy issues. Louise has conducted strategic reviews of the evidence landscape for key policy issues, advised how to change team structure and operations to introduce a knowledge brokering approach to research/policy links, and commented on high-level organizational changes which could improve the research/policy interface. She is currently advising the DfID-funded SPARC programme in Nigeria on how to implement an evidence-informed approach to policymaking in five states.

DAVID YETMAN

David Yetman is Director, Programs and Knowledge Mobilization with the Canadian Institute for Advanced Research in Toronto, Ontario. He has held previous management positions at Memorial University of Newfoundland in knowledge mobilization, and several not for profit organizations in Newfoundland and Labrador in regional economic development.

David is currently working on his doctorate in Community Health and Humanities at Memorial University of Newfoundland specializing in public engagement and knowledge mobilization. He holds a graduate degree in genetics for which he received an NSERC PGS-A graduate scholarship to study genetics in Switzerland. He also holds a Bachelor of Science (Hons) from Memorial University of Newfoundland and a Bachelor of Arts in Psychology from Carleton University. He has a Masters Diploma in Project Management from the Schulich School of Business, York University.

David is a recipient of numerous awards, including most recently, the President's Award for Exemplary Service from Memorial University of Newfoundland in 2009, for his role in sharing the knowledge of Memorial researchers with community users.

Appendix IV

SPECIAL WORKSHOP ON KNOWLEDGE TRANSLATION AND BROKERING PARTICIPATING ORGANIZATIONS

A

Agriculture and Agri-Food Canada
Alberta Innovates – Health Solutions
ArcticNet
Atlantic Provinces Council on the Sciences

C

Canadian Crossroads International
Canadian Institute for Advanced
Research
Canadian Institute for Health
Information
Canadian Institutes of Health
Research
Canadian International
Development Agency
Canadian Space Agency
Canadian Water Network
Cape Breton University
Cybera Inc.

D

Defence Research and
Development Canada
Delta Partnership
Department for International
Development

E

Environment Canada

F

Fisheries and Oceans Canada
Fonds québécois de la recherche
sur la société et la culture
Foreign Affairs and International
Trade

G

Genome Canada
Génome Québec
GEOIDE (Geomatics for Informed
Decisions) Network
GRIL (Groupe de recherche
interuniversitaire en limnologie et en
environnement aquatique)

GRIMN-CSSS (Groupe de
recherche interdisciplinaire sur
les maladies neuromusculaires
Centre de santé et de services
sociaux) de Jonquière

H

Health Canada
Hospital for Sick Children
Human Resources and Skills
Development Canada

I

Indian and Northern Affairs Canada
Industry Canada
Institut national de santé publique
du Québec
International Development Research Centre
IRICoR (Institute for Research in
Immunology and Cancer –
Commercialization of Research) Center of
Excellence for Therapeutic Discovery

M

McGill University
McMaster University
Ministry of Education

N

National Research Council
Natural Resources Canada
NIVA Inc

O

Ontario Ministry of Agriculture, Food and
Rural Affairs

Providence Heart + Lung Institute
Public Health Agency of Canada

Q

Queen's University

R

ResearchImpact

Robarts Research Institute

T

Triple Helix

U

Université de Montréal

United Nations University – Institute for
Water, Environment and Health

Université de Sherbrooke

Université du Québec à Trois-
Rivières

University of British Columbia

University of Guelph

University of Northern British
Columbia

University of Oxford

University of Queensland

University of Saskatchewan

University of Toronto

University of Waterloo

University of Western Ontario

V

VISTA Science & Technology Inc.

Y

York University

Appendix V

**SPECIAL WORKSHOP ON KNOWLEDGE TRANSLATION AND BROKERING
WORKSHOP EVALUATION SUMMARY**

QUESTION	PERCENT OF PARTICIPANTS
Participant Response Rate	63
Interested to participate in future, similar events	86
Workshop Overall	
Excellent	27
Very Good	53
Good	11
Fair	0
Poor	0
Workshop Format	
Excellent	22
Very Good	53
Good	22
Fair	0.02
Poor	0
Workshop Content	
Excellent	24
Very Good	42
Good	27
Fair	0
Poor	0
Knowledge Café	
Excellent	37
Very Good	37
Good	19
Fair	0.02
Poor	0
Used workshop networking tools prior to workshop	
	44%
Now interested to use workshop networking tools	
	73%