



#SPESciAdvice

A Science Advice Workshop for the Next Generation

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A report by Science & Policy Exchange in collaboration with the Canadian Commission for UNESCO (CCUNESCO).

Fonds de recherche
du Québec

NRC · CNRC



INTRODUCTION

Training the next generation of scientists and researchers is very important. We believe that research excellence requires understanding the impact of research on the community, in particular, the impact of research on policy. This workshop provided a selected pool of students and early career researchers (ECRs) with experience in government advice and interaction with key stakeholders at the government. The workshop was based on fictionalized case studies from the International Network for Government Science Advice (INGSA) of real-world scenarios. During the exercise, participants received guidance from experienced science advisory professionals during both their preparation and delivery of concise and relevant science advice.

One of the main goals of [Science & Policy Exchange](#) (SPE) is to foster the student voice in evidence-informed decision making. This workshop allowed us to share our commitment to evidence-informed science policy. It also provided hands-on experience, allowing the participants to understand the stakes and importance of policy while gaining insight into how evidence-informed science policy is done. The participants gained new skills as well as new outlooks on their own research, and research in general, from the policy perspective.

This activity provided graduate students and young researchers with the initial building blocks for understanding the challenges of delivering science advice in an effective manner to support evidence-informed policy decisions. In addition, it familiarized the Montreal student community with INGSA. The INGSA 4th International Conference on Science Advice to Government will be held in Montréal, Quebec, September 15-17, 2020 at Palais des congrès de Montréal.

Science and Policy Exchange is proud to present this report summarizing the experience from the participants' point of view and redacted by the participants. This document will be largely distributed across the SPE network, particularly on our very active social media platforms. We will also communicate the results of this workshop at conferences, such as CSPC and AAAS.

I: The Workshop

As highlighted by the facilitators of the workshop, when working in science policy and science advice, one's role is to primarily advise ministries on scientific matters being discussed for developing government strategy or law. These discussions are also necessary when urgent decisions have to be taken following a crisis. A science policy advisor requires qualities such as good networking skills, patience and resilience, knowing how to summarize and write clearly and concisely. In addition, understanding the decision-making environment and what can interfere with it, such as emotions, lobbies and motivations is crucial, though it may not be obvious at first for the ECRs entering the science policy world.

The SPE Science Advice workshop was an opportunity for the participants to discover science policy and the importance of communication skills in this field. The case studies were thoroughly appreciated and realized. In addition, it was a great networking opportunity considering the

different fields and career stages the participants came from. The participants were eager to meet one another and changed teams throughout the day to connect with all the attendees. The workshop was an enjoyable experience and all participants walked away with a better knowledge and interest in science policy. This format of workshops raises awareness and increases capacity building for the next generation of scientists and ECRs.

II: Analysis and problem solving: From Academic Researcher to Science Advisor

During the workshop, participants engaged in case studies simulating three stages of science advice: analysis, public outreach and advocacy. Each of these stages requires a unique set of skills.

As academic researchers, most ECRs are very familiar with reading and analyzing papers in order to extract and sort relevant information. The SPE science advice workshop offered the participants a rare opportunity to translate their analytical skills to topics outside of their realm of expertise - and realized how empowering that experience can be. In many regards, science and policy analyses are similar. The goal is to solve a problem. It starts by understanding the complexity of the issue, and then offering solutions based on the best available data. However, in policy, the weight distribution of information can be shaped by the different opinions of various stakeholders. The participants learned the importance of listening and taking into account the various perspectives of stakeholders, with many having contrasting opinions.

Advocating for policies requires strong communication of the research and policy proposals to the public. Condensing large amounts of information into a brief presentation was well illustrated by a role-play interview with a journalist during the workshop. Researchers are accustomed to presenting their research (conferences, lectures or poster presentations), teaching or training more junior trainees. However, only a subset of them have previous science outreach experience and have attempted to communicate complex ideas to an audience of non-experts. While traditional communication opportunities may equip a researcher with lecturing communication skills, public outreach and media communication, especially in the form of an interview, is not a universal skill amongst academics. This workshop provided the participants a chance to hone their science communication skills.

Science outreach seeks to avoid and correct miscommunication and misunderstandings. Different stakeholders may come from diverse viewpoints, lifestyles, backgrounds, and may even carry unique misconceptions about the science at hand. When acting as a science advisor you must tailor your work with these differences in mind, as well as presenting yourself in accordance with the situation to ensure that positive relationships can develop.

Finally, the last step in science advice is the advocacy stage. During the workshop, this was portrayed by a role-play interview with a fictitious prime minister. Participants had a few minutes to advocate for their policies in this interview format. This format was foreign to most and therefore forced participants out of their comfort zone while allowing them to gain a new skill. This interview format more closely resembled a “sales pitch” meeting, rather than most traditional

communication formats in academia. There was a short amount of time to clearly, succinctly and persuasively convince the target audience to adopt the policies presented. A common issue among participants was to allocate too much time on explaining the details of the policy proposals instead of explaining its effect on stakeholders. This again shows the types of information that is valued by ECRs and policy makers can differ, but with further experience we can learn to navigate through these issues.

Participants of the *#SPESciAdvice: A science advice workshop for the next generation* found that they improved their ability to sort information and communication skills outside of their field of expertise. While there are clear distinctions between academic research and policy advocacy, many of the skills honed by ECRs in their traditional roles can be transitioned to the policy world. This workshop offered a unique experience to participants to learn how to transfer those skills.

III: Missing useful skills from academic training

This workshop highlighted that academia must emphasize effective communication skills in conjunction with critical analysis techniques. The advantage of researchers in academia taking up the mantle of science advocacy and advice is an analytical mindset that allows for the promotion of evidence-based and peer-reviewed science.

Academia is structured at the undergraduate level for memorization of theory. Lab work and any semblance of experimentation are configured for consistent results obtained from controlled environments and already known from well-tested hypotheses. Academia does introduce the concept that all of its theories have been, and are, tested within set parameters. In terms of this translation to actual policy, this acknowledgement allows for identification of similar parameters and unique factors that have the potential to interfere with translation. At a graduate level, robustness of work is the standard, since it provides credibility to research. Many at this level do learn and apply valuable communication skills as they participate in seminars, conferences, and/or teach. These skills would be further refined with an added emphasis on communication to different communities of the general public.

To transition from researcher in academia to science policy advisor in the public service, there must be an acknowledgement toward the responsibility of conscientious science communication. A science advisor's role is to promote evidence-based policy: a collaboration between research application and the public's interest for the betterment of society. The role requires critical analysis skills, honed in graduate research, and to be well-informed on the newest advancements in a range of scientific disciplines. An advisor must also be aware of the general public's perception of scientific advances to properly navigate through misinformation and deliver sound advice on the steps forward.

These skills can be strengthened by improving knowledge of public policy and government administration. Understanding how to frame arguments and debates in a political setting is an invaluable skill, which is needed to improve policy-making by ensuring the science is sound.

CONCLUSION

In summary, the workshop took the participants outside of academia and demonstrated how science can benefit society. It built on the analytical skills scientists have developed and introduced them to other important areas of the decision making process. The presentations and exercises provided insight into the life of a science advisor and helped develop the skills required. The panelists focused on skills, such as effective communication and evidence-based decision making that are crucial not only in the science policy world but also in other scientific fields.

The event was a great opportunity to learn about science advice and practice it, but also to make valuable contacts. The exercises and discussions were a chance to exchange with other participants from various fields and backgrounds. Ultimately, both connections and skill development are paramount in making better use of science to improve our society.

ACKNOWLEDGEMENTS

The authors thank Sam Garnett, Samantha Bovaird, Arthi Ramachandran, and Tina Grusso for critical reading of the report.

APPENDIX

I: About the participants

SPE recognizes and values diversity and equity and made special efforts to ensure the inclusion of diverse and underrepresented populations, including those from underrepresented groups and the four designated groups: women, Indigenous peoples, persons with disabilities, and members of visible minorities. Our application process allowed for non-mandatory self-identification, the selection committee then took into account the self-identification data to fairly represent all minorities that were present in the pool of applicants.

Participants were selected amongst the pool of applicants who did our open online questionnaire. The selection process took into account research experience, policy experience or interest, fields of study, institution, and diversity criteria. The SPE selection committee valued diversity in all the different criteria and registered 40 participants of which 65% were female, ages varied between 23 to 46 years old, with 25% identifying as members of visible minorities. Participants were selected amongst graduate students (masters or PhD) and postdocs, as well as early career researchers. They were part of 10 different institutions in Québec and Ontario and study in over 25 different fields.

#SPESciAdvice Participants

Alia-Sarah Wouako	Justin Marleau
Alizée Gouronnec	Lee Hamilton
Anna Levinsson	Lola Welsch
Ben Gold	Martha Lee
Brandon Shokoples	Mélanie Le Berre
Brooke Struck	Mireille Gélinas
Charlotte Carrier-Belleau	Mitaali Taskar
Chloe Guinaudie	Nevicia Case
Cintia Blanco	Olga Koppel
Dominique Roche	Patrizio ntici
Dorelle Hinton	Pauline Herst
Emille Boulot	Peter Soroye
Federico Alzamora	Philip Bouvrette
J. Benjamin Kacerovsky	Polina Ash
Jesse Hudson	Rackeb Tesfaye
Jonathan Lai	Valérie Langevin

#SPESciAdvice Organizers

Tina Gruosso	Co-President
Marie Franquin	Co-President
Shawn McGuirk	Internal Director
Arthi Ramachandran	Treasurer
Sam Garnett	VP External Relations
Palina Piankova	VP Member Relations
Samantha Bovaird	VP Marketing
Jacqueline Ha	VP Communications
Anh-Khoi Trinh	Volunteer
Suzanne van der Veldt	Volunteer
Laura Lyon	Volunteer
Connie Shen	Volunteer

II: The science advice case studies

After lunch the participants were divided into groups and worked on the fictionalized case studies. Each group had to perform their case solutions in front of the group, with them offering feedback in a friendly and constructive atmosphere in return. The first case covered arguments for and against permitting gas extraction in Canada. The second case was hypothetical: attendees attempted to advise the government on managing the fear and reactions of the population following alternative science predictions of a devastating earthquake. You can find this case, called “Terramotia” [here](#).

III: Our expert facilitators

The experts present on the day of the workshop represent unique roles and career paths in the science policy world. The workshop was moderated by Rachael Maxwell, who has worked in several non-profit organizations adjacent to government science policy, as well as MITACs, and now Genome Canada. Both of the latter organizations work directly with government and industry to help leverage Canada’s science infrastructure, research, and personnel to serve our society.

Our workshop facilitators, Doctors Nicole Arbour & Rees Kassen are both scientists with different connections to the policy world and science advice. Dr. Arbour works within the federal government for the National Research Council as a Senior International Advisor, putting her in direct position of providing science policy and science diplomacy advice. Dr. Kassen is a professor at the University of Ottawa studying molecular evolution, but is also a member of the Global Young Academy and several other science policy and communication initiatives.

Finally, Julie Dirwimmer and Brite Pauchet of the FRQ’s Office of the Chief Science Advisor were also present to provide a background on science advice and guidance to the participants during the workshop. Julie is a senior advisor to Quebec’s Chief Scientist Dr. Remi Quirion and has ample experience in the world of science advice. Brite is an experienced science communicator

and the senior advisor for INGSA and International Affairs for the FRQ's Office of the Chief Science Advisor.

Together, our panelists' diverse backgrounds and current work showed participants that there are many avenues of involvement in science advice, within federal and provincial governments, academia, and external organizations. The presence of three women on the panel was a prime demonstration of the fact that the science advice career path is not solely possible for men, and can even be strengthened by diversity.