



Top tips for effective science communication

Lessons from our
2022/2023 webinars



**Natural Hazards
Commission**
Toka Tū Ake



Science is most impactful when it's useful and accessible to decision-makers. These tips will help you, as researchers, develop your own principles for enhancing your science communication practice.

At the Natural Hazards Commission Toka Tū Ake, we invest in research and modelling that increases Aotearoa New Zealand's resilience to natural hazards and ensure this knowledge is shared with New Zealanders. As part of that investment, in 2022 and 2023 our Research team led six science communications webinars to help researchers develop their skills when providing advice to decision-makers. After each webinar, we developed a set of 'top tips' and resources based on the presentation and discussion that followed. The 12 most useful tips are below.





1. Build strong relationships

- Build and strengthen relationships in quiet times. Build relationships early with media, journalists, policy writers, and decision-makers. Social media (X/ Twitter and LinkedIn, in particular) can be a great tool to identify people you'd like to work with and foster connections.
- Work to maintain relationships. Be helpful. Contribute when broad feedback is being sought.
- Be understanding and trust that any mistakes may have happened by accident before assuming that your advice has been 'deliberately misreported'.
- Relationships benefit from connections based on values, so ensure you express these when you communicate.

2. Widen connections

- Identify individuals who can help connect you to the people you want to engage with.
- Look for people who span the boundaries between different spaces for example science and policy, to forge connections and help translate your science.
- Consider new and diverse channels and opportunities. For example, communicate through social media or the media itself as a pathway to people you haven't reached before.

3. Actively listen

- Use and encourage active listening when communicating your research. Carefully consider any feedback you receive as it can sharpen or reshape your research approach. It also helps to build relevancy with your audience and create trust and credibility.
- Listening to stories is as important as telling stories. Ask to hear stories.
- Listen to and consider the wider environment your advice or communication sits in and what others are saying about the same subject.



4. Understand differences

- Maintain an understanding of national and local policy, policy cycles, timeframes, and competing demands. Where does your research fit? What is it most suitable for?
- Understand that timing and planning is everything for many audiences, such as media or policy.
- Craft and deliver messages with others' communication and decision needs in mind.
- Be patient with the policy iterations that often occur. Staff turnover can be high, so you may need to repeat advice for multiple advisors.
- Develop knowledge of Te Tiriti and what it means for natural hazards research. Reflect on the different ways Māori and non-Māori view the past, present and future, and their relationship with the natural world.
- Relationships may already exist in your research space or with your organisation that you need to consider.

5. Respect values and worldviews

- Recognise the value and importance of story in different cultures. Respect the stories shared with you.
- Recognise that values differ between cultures. Connections within the natural world are core to mātauranga Māori.
- Understand the whakapapa of people and knowledge. Be conscious and respectful of the history of whenua, hapū, and motu.

6. Identify and use resources

- Strategically manage your resources, processes, and time. Use the support of your organisation's communications team, particularly for engaging with the media.
- Identify your team of research and professional experts and collaborators and use technical societies to help build connections.
- Identify potential mentors to guide you in your communication skill development, or to support and facilitate relationship-building within or between organisations.
- Work with your organisation and colleagues and plan your approach before you start engaging. Consider cold calling as well as engaging with established connections.



7. Develop storytelling skills

- Storytelling is a great way to share your passion for science and move beyond the numbers. Find opportunities to practise how you tell stories and bring those skills into your science to create impact and leave a memorable impression.
- Craft your hook and develop a narrative arc to successfully pitch your story. Be specific and consistent with the language and terminology you use.
- Data visualisation is also a form of storytelling: keep it simple, reduce the clutter.
- Be mindful of the different platforms you are communicating through. Adapt your message. Test any visuals for accessibility, readability and format.

8. Be yourself

- Think about how you like to tell a story and transfer those skills into your science advice and communication.
- Be passionate - it will make you more engaging. Use your emotions to craft stories that spark connection.
- Bring your personal experiences into your stories to help build authentic connection.
- Talk clearly and transparently and avoid jargon.

9. Identify key components of your message

- When being questioned, practise controlling the message. Use bridging techniques to help with difficult or off-topic questions.
- Repeat your message, and answer with your key messages wherever possible. Anticipate and manage potential sensationalism or misinterpretation.
- Identify what can be 'ring-fenced' in your advice, and what can be compromised. Be clear about constraints, assumptions and opportunities in the science you are communicating.



10. It's ok to build your public profile slowly

- Public profiles need to start somewhere, and it's ok to start small. Focus on the method of communication you're most comfortable with.
- Break down your communication or science story into bite-sized components.
- Focus on one platform first.
- Your public face can be active through social media or more passive through websites and blogs.

11. It's normal to be nervous

- It's ok to feel uncomfortable when working with media, or when providing advice to policy or decision-makers. When engaging, find the interface you are most comfortable with.
- Embrace live media interviews. Being uncomfortable or anxious is not unusual. Ask for questions ahead of time and rehearse. Live interviews are less likely to be framed out of context.
- Don't let fear of getting it wrong stop you – you know your research better than anyone else. Be transparent about what you do and don't know and avoid being vague.
- Practise lots! Prioritise building your confidence and skills – take a deep breath and get out there.
- Showing the process of science as well as the results can help create more engaging stories, as well as move you into a more comfortable communication space.

12. Take time to reflect

- Communication and engagement take time, so don't rush it. It's smarter to pause, reflect and tailor information to your audience's needs.
- You don't have to answer media or policy questions straight away. Ask for their contact details and deadline, get your key messages prepared, and go back to them with written answers or potential interview times. Reflect on your experience after engaging with media or policy and decision-makers. Was there anything people misunderstood or needed extra clarification on? What worked well? What resonated? Use this reflection to help improve your next engagement.

Remember the 3P's:

- The good P's: Paint a picture, Personal is Powerful, Present Passionately
- The bad P's: No Procedures, Policies, or Practices!

Resources

Working with media

- Science Media Centre has a fantastic set of resources and workshops on Working with the Media: www.sciencemediacentre.co.nz/working-with-media/. This includes a downloadable PDF 'Desk Guide' that includes preparing your messages, working with the comms team, and engaging in social media. www.sciencemediacentre.co.nz/wp-content/upload/2021/05/2020-green-guide-web.pdf. They also run a range of events, including opportunities to network with journalists and training such as the Science Media Savvy workshops www.sciencemediacentre.co.nz/savvy/.
- Media First UK have a thorough guide for interviewees to develop their bridging techniques for interviews www.mediafirst.co.uk/blog/14-bridging-phrases-for-your-next-interview/, and also how interviewers and journalists might try to 'cross that bridge'! <https://www.mediafirst.co.uk/blog/the-bridging-technique-how-to-get-over-that-bridge/>.

Crafting your messages

- Compass Science Communication in the USA www.compasscomm.org/tools-resources/ have developed a ranges of tools and resources for communicating science with impact, in particular they have developed the "Message Box" as a tool to help you identify and craft your key message for a range of different audiences www.compasscomm.org/leadership-development/the-message-box/.
- The American Geophysical Union (AGU) has an extensive range of resources and tools that can help you develop your skills to share your science with a range of audiences see www.agu.org/Share-and-Advocate/Share#3 and connect.agu.org/sharingscience/home.



- There are numerous fantastic presentations available online on how to communicate concisely and effectively to multiple audiences, such as these on the TED Talk platforms:
 - Start with “Why” - The Why How What, by Simon Sinek www.youtube.com/watch?v=-fdJzvpX60
 - How to communicate science during a crisis, by Alex Dainis www.ted.com/talks/alex_dainis_how_to_communicate_science_during_a_crisis

Storytelling

- Make your science sticky – storytelling as a science communication tool – SEI. www.sei.org/perspectives/make-science-sticky-storytelling-science-communication-tool/
- Storytelling in Science: Why it matters and how to improve your skills. fourwaves.com/blog/science-storytelling/
- Going beyond “just the facts” towards a narrative in your science communication environment.uw.edu/news/2022/02/going-beyond-just-the-facts-towards-a-narrative-in-your-science-communication/
- The Importance of Storytelling in Science theplosblog.plos.org/2016/12/the-importance-of-storytelling-in-science/
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- Sundin, A., Andersson, K., & Watt, R. (2018). Rethinking communication: integrating storytelling for increased stakeholder engagement in environmental evidence synthesis. *Environmental Evidence*, 7(1), 1-6. environmentalevidencejournal.biomedcentral.com/articles/10.1186/s13750-018-0116-4?sf183029228=1



Understanding Policy

- The Cabinet Manual dpmc.govt.nz/our-business-units/cabinet-office/supporting-work-cabinet/cabinet-manual
- The Policy Project: dpmc.govt.nz/our-programmes/policy-project
- Parliament: www.parliament.nz/en
- Policy evidence and evaluation dpmc.govt.nz/our-programmes/policy-project/policy-advice-themes/evidence-and-evaluation
- These are some different ways to find out about bills and the policy agenda:
 - Use tools like LinkedIn
 - Know who's who in the zoo
 - Polite assertiveness
 - See what is coming up for submissions, policy and where your research could fit in
 - This is one of the places to go: www.parliament.nz/en/alerts/
 - Budget policy statements.
- NZPI Planning for non-planners/Being an expert witness courses run by Toka Tū Ake.
- Machinery of Government (School of Governance, Victoria University) www.wgtn.ac.nz/sog/study/courses.
- Kilvington M, Saunders W. 2017. Science to practice: understanding how natural hazard and climate science can be incorporated into land use plans. Planning Quarterly. 205:8-12. planning.org.nz/resources/Product?Action=View&Product_id=1989.



Effective visualisations:

- The following software was recommended by our speakers for data visualisation (charts, maps, tables), and to test colour blindness accessibility:
 - Flourish Studio has a generous free plan flourish.studio/
 - Datawrapper also has a free plan, and has a colour accessibility checker www.datawrapper.de/
 - A free and open source GIS program: QGIS qgis.org/en/site/
 - ColorBrewer provides colour advice and testing for spatial data and cartography colorbrewer2.org/#type=sequential&scheme=BuGn&n=3
 - Colblindor – colour blindness simulator: www.color-blindness.com/coblis-color-blindness-simulator/
 - See also this guide on colour accessibility: venngage.com/blog/accessible-colors/
- The Health Foundation UK has a very useful ‘creative data presentation’ resource that can be found here: www.health.org.uk/sites/default/files/Creative-data-presentation-dl.pdf . They recommend the following additional visualisation tools (see p. 5):
 - Canva image creator that includes a large library of free visual elements. www.canva.com
 - Easel.ly: infographic templates that can be adapted by changing text, colours, and images. easel.ly
 - Flat Icon: free icon database. Attribution is required. www.flaticon.com
 - The Noun Project: free icon database. Attribution is required. thenounproject.com
 - Heatmapper: a free tool for creating heat maps for many different data types and applications. www.openheatmap.com
 - Highcharts: a tool for creating interactive visuals that is free for non-profit organisations. www.highcharts.com
 - Google Charts: a set of HTML libraries for producing online charts. developers.google.com/chart
 - Dygraphs: a fast and flexible open source JavaScript charting library. dygraphs.com
 - Vis.js: a JavaScript library for large amounts of dynamic data. visjs.org
 - D3.js: a JavaScript library for bringing data to life. d3js.org



Developing your awareness of mātauranga Māori, Māori history, and tikanga

Books

Walker, R. (2004, 2nd Edition). *Struggle without end: Ka Whawhai Tonu Matou*. Penguin. A history of Aotearoa New Zealand, from a Māori perspective.

Smith, L. T. (2021). *Decolonizing methodologies: Research and indigenous peoples*. Bloomsbury Publishing. “Explores intersections of imperialism and research - specifically, the ways in which imperialism is embedded in disciplines of knowledge and tradition as 'regimes of truth.' Concepts such as 'discovery' and 'claiming' are discussed and an argument presented that the decolonization of research methods will help to reclaim control over indigenous ways of knowing and being.

Bateman, D. (2008). *Māori tribes of New Zealand Te Ara* – The Encyclopaedia of New Zealand. Bateman Books. Outlines the stories and history of the Māori people, including maps of tribal areas, includes updated census data and information. Designed for people new to Aotearoa New Zealand.

Marsden, M. (2003). *The woven universe: selected writings of Rev. Māori Marsden*. Estate of Rev. Māori Marsden. Te Wānanga-o-Raukawa, Huia publishers. Brings together Rev. Māori Marsden's statements on Māori philosophy, theology, and the Māori worldview through a collection of essays. Marsden (1924-1993) was a tohunga, scholar, writer, healer, minister, and philosopher of the latter twentieth century.

Harris, A. (2020, revised edition). *Hikoī. Forty years of Māori Protest*. Huia Publishers. A photographic history of Māori protest, including the rationale, the organization, and the story of the protests that lead to key turning points in Māori and Crown relations.

Mead, H. M. (2016, revised edition). *Tikanga Maori: Living by Maori values*. Te Whare Wānanga o Awanuiārangi, Huia publishers. An “accessible introduction to tikanga Māori, and the correct Māori ways of doing things as they were done in the past, as they are done in the present and as they may yet be done”

Barlow, C. (2019, revised edition). *Tikanga Whakaaro. Key concepts in Māori culture*. New Zealand Reference, Oxford University Press. Provides explanations in English and Māori of seventy terms which are important in Māori culture, each defined and its significance explained in terms of tradition, custom, myth and ritual, as well as present day understanding.



Tauroa, H., & Tauroa, P. (2009, revised edition). *Te Marae: A guide to Customs and Protocol*. Raupo, Penguin. This book outlines the sequence of events that begins when visitors arrive at the gates of a marae through to their departure. Includes appropriate behaviour at each stage, explanation of the spiritual and cultural background, and a selection of waiata, karakia, and mihi to support manuhiri (visitors) in their correct responses.

Articles and online resources

M9 webinar link – Māori ted talks www.m9aotearoa.co.nz/

Hema Wihongi talking to Julian Wilcox on RNZ about the history and future of Wai 262 - www.rnz.co.nz/national/programmes/mapuna/audio/2018871642/the-history-and-future-of-wai-262

Kaitiakitanga: Māori perspectives on conservation, Dr Mere Roberts et al – <https://www.publish.csiro.au/pc/pc950007>

Ways of seeing: Whakapapa by Dr Mere Roberts ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps_pid=FL18583880

He Papa Tikanga, NZ Certificate in Tikanga (Mātauranga Māori) offered by Te Wānanga o Aotearoa www.twoa.ac.nz/nga-akoranga-our-programmes/study-from-home/certificate-in-tikanga-maori

Massey University's Toro Mai online modules, free to all, that include two introductory online courses on te reo Māori and tikanga Māori. www.massey.ac.nz/student-life/m%C4%81ori-at-massey/te-reo-m%C4%81ori-and-tikanga-resources/toro-mai/

Podcasts

Taringa Podcast – a podcast by Te Wānanga o Aotearoa which aims to increase your knowledge of te ao Māori, including te reo and tikanga Māori. www.taringapodcast.com/

The Aotearoa History Show – a podcast from Radio New Zealand that explores the story of New Zealand and its people from its geological origins to modern day www.rnz.co.nz/programmes/the-aotearoa-history-show



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