

Post-truth, alternative facts and the role of the Environmental Protection Authority

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Abstract

The Environmental Protection Authority (EPA) administers six Acts and is charged with making net benefit decisions for New Zealand. Regulatory Science, which is supported by the research results from traditional science, enables evaluation of evidence, risks and uncertainties. To take appropriate account of the Treaty of Waitangi, an external Māori advisory group works with a focussed staff unit to ensure that Māori values are included in the decision-making process. Society is also included through consultation and hearings, and it is in the context of increasing global suspicion of government, media and science in general that the role of the EPA is increasingly about education and engagement, while continuing to make decisions that protect the environment whilst enhancing lifestyle and the economy.

Keywords: communication, HSNO, net benefit, policy, regulatory science, risk analysis, RMA, trust, values

Introduction

Post-truth and alternative facts have joined popular culture in the same way that post-normal science appears to have been accepted by society. Media reporters are struggling with employment in this era of Facebook and Twitter-sphere 'news' releases (Du Fresne 2017; Griffin 2017; Smellie 2017); from the outside, their focus appears to be 'creating controversy for attention'. Peter Griffin of the Science Media Centre has explained (Hansford 2016) 'Journalists can't abide a ceasefire... The anti-1080 lobby appeals to the emotive and visceral stuff and they're incredibly good communicators.... It's a two-point strategy. Once you've captured the news desk, it's time to head to the features department with a junk backgrounder'.

Further problems (Hansford 2016) include young and inexperienced journalists being captured by the thought of breaking the news, and the problem of achieving 'balance'. This can create more confusion as it implies both sides are based on the same type of information (Hansford 2016). During his research for 'Protecting Paradise', investigative journalist and author Dave Hansford found that despite ongoing statements about 'there's science on both sides', the evidence did not support the statements. 'There's science on one side and belief and propaganda on the other, but some media

have conflated them into an apparition of debate. Doubt has been manufactured' (Hansford 2016).

The ramifications of doubt are measured regularly in the Edelman Trust Barometer. The report (Edelman 2017) involved 30 000 respondents from 28 countries and was released with the statement that 'trust is in crisis around the world'. Trust has decreased in government (from 42% in 2016 to 41%) and media (from 48% in 2016 to 43%); in some contrast, trust in 'people like yourself' had reached the same score of 60% as academics and technical experts.

In what Edelman styles the Cycle of Fear and Distrust, loss of trust in institutions leads to erosion of confidence in the system, which leaves society more vulnerable to fears. This further erodes trust, and the eventual result is populist action. The media echo chamber amplifies the fears and accelerates the cycle.

To rebuild trust and restore faith in the system, Edelman (2017) suggests that institutions must 'step outside of their traditional roles and work toward a new, more integrated operating model that puts people - and the addressing of their fears - at the center of everything they do'. This means improving communication to society in general.

In this global setting, science policy, and the relatively new discipline of science regulation, is evolving. This paper explains the role of the New Zealand Environmental Protection Authority within the context of decreasing trust, the need for science communication, science policy which is fit for purpose, and the development of regulatory science.

Science communication

Trust is a fundamental requirement in relationships, and 'trust in science' is a concern globally. Peer-reviewed journals with publications whose authors were scientists generally with doctoral qualifications, used to be the first point of science research from which dissemination occurred in various forms (conferences, field days, media articles, for instance). Now dissemination is occurring through less formal paths available to everybody (Facebook pages, blogs and tweets, for instance) and the authors are people with passion and conviction rather than the ability to analyse and evaluate. The concern has resulted in a considerable body of work on science communication, which has been embraced by the communication arms

of most organisations, as well as scientists themselves. The problem in creating policy from the sea of communication (and mis-communication) is the difficulty in sorting facts from feelings. In the 1080 debate, the difference and difficulties have been explained (Hansford 2016) as ‘an opinion is a judgement that you’ve arrived at after considering at least some of the evidence. This is the stuff of metaphysical debate and can’t be reconciled without contest. A belief is subtly different. It’s a conviction you nurture, based on little or no evidence at all - karma. Bigfoot. Beliefs arise out of cultural, political and popular conditioning. They’re a viewpoint, is all, and as such they can’t be disproved, or even challenged, by logic. They cannot serve as the basis of an argument because they’re inarguable’. Science communication is vital in counteracting mis-information.

Communicating science effectively

A research agenda, produced by the Committee on the Science of Science Communication (2016), addresses the issues facing science communication in the future, and explains the different purposes of science communication.

- Five goals for communicating science were identified:
1. Simply to share the findings and excitement of science
 2. To increase appreciation for science as a useful way of understanding and navigating the modern world
 3. To increase knowledge and understanding of the science related to a specific issue
 4. To influence people’s opinions, behaviour, and policy preferences
 5. To engage with diverse groups so that their perspectives about science related to important social issues can be considered in seeking solutions to societal problems that affect everyone.

Of these five goals, the first three are traditional, and the second two more recent in evolution. The two newer goals (‘influencing people’s opinions, behaviour and policy preference’ and ‘engaging different perspectives’) have emerged even as the media environment has developed. A vaccination against fake news has been investigated (van der Linden *et al.* 2017). The vaccination involved inoculation with information rather than treatment with a needle, but the image is clear and serious. Fake news has been raised in New Zealand (Alexander 2017) as applying to information that people simply don’t like.

Last year the UK Science Council CEO (Phipps 2016) stated that ‘when trust is lost, the profession suffers and the UK suffers.... You only have to look at other areas of public life, such as the clergy or journalism for evidence of the knock-on effect of a drop in public trust’.

Achieving a focus on facts, evidence and data in a world swamped with information, is a battle, hence the focus on increasing communication.

Science policy

Professor Sir Peter Gluckman, the Prime Minister’s Chief Science Advisor, has been urging increased communication and explanation. ‘The goal must be to separate good science from bad, to distil the overwhelming amount of information, to interpret confusing claims without alienating the audience and to protect trust in the scientific system and its processes’. (Gluckman 2017). ‘In this, it is also, inevitably, about recasting the ‘expert’, not as an authoritarian ‘elite’, but as a reliable and authoritative voice with something valuable to contribute.’

People do still trust scientists. In the UK, scientists have been reported to be trusted by 80% of the British general public, behind nurses (93%), doctors (91%), teachers (88%), and judges (81%). In some contrast, politicians were trusted by 15% of the population, government ministers by 20% and journalists by 24% (Marmot 2017).

Victoria University’s poll is similar (based on groups trusted to do the right thing) - Medical practitioners and police (56 and 53% trusted them ‘lots or completely’), followed by schools and colleges, judges and courts, and universities, with bloggers, MPs and the media below 10% (Macaulay 2016). The poll also revealed that neighbours are trusted most (67%) – resonating with Edelman’s results for ‘people like you’.

The world cannot ‘get over’ the need for technical expertise; the challenge is to ensure that the experts can converse in a manner akin to ‘over the garden fence’ so that their contributions can be recognised and understood.

The Environmental Protection Authority

Education, explanation and engagement with the public is an increasing focus for the Environmental Protection Authority (EPA), established as a Crown Agent on 1 July 2011 by the Environmental Protection Authority Act 2011.

The EPA has a board of 6-8 people appointed by the Minister for the Environment who are selected to represent a ‘balanced mix of knowledge and experience’ in the appropriate areas. The Board is supported by the staff (approximately 160 people).

- Much of the EPA’s work involves:
1. Facilitating the decision-making process for proposals from applicants for nationally significant resource management proposals under the Resource Management Act (RMA) and
 2. Administering proposals for new applications under the Hazardous Substance and New Organisms (HSNO) Act.
- As well as the RMA and HSNO directly affecting

the agri-sector, there are another four Acts administered by the EPA, with a considerable number of associated activities (Figure 1).

The purpose of the RMA is to promote the sustainable management of natural and physical resources. This means that the Board of Inquiry has to assess whether an application for a development will also enable protection of natural and physical resources in a way or at a rate that enables people and communities to provide for their social, economic, and cultural wellbeing.

The decision process is similar to that made by businesses every day in terms of balance of benefits, but the EPA-supported Board of Inquiry has national good to consider, as well as the social and cultural components.

To assist with decisions (in HSNO), and as part of the EPA Act, a Māori Advisory Committee has been established ‘in order to recognise and respect the Crown’s responsibility to take appropriate account of the Treaty of Waitangi...’ The advisory committee which is external, is matched with an internal Māori group, which ensures that Māori values are included in the decision-making process.

The Hazardous Substances and New Organism (HSNO) Act requires application and evaluation processes to be open, transparent and public. The onus is on the EPA to explain why a decision has been made, and the emphasis is on being informed by science whilst being cognisant of societal and cultural values. For instance, an application for importing *Agathis* spp. for amenity purposes was declined because there was uncertainty as to whether or not the imported plants would have the potential to cross with the New Zealand Kauri - an iconic species.

In making decisions, the EPA is focussed on the evidence provided by research and science; if the risks appear to outweigh the benefits in an application, approval is not given. However, as indicated earlier, social and cultural components are also part of the process.

Increasingly challenging is that the EPA is being asked to deliver decisions on new organisms (genetically engineered, for instance) for which the research has

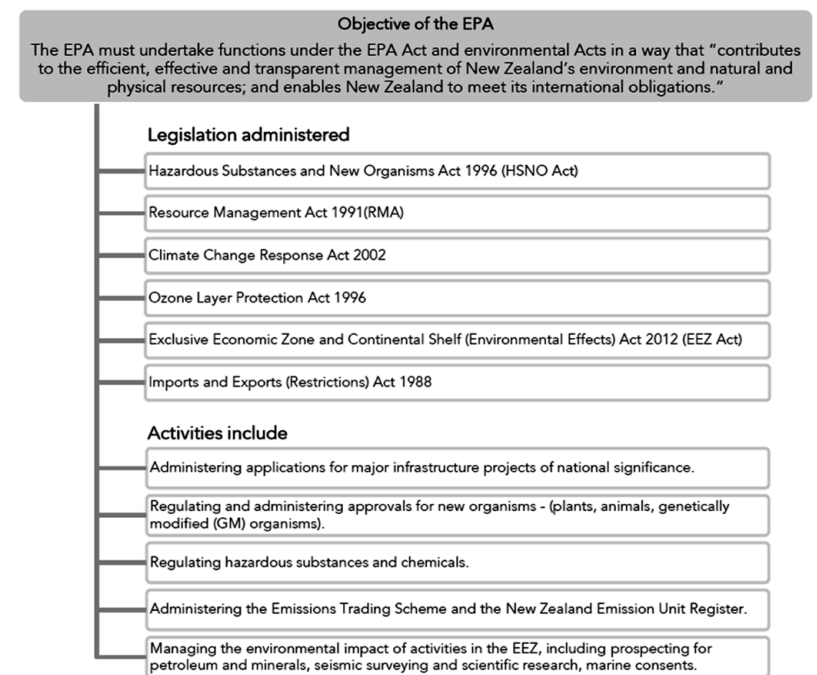


Figure 1 Environmental Protection Authority ambit.

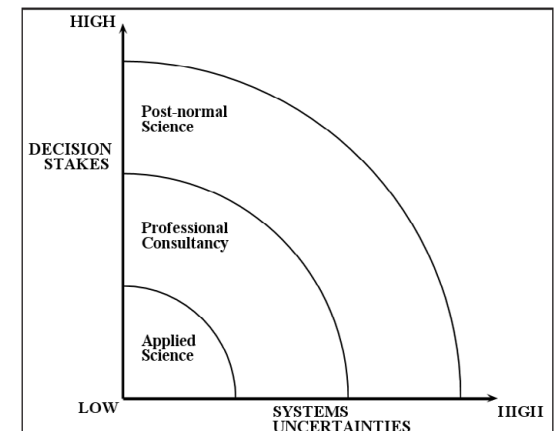


Figure 2 Relationship between uncertainty, decision and the role of ‘science’. FrancoisDM - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=16042041> https://en.wikipedia.org/wiki/Post-normal_science#/media/File:Post-normal_Science_diagram.png

not been done. This also applies to the effect of new chemicals on indigenous species.

In decisions where there is uncertainty, society is increasingly becoming involved (Maier *et al.* 2008) and the public are having an input. In this context, the certain/low risk environment traditionally inhabited by science and research has moved to ‘post-normal science’ (Funtowicz & Ravets 1993) and on through

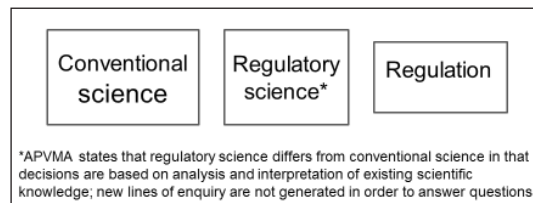


Figure 3 Relationship of regulatory science to conventional science and regulation.

alternative facts into the Twitter-sphere (Figure 2).

This change has moved various bodies, including EPA and the Ministry for Primary Industries (R. Barbieri pers. comm. 30.5.2017) into more risk analysis in an attempt to improve outcomes of the decision-making process. This move echoes that in other countries (e.g., Environmental Protection Agency 2016) and Professor Sir Peter Gluckman is in the process of publishing a series of papers on making decisions in the face of uncertainty. Part one and two were published last year (Gluckman 2016a, b), explaining risk perception and how acceptability changes according to experience and background.

Recognising the background for concerns in society and industry should help regulatory authorities with explanation and education. In addition, transparency is needed. The EPA is now publishing its decision-making risk assessment process in an attempt to both clarify and reassure, for example, Bromfield *et al.* (2017); the model developed and reported 'can set standards that pave the way for the adoption of the framework by multiple parties, which will in turn establish standards, familiarity and set a benchmark in risk analysis'.

Another aspect is increasing the rigour in 'Regulatory Science'.

Regulatory science

Regulatory science differs from conventional science in that decisions are based on analysis and interpretation of existing scientific research which has created knowledge; new lines of research are not generated or undertaken to answer questions (Figure 3, Australian Pesticides and Veterinary Medicine Authority.)

The concept of regulatory science is not new. A decade ago the US Food and Drug Administration (FDA) Science Board report (FDA Science Board 2007) described regulatory science as 'a science-based decision-making process needed to fulfil the responsibilities of a public health agency: FDA must have the scientific staff and resources to undertake the regulatory research that will provide a basis to: (1) improve capacity for safety and efficacy evaluations and monitoring of candidate and licensed products, (2) modernize current regulatory pathways, and (3) develop new regulatory pathways where there are

currently none.'

This capacity is important because 'decisions made in regulation development, pre-market approvals, legal actions and related public health emergencies must be based on understanding of contemporary and emerging science within the context of the risk analysis paradigm' (FDA Science Board 2007).

The statements are as relevant today for the EPA in New Zealand as when they were created by the FDA in the northern hemisphere 10 years ago. The goal is to use the best possible evidence for the best possible outcome for the public.

Sometimes, however, the public doesn't understand the issues, nor the risks (European Commission 2014), and inclusion during consultation has not resulted in the expected consensus of decision. A New Zealand press headline this year indicated that collaboration over Plan Change 1 in the Waikato has cost rate-payers \$14.8 million so far. This money has been for research, stakeholder consulting groups and council time; the Waikato Regional Council bill does not include the money spent by industry groups and individuals. The goal had been to ensure community involvement so that development of Plan Change 1 would be inclusive and harmonious. Five years down the track and considerable disharmony has been reported in the region and in the governing bodies.

The future

The EPA has consultation as part of its mandate, but tries to keep the science and the 'values' clear. This approach is supported by research in the United Kingdom. A report on science communication and engagement released this year (Science and Technology Committee 2017) suggests that public consultation 'unhelpfully pitches science and other factors together which makes it difficult for a clear foundation of scientific understanding to be established without being co-opted - and misinterpreted - by the public debate'.

The recommendation is to adjust the process of consultation to address scientific issues separately from the political and other trade-offs.

The recommendation doesn't devalue involvement, but makes it clear that science and opinion are not the same, even in a post-truth world.

For agribusiness, there is ongoing interaction with the EPA with new organisms (possibly from other countries and/or produced through engineering) for bio-protection and/or production, as well as new chemicals. In all cases, the EPA is aware that decisions made in the pioneering past have had unintended consequences; they were not 'innocuous' (as described by the Acclimatisation Societies which became Fish and Game) after all. Indeed, many of the bio-control agents and chemicals that have been considered recently are

being mooted as 'agents of control' for those mistakes. Gorse and wild rabbits are an example.

The role of media will continue, particularly as an information source. Oscar Wilde put the problem succinctly in 1891: 'By giving us quotes from the uneducated, journalism keeps us in touch with the ignorance of the community'.

These days we would use different words, but the challenge in communication remains. If the community doesn't understand the issues, our role as scientists, researchers, policy analysts, consultants and agri-industry professionals is not over. We must keep explaining how decision-making based on science, evidence, and risk assessment will protect the environment while enhancing our way of life and the economy.

Whatever our employment, most of us are on the same page: New Zealand is a remarkable country, shaped by nature and developed by people with pioneering and innovative spirit. It is the goal of the EPA to assist the current generation of agribusiness pioneers to do even better for the future than their ancestors.

The EPA's vision is 'an environment protected, enhancing our way of life and the economy'. Ask any farmer, and though they might use different words, they have the same goals. We are paddling the same waka...

REFERENCES

- Alexander, M. 2017. Mediawatch, RadioNZ May 28 2017. <http://www.radionz.co.nz/national/programmes/mediawatch/audio/201844955/award-winning-editor-s-fake-news-fears>
- Australian Pesticides and Veterinary Medicines Authority. The application of science to regulatory risk assessment. <https://apvma.gov.au>
- Bromfield, K.E.; Corin, S.; Atapattu, A. 2017. A qualitative binary risk assessment model for regulating the biosecurity and environmental risk of endophytes. *Biological control*. <https://doi.org/10.1016/j.biocontrol.2017.05.002>
- Committee on the Science of Science Communication, National Academies of Sciences, Engineering, and Medicine. National Academies Press. December 2016. ISBN 978-0-309-45102-4 126 pp.
- Du Fresne, K. 2017. Burning issues. *The Listener* 259, 4018, pp. 21-23.
- Edelman. 2017. Edelman Trust Barometer. <http://www.edelman.com/global-results/>
- European Commission. 2014. Science for

Environmental Policy. Future Brief: Public risk perception and environmental policy. 12pp.

Food and Drug Administration Science Board. FDA Science and Mission at Risk. Rockville, MD: Report of the Subcommittee on Science and Technology; 2007.

Funtowicz, S.O.; Ravetz, J.R. 1993. Science for the post-normal age. *Futures*, September: 739-755

Gluckman, P. 2016a. Making decisions in the face of uncertainty: understanding risk Part 1. 34 pp.

Gluckman, P. 2016b. Making decisions in the face of uncertainty: understanding risk Part 2. 27 pp.

Gluckman, P. 2017. Scientific advice in a troubled world. 13 pp. <http://www.pmsa.org.nz/blog/scientific-advice-in-a-troubled-world/>

Griffin, P. 2017. Breaking News. *The Listener* 259, 4018, pp.17-20.

Hansford, D. 2016. Protecting Paradise: 1080 and the fight to save New Zealand's wildlife. Pottin and Burton. 385 pp.

Macaulay M. 2016. Who do we trust? <http://www.victoria.ac.nz/vbs/about/news/news-archives/2016-news/new-zealanders-distrust-in-government-growing/IGPS-Who-Do-We-Trust-Survey-March2016.pdf> 12p.

Maier, H.R.; Ascough, J.C.; Wattenbach, M.; Renschler, C.S.; Labiosa, W.B.; Ravalico, J.K. 2008. Uncertainty in environmental decision making: issues, challenges and future directions. *Environmental Modelling, Software and Decision Support*.

Marmot, M. 2017. Post-truth and science. [http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(17\)30207-6.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(17)30207-6.pdf)

Phipps, B. 2016. If trust in science falls, society suffers. <http://sciencecouncil.org/if-trust-in-science-falls-society-suffers/>

Science and Technology Committee. 2016. Science communication and engagement. Eleventh report of session 2016-17. House of Commons UK, 35 pp. <https://www.publications.parliament.uk/pa/cm201617/cmselect/cmsctech/162/16202.htm>

Smellie, P. 2017. Grave new world. *The Listener* 259, 4018, pp.12-16.

United States Environmental Protection Agency. 2016. Weight of evidence in ecological assessment. EPA/100/R-16/001. 104 pp.

Van der Linden, S.; Leiserowitz, A.; Rosenthal, S.; Maibach, E. 2017. Inoculating the public against misinformation about climate change. *Global Challenges* 1, 160008. 7 pp.