Geosci. Commun. Discuss.,
https://doi.org/10.5194/gc-2019-1-SC1, 2019
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Discussions

Interactive comment on "Telling the boiling frog what he needs to know: why climate change risks should be plotted as probability over time" *by* Simon Sharpe

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Received and published: 10 March 2019

This article points to an important improvement that can be made to the representation of risks related to climate change to ensure that risk assessment reports speak more clearly and directly to the concerns of policy makers. Below I will describe some additional psychological factors in support of the boiling frog's case, as well as give pointers for its successful implementation.

An empirical imperative for testing alternative climate risk representations

Studies in the psychology of risk have shown that its perception can be dramatically

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affected by how a particular risk is presented or formulated (Slovic, 2010). Most formal risk assessments are highly cognitive endeavours. They rely on complicated mathematical analysis and are presented using formalisms that require expert knowledge to be understood. Beyond this aspect of risk known as risk-as-analysis, there are two related psychological dimensions to risk perception. Firstly, the risk-as-feeling hypothesis states that some risk problems generate an affective response while others might not. This affective response is sometimes an overt feeling of fear or anxiety, but often a more subdued "background" feeling (Loewenstein et al. 2001). Secondly, it appears that some cognitive representations of risk problems are intuitively evaluable while others are not (Cosmides Tooby, 2008). This means that they can be evaluated using fast, automatic cognitive processes, rather than requiring slower, deliberative reasoning. Both risk-as-feeling and intuitive evaluability are crucial in guiding people's day-to-day decision making. By extension, these psychological factors also affect how particular problems "jump out" at politicians and policy makers, and thus influence how they trade-off giving attention to some risks over others.

Whereas some risk representations may be naturally "intuitively evaluable" by many people, other representations only become so through prolonged exposure and expertise in a particular domain. The "Hazards - Vulnerability - Exposure" risk framework of the IPCC WG2 Fifth Assessment Report is a likely case in point (IPCC, 2014). Journalism research following the release of the report has shown that its risk framing was not picked up by the media - with the notable exception of some business media (Painter, 2015). Although the primary audience of the report is policy makers, the fact that the risk language used in the report's press release did not make it into articles about it suggests that it did not speak to the intuitions of the journalists involved. This can be seen as a proxy for other audiences outside of scientists and policy makers closely involved in the production of the WG2 report. These 'other audiences' may include policy makers in infrastructure, transport or treasury roles who will in future be affected by climate change risks, but whose professional background may lie in other domains such as economics or engineering. To make climate change risk representations gain

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widespread traction outside of the narrow band of scientists and climate policy makers, they will need to be made more intuitively evaluable to those other audiences.

How to make climate risk representations intuitively evaluable to policy makers?

The degree to which a complex problem is intuitively evaluable is related to a person's "lived expertise" in that problem domain. Policy makers often have expertise in one or more specific domains, in which they may have a limited number of concrete decision concerns. These concerns can be called the 'risk currency' of the policy maker, i.e., the measures or quantities that fall within their remit to keep below certain levels or between certain boundaries. The author's story (in AC1) of "faeces floating the in the street" is one such case. In this particular example, the scientists involved found it straightforward to produce a graph in the risk currency of the policy makers, which was hence intuitively evaluable to them, given their expertise.

As both reviewers rightfully point out, defining non-arbitrary thresholds may not be feasible or appropriate for all climate science areas or for all policy concerns, nor may the probability of surpassing a non-arbitrary threshold be calculable. To give an example of the latter: when a group of scientists studying Atlantic Ocean currents recently briefed Members of the European Parliament about their research, the most pressing question the MEPs wanted answered was what the research meant for the flow of refugees across the Mediterranean! Here, the risk currency of the politicians is one that the science community may never be able to address directly.

What this example and the related concerns expressed by one of the reviewers (see comment RC3) make clear is the need for appropriate "co-production" of research questions between policy makers, scientists and research funders (De Meyer et al., 2018). Even if scientist may not be able to quantify the risk of refugees directly, they might find - in conversation with policy makers - intermediate ways to explain the possible multiplier effect of climate change on their concerns. To do this successfully for all policy questions, it will simply not be enough for policy makers to tell funders what

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questions they want answered; nor can funders define in isolation what research is required; nor can scientists define what thresholds are relevant to the risk currencies of different policy makers without having meaningful conversations with them. The responsibilities for fixing this potential mismatch of knowledge production and knowledge requirements are fragmented, and will need joined-up and sustained efforts to resolve (ibid.). A first step to a solution is the recognition of the problem, and the author's contribution to this could not have come at a better time.

References

Cosmides, L., Tooby, J. (2008). Can a general deontic logic capture the facts of human moral reasoning? How the mind interprets social exchange rules and detects cheaters. Moral psychology, 1, 53-119.

De Meyer, K., Howarth, C., Jackson, A., Osborn, D., Rose, L., Rapley, C., Sharpe, S., and Welch, K. (2018). Developing Better Climate Mitigation Policies: Challenging current climate change risk assessment approaches. UCL Policy Commission on Communicating Climate Science; Report 2018-01.

IPCC, 2014: Summary for policymakers. In: Climate Change 2014: Impacts,Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., Welch, N. (2001). Risk as feelings. Psychological bulletin, 127(2), 267.

Painter, J. (2015). Taking a bet on risk. Nature Climate Change, 5(4), 286.

Interactive comment on Geosci. Commun. Discuss., https://doi.org/10.5194/gc-2019-1, 2019.

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