

COMMUNICATING CLIMATE CHANGE UNCERTAINTY

When the media talk about climate change scepticism, they usually mean that people are uncertain in some way about the reality or seriousness of climate change. To what extent is this the case and how can it be countered?

This guide draws heavily upon and complements The Uncertainty Handbook, written jointly by Climate Outreach and the University of Bristol.

There is strong and reliable evidence that human activity has caused the earth to warm over the past half-century – on this critical point, there is next to no uncertainty. Despite this, remaining uncertainties about the future impacts of climate change still manage to give many the impression that scientists don't know *anything* or only very little about climate change, just because they don't know *everything*. This is a major barrier to public engagement – when it actually should provide a greater impetus for action (Ballard & Lewandowsky, 2015). If we had 'perfect knowledge' about climate change, we could do 'just enough' to see off the risks. But we don't have perfect knowledge – so **uncertainty is a reason to be more concerned, not less.**

Counteract uncertainty with consensus

Despite the solid scientific consensus (Cook et al, 2013), public uncertainty about whether climate change is actually happening has remained in many English-speaking countries

(Pew Research Centre, 2009; Spence et al, 2010). For example, the share of US adults who said that there is no solid evidence of climate change occurring rose from 11 to 24 percent between 2009 and 2015 (Pew Research Center, 2015). Only recently have signs of stabilisation or decrease been seen in some countries around the world (Pidgeon, 2012). The message from these studies is consistent – consensus 'messages' can be an important way to overcome many people's perceptions of uncertainty (van der Linden et al, 2015; Ding et al, 2011), and these messages are best communicated with a few simple sentences, clear pie-chart graphics and metaphors drawing on other, more familiar topics (e.g. asking people whether they would cross a bridge if 97% of engineers said not to cross it) (van der Linden et al, 2015, 2014). The devil is in the detail with strategies like these, however, as **the person offering the message must be trusted by the audience**, or the consensus message could backfire. The distrust among 'sceptics' of many mainstream scientists and climate change activists explains why – despite years of 'real life' consensus messaging, scepticism has remained. (Connecting with different audiences' values and using effective frames to do so is the the focus of the Values and Frames guide.)

Start with the 'knowns' but also explain uncertainty

There are still many 'unknowns' regarding climate change's specific 'whens', 'wheres' and 'hows', and this should be acknowledged (see for example The British Royal Society's climate [website](#) for more on where uncertainties remain) – but not before stating the certainties, and the 'knowns' of climate science.

Uncertainty is a stimulus for science that drives it forward, not its enemy. Science is an ongoing debate, a method for asking

coupling qualitative terms such as 'very likely' to specified probability ranges such as 90-100%. However, a series of studies have found that people severely underestimate the meaning of such probability statements (while overestimating the probability of others) (Budescu, Broomell & Por, 2009; Ekwurzel, Frumhoff & McCarthy, 2011). Written expressions such as 'very likely' should therefore be accompanied by the numerical probability range they refer to.

A common strategy of people who reject the scientific consensus is to intentionally confuse and conflate different types of uncertainty (Poortinga et al, 2015). ***It's therefore critical to be clear what type of uncertainty you're talking about*** – whether it's regarding causes, impacts or policies. See next page's box for examples on how to do this.

Use plenty of analogies from everyday life

One reason for why uncertainty has proven so problematic is that people find the uncertainty generated by 'conflicting messages' difficult to deal with. When people hear politicians contradict each other, or when newspapers offer a 'false balance' between scientists and sceptical voices in the name of objectivity, people tend to come to doubt the credibility of what they're hearing.

One way to help people deal with the resulting obfuscation is to use analogies for other circumstances on which giving a 'balanced' take does not mean equal space to opposing viewpoints but rather calls for representativeness of the evidence. One can for example say "Scientists are as certain about the link between human behaviour and climate change as they are about the link between smoking and lung cancer". And concerning potential linkages between climate change and an extreme weather event, one can say "When someone has a weak immune system, they are more



A 'balanced' take does not mean equal space to opposing viewpoints but rather calls for representativeness of the evidence

Image credit: Emily Orpin (CC BY-NC 2.0). Image has been cropped and tinted and text has been added.

questions about the world, not a series of answers or a fixed body of facts. Getting this message across is important to make people less likely to dismiss messages containing uncertainty and more motivated to act (Rabinovich & Morton, 2012). ***As long as uncertainty fits within the audience's understanding of how science works it doesn't need to undermine the effectiveness of science communication.***

Be clear about what kind of uncertainty you are talking about

The public thinks about certainty differently than scientists do. For example, the Intergovernmental Panel on Climate Change communicates quantitative uncertainties by

Cause of climate change	Climate impacts	Climate policies
<p>DO say</p> <p>"Scientists are as certain about the link between human behaviour and climate change as they are about the link between smoking and lung cancer."</p>	<p>DO say</p> <p>"As the Earth warms there is more moisture in the air, which increases the chances of intense rainfall. So this flood is consistent with what scientists have long been predicting."</p>	<p>DO say</p> <p>"We know how much more carbon we can burn if we want to limit the risks of climate change. Most of the world's remaining coal, oil and gas must remain in the ground. How to achieve this is a matter of political debate."</p>
<p>DON'T say</p> <p>"Although we can never be 100% certain of anything, it is highly likely that changes in our climate are due to an anthropogenic influence."</p>	<p>DON'T say</p> <p>"No single weather event can be attributed to climate change."</p>	<p>DON'T say</p> <p>"Science can never tell us which climate policy is best."</p>

Practical tips from our resource [The Uncertainty Handbook](#).

susceptible to a range of diseases". On the wisdom of radical mitigation efforts to avoid dangerous climate change, "When was the last time you made a business decision with that degree of certainty?" can work well.

Use (positive) risk framings

Social scientists Nick Pidgeon and Baruch Fischhoff (2011) suggest that the best way to deal with uncertainty is to talk about climate change as a risk, since doing so turns the problem into something that most people are used to dealing with: perceiving and managing risks. It is also the language of the insurance, health and national security sectors. Pidgeon and Fischhoff suggest that the more the risks of climate change can be brought to life through vivid 'mental models', the better (using clear practical examples of the risk of sea level rise, or the risk of melting glaciers, preferably by means of images, human stories and simply having real conversations). **Shifting from an 'uncertainty' to a 'risk' framing** also makes it easier for people to weigh the costs and benefits of inaction (Painter, 2015).

Moreover, University of Exeter psychologists (Morton et al, 2011) found that a message describing a positive action producing a 20% chance of avoiding abrupt changes to

Monsoon patterns (what they called a 'positive framing') caused people to indicate stronger intentions to act pro-environmentally than a message describing a failure to act leading to an 80% risk for the same scenario (a 'negative framing'). Talking about uncertainty in a 'positive' way creates

hope and cautionary inclinations, but talking about it in a negative way creates feelings of hopelessness.

The most important question for climate impacts is 'when', not 'if'

Climate change predictions are usually communicated using a standard 'uncertain outcome' format, such as "By 2072, sea levels will rise by between 25 and 68 cm, with 50 cm being the average projection". But flip the statement around – **using an 'uncertain time' framing** – and suddenly it is clear that the question is when, not if, sea levels will rise by half a meter: "Sea levels will rise by at least 50 cm, and this will occur at some time between 2060 and 2093". This simple switch in the framing of the uncertain information was found to increase support for government action on climate change in a recent study (Ballard & Lewandowsky, 2015). And the focus on 'certain' events also helps to bridge the psychological distance (see separate guide) between climate change and people's everyday lives – making it seem more tangible, less abstract, and more relevant.

Adequacy of frames is context dependent

The level of uncertainty people feel regarding climate change depends on their *worldviews, values, political convictions and social identities*. People with right-leaning political values, for example,

express higher uncertainty than people to the left (Campbell & Kay, 2014). Frames that highlight 'ideologically safe' aspects of climate action – such as risk-aversion, pragmatism, conserving natural beauty, responsibility, and pride in local decision making – may therefore offer a more constructive way of discussing climate change uncertainties with people in doubt.

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About Climate Outreach

Climate Outreach (formerly COIN) is a charity focused on building cross-societal acceptance of the need to tackle climate change. We have over 10 years of experience helping our partners to talk and think about climate change in ways that reflect their individual values, interests and ways of seeing the world. We work with a wide range of partners including central, regional and local governments, charities, trades unions, business and faith organisations.

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