

which co-chairs and lead authors are available to field queries. A published calendar of such events could cover a wide range of specialisms and areas within climate science. These events should happen throughout the IPCC cycle, not just when a report is released.

Last, the IPCC as an institution should re-evaluate its Communication Strategy to fully account for its audiences. It is a mistake to think that the audience is largely limited to policymakers — a cursory glance at both legacy and social media coverage of AR5 indicates that the IPCC engages diverse audiences<sup>13</sup>.

This year, 2015, will be an important year as the IPCC debates not just the focus, scope and scale of its reports, but also its very future. Signs from the IPCC Task Force are promising: a document released in September 2014 gave a litany of suggestions that could increase engagement of online audiences, including developing interactive web-based tools, graphics and videos; hiring infographic specialists to assist with developing figures; user consultation to gain insights into how the IPCC might better tailor its products

to user needs; reporting divergence of viewpoints; opening the SPM plenaries to media organizations; and producing shorter, simpler and more targeted reports, or reporting that the IPCC online as a dynamic document that is updated when new evidence is produced<sup>14,15</sup>. In combination with the suggestions made in this Commentary, these changes would greatly help the IPCC to become the transparent, interactive organization it needs to be in order to retain its authority, trust and relevance in the years ahead. The decision on whether to adopt such changes will be debated at the 41st Session of the IPCC, which is scheduled to take place in Nairobi, Kenya on 24–27 February. The IPCC must be bold and endorse them. □

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COMMENTARY:

# Taking a bet on risk

James Painter

In the light of its potential benefits, some scientists have been using the concept of risk to frame their discussions of climate change. At the moment, the media hardly pick up on risk language, so can anything be done to encourage them?

Social and natural scientists have argued that there may be advantages in presenting the climate change challenge as one of managing risk in a context of uncertainty, at least for decision-makers and other target audiences<sup>1–3</sup>. Throughout his life, Professor Stephen Schneider regularly used the everyday concept of house insurance in communicating climate risks to the public, often via the media<sup>4</sup>. There is strong evidence that risk language and concepts are now being used more often in the dissemination of major science-based reports, and by politicians urging action on climate change<sup>5</sup>.

No studies have been carried out to map the shifts over time in the relative presence of the language of risk compared with other

discourses (such as disaster or uncertainty) in the framing of the climate change challenge by the IPCC. But simple metrics applied to the IPCC Fifth Assessment Report (AR5) published in 2014–2015 compared with those used in the Fourth Assessment Report (AR4) in 2007 do suggest that a shift is happening. The word 'risk' appeared more than 230 times in the 26-page Summary for Policy Makers (SPM) for the Working Group II (WGII) report in AR5, compared with 40 times in the 22-page SPM for the WGII report in AR4.

**Risk management**

The specific concept of risk management was conspicuous in the communication of the AR5 WGII report. For example,

Professor Chris Field, a co-chair of WGII, explicitly used a risk framing when referring to the future impacts of climate change and the solutions available to mitigate them. He gave two reasons why such a characterization is helpful<sup>6</sup>: “The first is the importance of considering the full range of possible outcomes, including not only high-probability outcomes. It also considers outcomes with much lower probabilities but much, much larger consequences. Second, characterizing climate change as a challenge in managing risks opens doors to a wide range of options for solutions.”

The WGII SPM contained a risk chart illustrating high-probability outcomes such as threats to Arctic sea ice and coral reefs, and low-probability, high-impact

outcomes such as large-scale, singular events like tipping points<sup>7</sup>. It also contained a long list of possible policy solutions to manage the risks, such as sea walls and coastal protection.

In the IPCC press release for WGII, 'risk' was mentioned 22 times, and 'risk management' four times<sup>8</sup>. One veteran environment correspondent observed that the key message of WGII could "be summed up in one word that the overall report uses more than 5,000 times: risk"<sup>9</sup>.

Risk is a concept used throughout the social sciences<sup>10</sup>. It can range in meaning from a more colloquial sense of a possible adverse impact, to the more technical sense of the likelihood of harm multiplied by the severity of the consequences; it can also refer to the practice of assigning probabilities or confidence levels to different outcomes.

But journalists in print and broadcast mainstream media rarely seem to pick up on risk concepts, even if these are given to them in press releases and SPMs. This is important because despite the boom in niche online sites, blogs and social media, legacy media such as television and newspapers in print or online are still by far the most consulted and trusted in many countries for general science news<sup>11</sup>.

A study of the IPCC's 2007 WGI and WGII reports analysed the content of around 150 print newspaper articles published in six countries covering the reports to assess, among other things, the presence of risk language<sup>5</sup>. The study measured the presence of the word 'risk', and measured where the odds or probabilities of something adverse happening were given, or where everyday concepts or language relating to insurance, betting or the precautionary principle were included. The 'likelihood' terminology used by the IPCC in phrases such as 'extremely likely' (together with the associated numeric probability, 95% in this case) was also considered an indicator of risk language. Even with such a comprehensive characterization of risk, the results showed that the 'explicit risk'

language was present in only 35% of the articles, whereas the uncertainty or disaster/catastrophe languages were present in 80–90% of them.

Research into the use by English-language media of the IPCC 'likelihood' terminology in the 2013 WGI report came to similar conclusions<sup>12</sup>. It found that although many of the 2,038 news items examined used the term 'extremely likely', just 55 "made only a passing reference to the IPCC definitions of 'extremely likely' and 'virtually certain'".

In a recent analysis of television coverage of all the 2013–2014 AR5 Working Group reports in six countries (Australia, Brazil, China, India, the United Kingdom and the United States), explicit risk language, compared with uncertainty, disaster and opportunity, was again the least present<sup>11</sup>.

An extensive study of the dominant frames evident in legacy and social media coverage of the same IPCC reports did not include 'explicit risk' as one of its 13 frames<sup>13</sup>. The study concluded, however, that the opportunity and economic frames, where risk language would most likely be found, were far less prevalent than other frames such as settled science, disaster and uncertain science.

### Journalists and risk

These studies of media coverage suggest that journalists did not pick up on the language of risk in a volume and detail commensurate with the degree to which it was being heavily sponsored by some IPCC co-chairs and lead authors. This may be in part because the concept of 'risk management' sounds like a specialist or jargon-ridden term, which most journalists find problematic.

It is also a difficult one to explain visually for television. The disaster frame lends itself to a strong narrative and pictures, which television news needs, whereas explicit risk is more of an issue or concept than a story. Similarly, the idea of quantifying uncertainty through confidence and probability rankings

is a complex one for all journalists, who may worry that their audience will find the concepts hard to understand.

Survey work from the United States suggests that journalists covering environmental issues rarely adopt scientific concepts or assessments of risk as a basic news value, but instead follow traditional values of timeliness, proximity, human interest, prominence and consequence (or arresting visual images for television)<sup>14</sup>. For example, a survey of more than 600 environment reporters, carried out in the early 2000s, found that a risk assessment angle was the least likely storyline or framework of the nine examined<sup>15</sup>. Interviews with experienced environment journalists suggested mixed attitudes as to the helpfulness of risk language and IPCC concepts in communicating the climate challenge<sup>5</sup>.

A common exception seems to be some business newspapers. Table 1 gives four examples from the *Financial Times* in the second half of 2014, where risk language was used in an editorial and in the commentaries of its senior column writer, Martin Wolf.

It may be that business sectors are more likely to understand such language, as they deal regularly with assessing investment, insurance and other types of uncertain outcomes. Other sectors such as the military, doctors and politicians constantly deal with risk assessments and how to communicate them. Risk language may be appropriate for some members of the general public too, as they are used to the language of betting and taking out insurance or a pension policy.

So there is a compelling case to interrogate and test whether and how the IPCC language of risk might aid the three spheres of public engagement with climate change: cognition, emotional engagement (affect) or willingness to take action (behaviour)<sup>16</sup>. Could the risk framing be tailored in such a way that the media are more likely to pick it up? And if it is the case that some policymakers find the IPCC risk frame helpful, how will we know which

**Table 1 | Examples of climate and risk language in the *Financial Times***

Date	Headline of article	Example of risk language
08 July 2014	Climate sceptics are losing their grip	'What makes the report valuable is that it sets this out rightly as a problem in risk management. The aim must be to cut off the risks in the tail of the distribution of possible outcomes. The way to do so is to change behaviour. Nobody can sell us insurance against planetary changes. We have seen what tail risk means in finance. In climate, tails are fatter and likely to be far more damaging.'
21 September 2014	Saving the climate need not destroy the economy	'Climate change, like a financial crisis or an industrial accident, is a high-impact risk with an uncertain probability, and as in those cases it would be negligent not to take precautions to prevent it.'
22 September 2014	Clean growth is a safe bet in the climate casino	'All but the most obdurate sceptics must recognize that the probability of irreversible climate change is much greater than zero. But the cost of buying insurance against that risk also matters.'
11 November 2014	An unethical bet in the climate casino	'It is also "extremely likely" that more than half of the observed increase in global average surface temperatures from 1951 to 2020 is due to human activity.'

policymakers (politicians, relevant ministers, civil servants, local planners or negotiators), and in what sense it ‘helps’?

There is no silver bullet to achieve more or better coverage of climate risks in an increasingly polarized and fragmented media landscape. But more training for journalists, instigated by management, about how numbers and probabilities can be communicated effectively in text, graphics and images, should be part of the mix.

Another advantage is that if risk is used in other fields such as economics, security and health more commonly than in conventional climate circles, then a risk language could further the urgent need to move climate reporting out of the environment ghetto.

Business sectors were a target audience for a 2014 report called ‘Risky Business’, which used a risk-management perspective to lay out the threat to agriculture, energy and coastal real estate in the United States<sup>17</sup>. The report helped to change the nature of the climate change story in the media, making it a business story on the business pages, often written by business reporters<sup>18</sup>.

Talking of risk and attempting to quantify it with numbers may not make climate change a gripping story, but part of the role of journalists is to promote societal reflection. Framing the challenge as “risk and how to reduce it” could help in providing a more constructive discourse about climate change than doom and gloom or uncertainty.

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COMMENTARY:

# Media power and climate change

Julia B. Corbett

Fingers are often pointed directly at the news media for their powerful influence and ineffective reporting of climate change. But is that the best place to point? And are there more effective ways to conceptualize the power of the media and to consider whom they serve?

Over the past two decades, there has been much critique of news media coverage of climate change, including both subtle and overt suggestions that the media should be more of a watchdog of this issue. At the same time, some research<sup>1</sup> concludes that mass media are powerful agents for the way they frame climate change in news stories.

This prompts several questions: what is the role of news media (watchdog or otherwise) and how much power do they possess? Where in the process of

news — which begins with competing claims-makers who seek to instigate and influence news, culminates with the news product and concludes with media audiences — does the power of media lie? And in whose interest do news media operate — is it in the public's interest as a watchdog or for other interests altogether? I will argue that these questions are best answered when news is conceptualized (and studied) as a complex, interactive societal process rather than as prima facie powerful stories. I also argue that applying theories

of the role of media in society advances our understanding of media coverage of climate change and allows scholars to examine important questions of power and influence.

The majority of mass media research investigates the latter two parts of the news process, news content and news audiences, which can be studied singly or collectively. Research that analyses how news content affects news consumers (such as their knowledge, policy support or opinions) is part of a large body of research called media effects<sup>2</sup>. Audience effects can be found