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REPORT

Disaster Averted? Television Coverage of the 2013/14 IPCC's Climate Change Reports

James Painter

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Cover images

Main image: A temple stands amid the waters of the flooded river Tawi after heavy rains in Jammu August 19, 2012. REUTERS/Mukesh Gupta.
Inset top: Media representatives wait before a news conference to present Working Group III's summary for policymakers at The Intergovernmental Panel on Climate Change (IPCC) in Berlin April 13, 2014. REUTERS/Steffi Loos.
Inset bottom: A gumboot sits atop a fencepost on the site of the old town of Adaminaby as it re-emerges out of Lake Eucumbene, located 150 km (93 miles) south of the Australian capital Canberra June 5, 2007

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The Assessment Reports by the Intergovernmental Panel on Climate Change (IPCC), which have been published every five or six years since 1988, are widely regarded as the most important and authoritative publications on climate change on a global scale.

The fifth Assessment Report (AR5) published in 2013/14 was probably the IPCC's most important in its history. Its significance in part flowed from its updated findings, giving greater certainty to some aspects of the science. But the wider political, social, and media context in which the report was released gave the AR5 an unparalleled importance.

The IPCC itself has come under increased scrutiny since its last set of reports in 2007. Climate science and scientists have become more subject to public questioning since the so-called 'Climategate' affair in November 2009 (when emails were stolen from computers at the University of East Anglia in the UK), and the excessive publicity given to a small number of errors in the 2007 AR4 report.

There is also considerable evidence that since 2007, the general public in some countries has become less concerned about climate change and, in some countries, more sceptical about some aspects of the science. For example, in the UK, the proportion of British people who doubt that the world's climate is changing has increased from 4% in 2005 to 15% in 2010 to 19% in 2013. The proportion that say they are concerned about climate change dropped from 82% in 2005 to 60% in 2013.

There is also evidence that organised sceptical groups, especially in the UK, the USA, and Australia, have enjoyed considerable success in getting their voices heard in parts of the media and in contesting parts of the science and/or the need to take action on climate change.

Despite the huge revolution in the way people, and particularly younger age groups, consume news due to the advance of social and online media, for many publics in many countries television remains the most popular way of receiving news. In general, television news is also often the most trusted source of information compared to other media, both for general news and for science information.

There is now a considerable body of academic research and other studies analysing the way climate change is reported in the media. However, few of these studies have included analysis of the way climate change has been reported on television news. And of those that have, few have included cross-country comparisons.

In this study we focused on television coverage in six countries: Australia, Brazil, China, Germany, India, and the UK. The six countries offer a range of different media landscapes, journalistic practice, and political and social contexts in which climate change receives coverage.

We examined one evening bulletin on one channel in each country the day before and the day of the release of the three IPCC Working Group (WG) reports which came out in September 2013, March 2014, and April 2014 respectively.[1] This gave us a total of 36 bulletins, of which 13 carried items on the IPCC reports.

[1] Australia ABC 1 at 19:00 (Sydney time); Brazil TV Globo, *Jornal Nacional* at 20:30; China CCTV-1 *Night News* at 22:00; Germany ARD *Tagesschau* at 20:00; India Aaj Tak News bulletin at 21:00; UK BBC *News at Ten* at 22:00.

In each country we chose a channel that commanded a significant audience, often the largest in the country for an evening news bulletin, and often the most trusted. The combined audience of the six channels is around 50 million. With the possible exception of India, the audience for the news bulletins on these television channels is much higher than the circulation of the largest newspaper in the country.

We applied the same four frames to our analysis of television bulletins which we had used in the 2013 RISJ publication, *Climate Change in the Media: Reporting Risk and Uncertainty*. These are 'disaster' in the sense of adverse impacts, 'uncertainty', 'explicit risk' and 'opportunity' (see the box, p. 31). All these common ways of presenting the climate change story are subject to considerable scrutiny as to their efficacy in promoting public understanding, engagement, or behaviour change.

Doom-laden depictions of climate change are ubiquitous in the media, and yet such disaster narratives are not regarded as helpful to genuine personal engagement. Uncertainty can be an obstacle to decision-making. Scientific uncertainty is often misunderstood, particularly by the general public, and misinterpreted as ignorance. This has fed into an active debate as to whether, in some cases, framing climate change as one of risk is more helpful. Emphasising more hopeful messages, such as the opportunities of low carbon development, is also seen by some scholars as more 'helpful' for personal engagement from some sectors than a narrative of catastrophe or disaster.

We were also interested in the volume of coverage of the three reports, country differences in the presence of the climate 'pause' narrative[2] and/or of sceptical voices, the use of the IPCC concepts of likelihoods and confidence levels, and the appearance of representatives of different sectors in the bulletins.

Our main findings are:

- Across all three IPCC reports, the disaster frame was the strongest of all the frames, measured by presence, salience, and dominant tone.[3] As was to be expected, this was particularly true of WG2, which focuses on impacts, but it was also strongly present in the reporting of WG1 (on the physical science).
- Uncertainty was present in 7 of the 13 reports, and particularly in the coverage of WG1, but it was not particularly salient or dominant. The opportunity frame had the same presence as the uncertainty frame (seven), and was, as one would expect, strongly dominant in the coverage of WG3 which focuses on solutions.
- Although the IPCC put considerable emphasis on 'risk management' in its communication of the WG2 report, the explicit risk frame was the least present, and the least number of times a dominant tone (once). It was only salient in one of the 13 reports.

[2] This refers to the lack of significant rise in global average temperatures since 1998.

[3] Presence is measured by the appearance of the frame anywhere in an article and salience by their presence in headlines or the opening element of the report. Dominance includes a wide variety of indicators such as the relative weight of a frame throughout an article, salience, prominent quotes, and the use of language such as metaphors and adjectives.

- The volume of coverage declined from 6 items for WG1, 4 for WG2, to 3 for WG3. It also declined in terms of the total amount of coverage from 14.45 minutes (WG1), 11.45 minutes (WG2), to 7.15 minutes (WG3).
- In the bulletins we monitored, the three channels in the Western industrialised countries covered all three reports on the day of the release. Of the three developing countries, *Jornal Nacional* in Brazil covered the first two reports.
- In contrast, China's CCTV-1 ran only a short piece of around 40 seconds read out by the anchor about the WG1 report. It had no coverage of WG2 or WG3. Aaj Tak in India covered none of the reports.
- Three of the 13 bulletins mentioned the climate 'pause' in their coverage of WG1; these were on the ABC, BBC, and *Jornal Nacional.* Only one sceptic[4] appeared on screen (Professor Richard Tol on the BBC), although there was a generic mention of sceptics on the BBC and on *Jornal Nacional* in Brazil.
- Only 2 of the 13 bulletins used the IPCC language of likelihood and confidence levels, and one of these gave a full explanation of what they meant.
- IPCC authors and other scientists were almost exclusively the interviewees who appeared on screen during the reports. Of the 35 clips of interviewees which appeared, 19 were IPCC authors, 7 were non-IPCC scientists (and 9 others).

The above results are discussed and analysed in the context of other studies of the media coverage of the IPCC reports, drawing out parallels with print coverage and highlighting some issues worthy of consideration around the effective communication of the messages around the IPCC reports.

One of these is that visually the adverse impacts of climate change are probably easier to illustrate for television than any other frame. It's a truism but television news needs pictures to tell stories, and is better at telling stories than dealing with issues. The disaster frame lends itself to a strong narrative, whereas risk for example is more of an issue than a story. It will remain a major challenge to shift the dominant narratives around climate change, particularly as television is such an important medium for many publics.

[4] See Chapter 3 for a detailed description of Professor Tol's scepticism.

1. Introduction

The publication of the Fifth Assessment Reports (AR5) by the Intergovernmental Panel on Climate Change (IPCC) starting in September 2013 offered a unique opportunity to address several key questions surrounding the international media's coverage of climate change. These Assessment Reports are a culmination of work by several hundred climate scientists around the world which analyse and summarise the latest research. They have been published every five or six years since 1988, and are widely regarded as the most important and authoritative publications on climate change on a global scale. They consist of three working group (WG) reports. In the case of AR5, they were published on the following dates: WG1, *The Physical Science Basis* (27 Sept. 2013); WG2, *Impacts, Adaptation and Vulnerability* (31 Mar. 2014); and WG3, *Mitigation of Climate Change* (13 Apr. 2014).

As will be argued in Chapter 3, there are reasons for thinking that the AR5 was the most important IPCC report to have been published since the IPCC was set up in 1988. Its significance in part flowed from its updated findings, including the assessment that the likelihood that most of the observed increase in average temperatures since the 1950s was due to anthropogenic factors had risen from 'very likely' in 2007 (meaning more than 90% certain) to 'extremely likely' (more than 95%). But the wider political, social, and media context in which the report was released gave the AR5 an unparalleled importance.

Climate science and scientists had come under increased scrutiny since the so-called 'Climategate' affair in November 2009 (when emails were stolen from computers at the University of East Anglia in the UK), and the excessive publicity given to a small number of errors in the 2007 AR4 report. There is also considerable evidence that since 2007, particularly in the UK and the USA, the general public has becoming less concerned about climate change and more sceptical about some aspects of the science. There is also evidence that organised sceptical groups, especially in the UK, the USA, and Australia, have enjoyed considerable success in getting their voices heard in parts of the media and in contesting parts of the science and/or the need to take action on climate change. One of their main lines of argument, which had gained considerable traction in parts of the media in 2013, was that there had been 'no increase in surface warming since 1998'[5] during a period when the concentrations of greenhouse gases in the atmosphere had been increasing at around 2% a year. In short, the AR5 report was bound to be scrutinised with more dedication, particularly from sceptic groups and individuals, than had been the case with previous reports.

There is now a considerable body of academic research and other studies analysing the way climate change is reported in the media.[6] Whereas in previous years this was largely confined to industrialised countries, there are now a large number of articles examining media treatments right across the world, including Africa, Latin America, China, and India (Schmidt *et al*. 2013). The RISJ has published several works on the topic focusing on cross-country comparisons, including an analysis of the differences between the presence of sceptical voices in Anglo-Saxon countries compared to non-

[5] Between 1998 and 2013, the Earth's surface temperature rose at a rate of 0.04°C a decade, slower than the 0.18°C increase in the 1990s. See 'Who Pressed the Pause Button?', *The Economist*, 8 Mar. 2014.
[6] See bibliography in Boykoff 2011.

Anglo-Saxon countries (Painter 2011), and the way risk and uncertainty around climate change have been represented (Painter 2013). However, these studies, like most other studies in this general field, did not include an analysis of the way climate change has been reported on television news. Even the few studies that have concentrated on television (for example, those listed in Boykoff 2011: 50) have for the most part not included cross-country comparisons.

This is an important omission. Despite the huge revolution in the way people, and particularly younger age groups, consume news due to the advance of social and online media,[7] for many publics in many countries television remains the most popular way of receiving news. In general, television news is also often the most trusted source of information compared with other media. For example, in the UK television remains the most important and frequently used mode of news consumption by some margin, compared to newspapers, radio, or new media. In 2014, 75% of adults said they used the television to access news, compared to four in ten saying they used newspapers, the same proportion using the internet (either on a computer or mobile), while radio was used by just over one-third (36%) (Ofcom 2014). The same report suggested that UK viewers also rated television highly for accuracy, reliability, and trust, particularly compared to other sources. We also know that television in the UK is the most important source for news about science. As we shall see in Chapter 4, in 2014, 68% of the British people regularly used television news and programmes as the main source of information about science. This compares to 23% for print, and 15% for online newspapers and news sites, and 2% for blogs.

There is also considerable evidence that in general, television is the most highly rated medium for information about climate science. For example, a survey of 18 countries in May 2010 (including five of the six countries in this study) suggested that a majority of the 13,000 people questioned rated TV as the best media source for climate change information, followed by websites.[8]

For this reason, in this study we focused on television coverage, and particularly in six countries: Australia, Brazil, China, Germany, India, and the UK. Such a cross-country approach offers important insights into significant country differences in the amount of coverage climate change coverage receives, and in the way it is reported. The six countries offer a range of different media landscapes, journalistic practice, and political and social contexts in which the climate change receives coverage. We have included three large developing countries, all of which are key players in the international negotiations to reduce Greenhouse Gas (GHG) emissions; and three developed countries, where there are important distinctions between the presence of climate sceptics in the media and wider society.

Our focus on examining four narratives – disaster, uncertainty, risk, and opportunity – that were in evidence from the television coverage feeds into the growing debate about the different ways the climate change narrative is framed by the media, and whether this is helpful for public understanding, engagement, or behaviour change. Doom-laden depictions of climate change are ubiquitous in the media, and yet such disaster narratives are not regarded

[7] RISJ, *Digital News Report*s 2013 and 2014, available via http://www.digitalnewsreport.org/; Ofcom 2014.

[8] 'Climate Change Concern Remains High across the Globe, Says Synovate and Deutsche Welle Global Study', 28 May 2010.

as helpful to genuine personal engagement (Rapley *et al*. 2014; O'Neill and Nicholson-Cole 2009). The issues on the communication of uncertainty around climate science are fully set out in previous RISJ publications (Painter 2013; Ashe 2013), and have been amply rehearsed in other research (Shuckburgh *et al*. 2012; Glasgow Media Group 2012; Patt and Weber 2014). The IPCC itself is involved in considerable efforts to address this difficult question, and has published its own guidelines to its authors (Mastrandrea *et al*. 2012).

There is considerable evidence that policy-makers and the public struggle with uncertainty, which has fed into an active debate as to whether, in some cases, framing climate change as one of risk (particularly for policy-makers or decision-makers) is more helpful than framing it as uncertainty (Painter 2013: ch. 3). Emphasising more hopeful messages, such as the opportunities of low carbon development as a way of reducing GHG (but many others too), is seen by some scholars as more 'helpful' for personal engagement from some sectors than a narrative of catastrophe or disaster (particularly when not accompanied by messages on effective actions individuals can take) (Roser-Renouf *et al*. 2014; Moser and Dilling 2007). So this report feeds into these debates by laying out what six television channels, with a combined audience of around 50 million, actually do when they cover the world's most authoritative report on climate change.

2. The Coverage of IPCC Reports Prior to 2013

The 2007 Reports

The 2007 IPCC reports have been included in several academic papers examining print media treatments of climate change, but they have tended not to be the specific focus of these papers. For example, two researchers at the University of East Anglia looked at 150 articles in four UK quality newspapers from June 1997 to June 2007, and examined which of five discourses (optimism, rationalism, ethical or self-righteous mitigation, 'disaster strikes' or potential catastrophe, and opportunity) were the most common (Doulton and Brown 2009). They found that 'potential catastrophe' was by far the most common discourse, accounting for a third of the 150 articles, whilst 'disaster strikes' was also relatively common, with around 20 articles. The coverage of the IPCC reports often fell within the 'potential catastrophe' discourse, a finding also highlighted in a study by Professor Mike Hulme discussed below (Hulme 2009).

On India, the media analyst Simon Billett included the 2007 IPCC reports in his oft-quoted study of four English-language dailies in India between 2002 and 2007 (Billett 2009). In his research he found that the Indian print media almost never questioned the science behind climate change, and typically focused on India's vulnerability to climate risks and the West's responsibility to take action to cut GHG emissions. However, there were no specific findings on the coverage of the IPCC reports. This is also true of a recent study of the Indian print media, which found some evidence of a less nationalistic narrative which favoured India taking action on its own (Jogesh 2011).

The same holds broadly true of studies of the Chinese print media which include 2007 (Yang 2010; Wu 2009). Yang found that coverage of global warming and animal protection was significantly more extensive than that of 'pollution and health' and 'environment and health', in part because of coverage of the IPCC reports. Likewise in Germany, an exhaustive study of that country plus the USA, the UK and France included the 2007 reports (and found a peak in coverage in all four countries in that year), but was not focused on media treatments of the IPCC (Grundmann and Scott 2012). The 2007 IPCC reports have also featured in research on the Brazilian media's coverage of climate change (Fioravanti 2008; Miguel 2012). Fioravanti found that the coverage by the *Independent* in the UK of climate change was much more comprehensive than that of *Folha de Sao Paulo*, which tended to rely on quotes from scientists but not on other voices from civil society. Neither the Fioravanti study nor the Miguel study were focused on the media treatments of the IPCC reports.

However, we do have some data on Australia. The three newspapers, the liberal *Sydney Morning Herald*, the right-leaning *The Australian*, and the tabloid *Herald Sun,* were included in an extensive RISJ study of the print media's reporting of risk and uncertainty (Painter 2013). This study looked at 344 articles in six countries (Australia, France, India, Norway, the UK, and the USA) which included coverage of the release of the first two 2007 IPCC reports, but also the IPCC's 2012 report on extreme weather events, and the melting of the Arctic sea ice since January 2010.

Of the 344 articles, 101 covered the WG1 report and 50 the WG2 report. The study assessed the relative presence, salience, and dominance of four frames (uncertainty, disaster, explicit risk, and opportunity), and found that

for the WG1 and WG2 reports, both the disaster frame and the uncertainty frames were present in 87% of the articles. Explicit risk and opportunity were much less present at 35% and 13%, respectively (Painter 2013: 68–9). Another significant finding of relevance to this study is that the IPCC concepts of likelihood and confidence levels were found in 42% of the 151 articles covering the WG1 and WG2, but a relatively small percentage (15%) included an explanation of what they meant. There were few country variations, the one major exception being the presence of uncertainty through sceptical voices: Australia had the highest total of articles in the sample with sceptics in them and the highest percentage of such articles, followed by the USA. More details of the results for Australia and the other five countries can be found in the separate country sections (Painter 2013: ch. 6).

One of the few exceptions to the lack of studies specifically focused on the media's treatment of the 2007 IPCC reports is work done by Professor Mike Hulme (Hulme 2009). He examined all 10 UK national daily newspapers on the day after the three Summaries for Policymakers (SPMs) for the different Working Groups were published in February, April, and May 2007 respectively. This gave him a sample of 55 articles. Amongst his many conclusions were:

- There was a significant difference in the volume of coverage between the three reports, as WG2 received about 67% of the coverage of WG1 and WG3 about 30%.
- An overwhelmingly alarmist tone featured in the reporting of the WG1 and WG2 reports. The language of catastrophe, fear, disaster, and death was an almost universal trait, with the possible exception of the *Financial Times* and *The Times*. Over 75% of items reporting on WG1 and WG2 fell into this category.
- This has the effect of 'presenting climate change through scary, and almost pre-determined, doom-laden scenarios saturated in the language of fear and disaster, rather than as a contingent phenomenon with a malleable outcome which can be heavily influenced by policy choices'.
- The reasons for these preferences may have as much as to do with journalistic norms and practices in favouring bad news and melodrama over more nuanced and contingent interpretations of climate change than they are a result of different newspaper ideologies.
- Adaptation – reducing society's sensitivity to climate change – was largely absent, or at best marginalised, from the reporting of WG2, while discussion of the potential policy options for mitigation – reducing society's exposure to climate change – was relegated in third place in the less extensive reporting of WG3.

Some of these findings were consistent with those of a study carried out of the international TV reporting of the WG2 and WG3 reports (Painter 2007). This study looked at the coverage of these two reports on the most popular television channels in five key developing countries who were also key players in climate change negotiations, namely Brazil, China, India, Mexico, and South Africa. Russia was also added in part because it belonged to a grouping known as the BRIC countries, then gaining currency as a useful unit of analysis. The six mass-appeal TV stations were monitored on the evenings (local time) of 6 April and 4 May to be able to contrast the contents of their news bulletins on the two nights. Flagship news programmes were chosen

from TV Globo in Brazil, CCTV-1 in China, Aaj Tak in India, Televisa in Mexico, Channel One in Russia, and SABC-3 in South Africa. In all six countries studied, television had a much wider audience than the number of readers of newspapers or users of the internet.

The main conclusions of the study were that:

- The most popular channels in India, Mexico, and Russia, with a combined audience of more than 100 million, carried no news at all of either the WG2 or WG3 report on their main evening news broadcasts (the coverage of the WG1 report was not included).
- However, China's most watched channel and one of South Africa's most popular stations for news did carry reports on the WG2 report. Both the WG2 and WG3 reports contained significant implications for the long-term development of all six countries monitored.
- The IPCC's WG2 report received significantly more coverage than the WG3 report. Of the six domestic TV channels monitored, three covered the WG2 report but only one (Brazil's TV Globo) included the WG3 report on their flagship evening news programmes.
- The higher level of coverage of the WG2 report may have been in part because 'doom and gloom' stories are more attractive to the media. However, the earlier time for the release of the WG3 report, competition with other news stories, the availability of agency pictures, or mitigation being a more complex story may have also been explanatory factors for the WG3 report receiving less coverage.
- The word 'adaptation' appeared in the title of the WG2 report, but positive illustrations of adaptation were rarely included in the media coverage. This was despite the fact that international NGOs were supporting examples of poor people successfully following adaptation programmes at the local level.

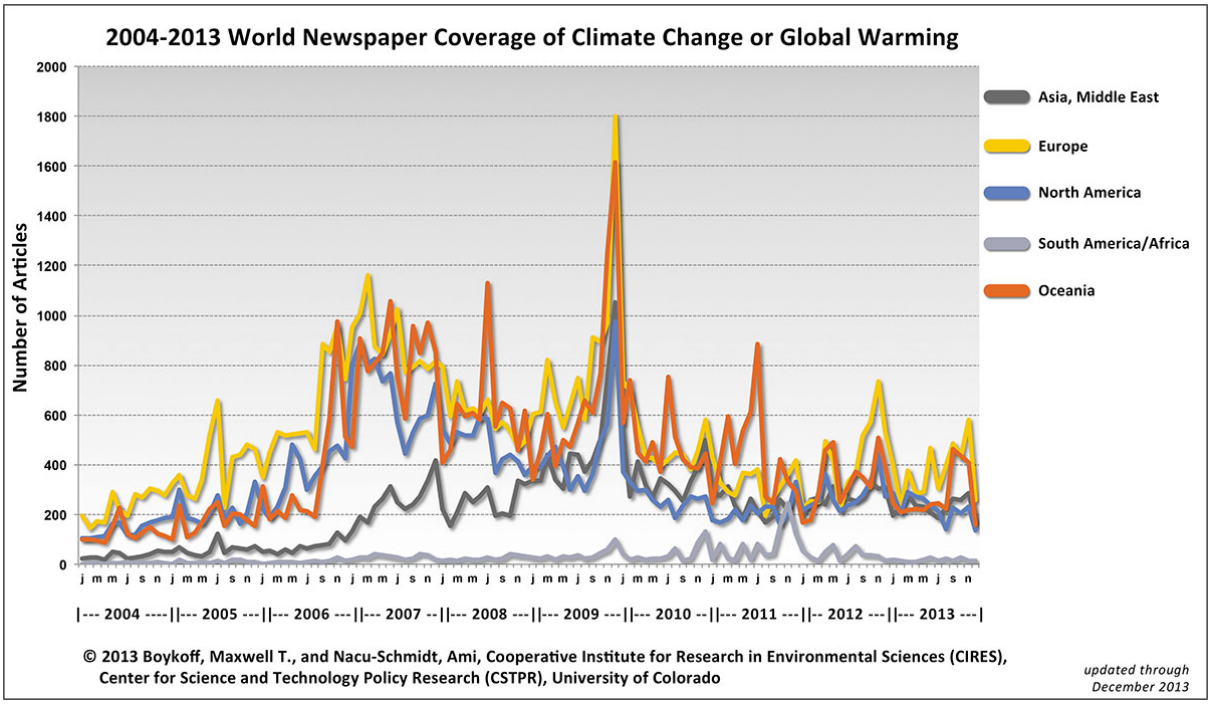
Some possible contributory factors, both societal and media-related, were put forward to account for the differences in coverage between the six countries. In Russia, much of the media, and particularly TV, are essentially controlled by President Putin and his close advisers, who did not at the time consider global warming a priority. None of Putin's annual addresses in the three years prior to 2007 had touched on climate change in a meaningful way. In contrast, in Brazil the media consistently cover climate change issues, partly driven by business and politicians' interest in the topic (such as the country's potential as a bio-fuel supplier or the effect of a changing climate on agricultural exports), public and NGO concern for the destruction of the Amazon rainforest, and the personal interest in the environment of one of owners of TV Globo.

In India, the relentless drive of 'infotainment' in the highly competitive media market (where at the time there were 30 24/7 news channels) crowded out climate change issues in favour of sport, Bollywood, crime, and national or regional politics. In Mexico, the two IPCC reports coincided with a period of considerable political upheaval as a newly installed government initiated a major campaign against drugs traffickers. Also, the day of the release of the WG2 report was Good Friday, so Televisa dedicated a considerable amount of time to how Easter was being celebrated in Mexico and around the world.

The Volume of Media Coverage

Although we do not have much analysis available of the media coverage of the 2007 IPCC reports, we do know that the publication of the three reports in February to May of that year contributed to a peak in the coverage by the international print media of climate change in many parts of the world (see Figure 1). Indeed, for Europe and North America, the early part of that year represented a high point in the volume of coverage for the whole of the period between 2004 and 2013, with the exception of the Copenhagen summit at the end of 2009. For the USA, it represented a peak for the whole ten-year period.

Figure 1.



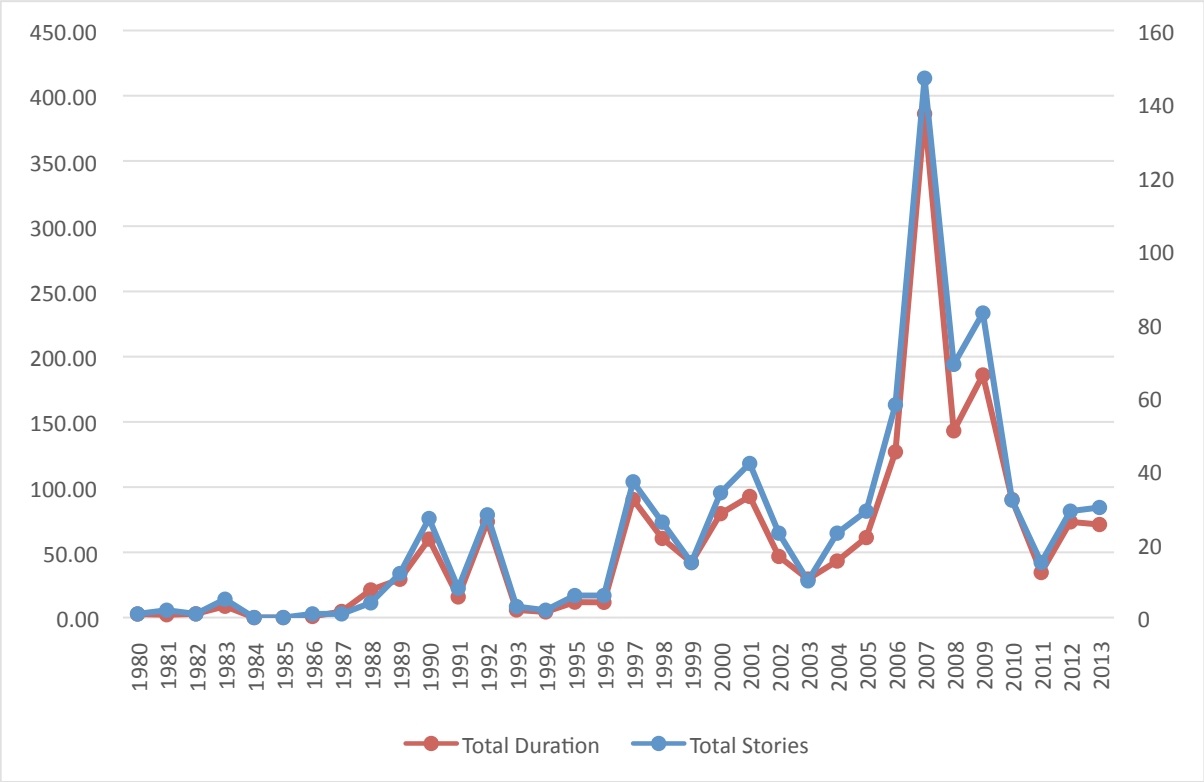
Of the countries covered in this study, the UK print media gave extensive coverage to the 2007 IPCC reports (the second largest peak in the period 2004–13), which was, as we shall see, considerably more than it gave to the 2013/14 reports.[9] One indication of its perceived significance was that the WG1 report attracted five front-page news-stories, and the WG2 report two (Hulme 2009: 122). The BBC even sent one of its star news presenters, Fiona Bruce, to Paris to cover the launch of WG1 in February. In India, an analysis of four English-language newspapers (*Times of India, The Hindu, Hindustan Times,* and the *Indian Express*) also shows a peak in the early part of 2007, which just edged out other peaks in late 2009 and late 2010.[10] In Australia, five principal newspapers also gave extensive coverage to the issue of climate change in 2007, although there were similar peaks in 2008, 2009, and 2011.[11]

Few studies have been carried out of the volume of television coverage of climate change over a sustained period, but one exception is the research

[9] http://sciencepolicy.colorado.edu/media_coverage/uk/index.html.
[10] http://sciencepolicy.colorado.edu/media_coverage/india/index.html.
[11] http://sciencepolicy.colorado.edu/media_coverage/australia/index.html.

done by Professor Robert Brulle at Drexel University in the USA, who has been monitoring the evening broadcasts of three major US network stations, NBC, ABC, and CBS, since 1980 (see Figure 2). He has found that the number of news stories about climate change peaked in 2007 with 147 stories but fell to 32 in 2010, and to just 14 in 2011. It recovered in 2012 and 2013 (30 and 29 stories respectively), but this was still way off the high point of 2007.

Figure 2. Total Number of Stories about Climate Change on US Networks, 1980–2013



The decline in the volume of coverage of climate change in most of the world's media since 2009 can be attributed to several factors, although it is difficult to assess their relative weight. The first is that the peak in 2009 was due to the Copenhagen summit, which was attended by heads of state from many countries of the world and portrayed as a hugely significant event. This whipped up a large media presence and expectation, and resulted in many political correspondents being sent to the event alongside environment reporters. The presence of the media was huge (Painter 2010), and there's been nothing like it since on the climate change beat.

Another is linked to the nature of the 'story': in the last few years, climate science has not generally shown startlingly new results which would provoke headlines or sustained coverage. Another is the decline in the number of environment correspondents, particularly in the USA due to the pressures on traditional media business models, and another is the reduction in budgets for journalists to cover climate change conferences or to travel to areas affected by climate change (Arevalo 2012). Some journalists also noted a general fatigue amongst editors, politicians, and the general public for the climate change issue, particularly when compared to a series of more obviously newsworthy stories such as the financial crisis and economic

recession in the West, the upheavals in various Arab countries, and the ongoing conflicts in Afghanistan and Pakistan.

3. The 2013/14 IPCC Reports

The Context

There are several differences in the context of the media's reporting of the IPCC's 2013/14 reports compared to the previous reports in 2007. As we have seen, one is that there has been a decline in media interest in the climate change issue. But three other developments are worth mentioning: a greater questioning of the IPCC's reliability and credibility as an authoritative voice; a rise in sceptical voices in the media of some countries, and particularly the 'Anglo-sphere'; and a decline both in public concern about climate change, and in public belief that it is taking place or mainly human-caused.

The 2007 IPCC reports undoubtedly contributed to a growth in media coverage and awareness or concern amongst the public in several countries. It was one of the reasons the IPCC received a share of the Nobel Peace Prize in the same year with former US vice president Al Gore, and contributed to the unprecedented hype and expectations, particularly from NGOs, around the Copenhagen summit in December 2009.

However, this was probably a high point for the IPCC's reputation and impact. Just prior to the summit, the media latched onto the so-called 'Climategate' affair, which has been widely analysed and discussed in the media, articles, and books (Pearce 2010; Painter 2011: appendix 1). Emails exchanged between scientists working with the IPCC were stolen from the Climatic Research Unit at the University of East Anglia in the UK and published in November, just before the Copenhagen summit. They purported to show some collusion between researchers to make climate data fit the theory of human-induced global warming more clearly, and to keep critics out of science publications. However, three investigations in the UK found no evidence to support this conclusion and concluded that the basic science of climate change had not been undermined.

Critics of the IPCC 2007 report also highlighted a small number of errors, including the claim that Himalayan glaciers would disappear by 2035 (which may have been based on a typographical error for the year 2350). The IPCC (eventually) admitted it had got it wrong and explained that, in a report running to 3,000 pages, there were bound to be some mistakes. However, in the early months of 2010 the mistake gave ample opportunity to parts of the right-leaning UK print media, and particularly the *Daily Mail* and *Sunday Telegraph*, to give ample coverage to the mistake. Unsurprisingly, given the location of the Himalayas and the nationality of IPCC chair Rajendra Pachauri, the Indian media also covered the controversy extensively (Painter 2011: ch. 5).

Another smaller error which attracted much less attention in the media was an assertion in the WG2 report that, in some African countries, 'additional risks that could be exacerbated by climate change include greater erosion, *deficiencies in yields from rain-fed agriculture of up to 50% during the 2000–2020 period*, and reductions in crop growth period' (emphasis added). Some scientists questioned the figure for deficiencies in yields.[12] In the same report, the wrong percentage was given for the amount of land in the Netherlands under sea level, although this was traced back to an error by the Dutch environment agency PBML.

[12] Jonathan Leake, 'Top British Scientist Says UN Panel is Losing Credibility', *Sunday Times*, 2 July 2010.

In part as a result of these errors, the IPCC commissioned a report by the InterAcademy Council (IAC) of its reviews and processes. In October 2010, the IAC published its results which included a recommendation that the IPCC 'should complete and implement a communications strategy that emphasizes transparency, rapid and thoughtful responses, and relevance to stakeholders, and that includes guidelines about who can speak on behalf of IPCC and how to represent the organization appropriately'.[13] The recommendation stemmed in part from a recognition that the IPCC had 'come under severe criticism for the manner in which it has communicated with the media and public. The lack of an ongoing media-relations capacity and comprehensive communications strategy has unnecessarily placed the IPCC's reputation at risk and contributed to a decline in public trust of climate science.'[14]

Indeed, there is some evidence to suggest that public trust in climate scientists in the UK and the USA did take a temporary hit, although it has recovered.[15] What is more certain is that sceptical voices became much more prevalent in the media from the end of 2009, particularly in the UK and the USA, when compared to the period of the IPCC reports in early 2007 (Painter 2011: 58–9). There was a small increase in the number of articles with sceptical voices within them in Brazil, India, and China over the same period (France stayed the same) but nothing like as pronounced an increase (Painter 2011: ch. 4; Painter and Ashe 2012). Although the volume of coverage in the UK print media diminished considerably in early 2011, the incidence of sceptical voices remained the same at roughly one in five articles (Painter and Gavin 2014).

In Australia, the incidence of sceptical voices in the media is probably higher than in the UK. A study of more than 600 articles in 10 newspapers of two periods in 2011 and 2012 by the Australian Centre for Independent Journalism found that 32% of them dismissed or questioned whether human activity was causing the climate to change (Bacon 2013). Sceptical voices were to be particularly found in opinion pieces in the News Corporation papers owned by Rupert Murdoch, such as *The Australian*, the *Telegraph,* and the *Herald Sun*. Australia had the highest number of articles in the print media with sceptics in them and the highest percentage of the six countries examined in the RISJ 2013 study (Painter 2013: p. ix).

There is considerable evidence from the UK media that some newsrooms and editors put pressure on their correspondents and journalists to include more sceptical voices in their coverage (O'Neill 2010). Many journalists argued that sceptics became a legitimate and more credible part of the story around the time of 'Climategate' and 'Himalayagate'. Some of them also noted that as a result sceptics were emboldened to speak out or be quoted on a wide range of issues around climate change, from the science to the policy of what to do (or not) about combating it. This in large part explains how organised scepticism, and particularly the Global Warming Policy Foundation (GWPF), was able to take advantage of the 'scandals' to reach a remarkably prominent position in the UK print coverage of climate change in the months after its formation in November 2009.

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[13] InterAcademy Council, *Review of the IPCC*, Aug. 2010, p. xv.
[14] Ibid., p. 62.
[15] https://www.gov.uk/government/collections/public-attitudes-tracking-survey; http://environment.yale.edu/climatecommunication/files/Climategate_Opinion_and_Loss_of_Trust.1.pdf.

How much the presence of sceptical voices in the media made a significant long-term difference to public attitudes to climate science, including their level of concern or their willingness to change their behaviour, is difficult to ascertain. All sorts of factors affect such attitudes. However, what is more certain is that, in the UK, survey data from 2005 onwards compiled by Ipsos-Mori and Cardiff University do suggest that the proportion of British people who doubt that the world's climate is changing (so-called 'trend scepticism') has been steadily rising. It increased from 4% in 2005 to 15% in 2010 to 19% in 2013.[16] The same survey showed that, even though public opinion on the causes of climate change remained fairly constant over the same period, the proportion of the sample indicating that they were concerned about climate change dropped from 82% in 2005 to 71% in 2010 to 60% in 2013.[17]

Data from the USA suggest a not dissimilar pattern in public attitudes. The proportion of people who do not believe global warming is happening rose from 10% in 2008 to 23% in 2013, whereas the proportion believing it is happening has dropped over the same period from 71% to 63%.[18] Over the same period, the proportion of the American people who are 'somewhat' or 'very worried' about global warming fell from 63% to 53%.[19] In Australia 45% of the population now see global warming as a 'serious and pressing problem', up 5 points since 2013, but still considerably lower than the 68% who held this view in 2006.[20]

As for the rest of the world, there is also evidence that by early 2013 public concern about environmental issues including climate change had slumped to a 20-year low. According to a survey by Globescan Radar which looked at 22 countries (including the six countries examined in this study), fewer people considered issues such as CO_2 emissions, air and water pollution, animal species loss, and water shortages to be 'very serious' than at any time in the last two decades.[21] In this survey 49% of the 22,000 people surveyed considered climate change a very serious issue – far fewer than at the beginning of the worldwide financial crisis in 2009. According to this survey, worries about climate change first dropped in industrialised nations but now had also fallen in developing economies such as Brazil and China.

In the European Union, the Eurobarometer surveys suggest that little changed in public attitudes in the years between 2008 and 2013.[22] In 2008, 75% of those surveyed thought that climate change was a very serious problem, 15% a fairly serious problem, and 7% not a serious problem. In 2013, the figures were 69%, 21%, and 9% respectively. So the combined total for those thinking it a very or fairly serious problem remained the same at 90%, and the figure for those thinking it not a serious problem increased slightly by 2%. The UK often scores more highly than other countries for those who do not think it is a problem.

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[16] www.ipsos-mori.com/researchpublications/researcharchive/3284/British-public-split-on-nuclear-power.aspx.
[17] Ibid.
[18] *Climate Change in the American Mind: Americans' Global Warming Beliefs and Attitudes in November 2013*, Yale Project on Climate Change Communication and George Mason University Center for Climate Change Communication, 2013. 8.
[19] Ibid., 14.
[20] Alex Oliver, *The Lowy Institute Poll 2014*, Lowy Institute for International Policy, 2014, 8–9.
[21] www.globescan.com/news-and-analysis/press-releases/press-releases-2013/261-environmental-concerns-at-record-lows-global-poll.html.
[22] Eurobarometer, *Climate Change* reports, several years.

There are many possible drivers of public concern about climate change, other than the level of media coverage. Economic circumstances (such as recessions), weather anomalies, campaigns by lobby groups, and politicians espousing action all may have an influence.[23] The view that people only have 'a finite pool of worry' available (where other pressing concerns such as a job or the cost of living may dominate) has often been put forward.[24] In the USA, research by Professor Robert Brulle and colleagues suggests that scientific publications, such as IPCC reports, have little effect on such an ebb and flow of public views (Brulle *et al*., 2012). They looked at the period between 2002 and 2010, and assessed five factors that could account for levels of concern: (1) extreme weather events, (2) public access to accurate scientific information, (3) media coverage, (4) elite cues, and (5) movement or countermovement advocacy. (1) and (2) had little or no effect. Media coverage did exert an important influence, but this coverage was itself largely a function of elite cues and economic factors. They concluded that political mobilisation by elites and advocacy groups was critical in influencing climate change concern.

In summary, a strong argument can be made that the 2013/14 IPCC reports were more important than any of their predecessors. First, as we have seen, it was the first Assessment Report since the IPCC had been subject to the controversy over 'Climategate' and the errors in the 2007 reports. One journalist described the 'leaden cloak of responsibility' hanging over the IPCC authors, whose report, it claimed, could 'revive the drive against climate change'.[25] Secondly, as we have amply described, the reports were the first to be publicised since the rise of organised sceptical groups in several 'Anglo-sphere' countries and an apparent increase in some forms of scepticism in the general population.

They were also the first to be published since the recommendations made by the IPCC for the overhaul of its procedures. Finally, they were the last before the UN meeting to be held in Paris in December 2015 where world leaders are due to finalise an international agreement on reducing emissions against a backdrop of climate change dropping off many of their political agendas. In short, the reports amounted to what the *Financial Times* called 'one of the most carefully analysed documents on climate change this decade, probed and picked apart by the thousands of people around the world for whom the subject has become a driving passion'.[26] The boom in online and social media facilitated this inevitable non-stop public scrutiny.

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[23] See e.g. L. Scruggs and S. Benegal, 'Declining Public Concern about Climate Change: Can we Blame the Great Recession?', *Global Environmental Change*, 22 (2012), 505–15.
[24] E. U. Weber, 'What Shapes Perceptions of Climate Change?', *Wiley Interdisciplinary Reviews: Climate Change*, 1 (2010), 332–42.
[25] Richard Ingham, 'Can UN Scientists Revive Drive Against Climate Change?, Agence France-Presse, 25 Aug. 2013.
[26] Pilita Clark, 'What Climate Scientists Talk about Now', *Financial Times*, 2 Aug. 2013.

The Run-up

Prior to the release of each of the three IPCC reports, parts of the media (mostly in Western countries) and particularly print and online, were already discussing in some detail what the reports would say, or not say.[27] This was in part due to the leaking, or the posting online, of early drafts of the reports, partly by the sceptic website Bishop Hill, which different media organisations, and particularly the news agencies, published before the official launches. But it was also due to the intense interest in the reports driven by the political factors and other drivers mentioned above. Sceptic organisations clearly had an interest in constructing a narrative around the reports that could counter the main headline findings the IPCC was keen to publicise. It is important to stress that on the whole such 'leaks' were largely ignored by the broadcast media (as they are more difficult to cover), but they did contribute to setting an editorial agenda around the reports.

This was particularly the case with the WG1 report on the Physical Science. In the months leading up to the report's official launch in September, a number of aspects were already being discussed in the traditional and new media, and particularly on the blogosphere. These included the general question of whether the IPCC really had anything startlingly new to add to the WG1 report of 2007, and more specific questions about higher levels of certainty about the anthropogenic drivers of global warming, and updates on such areas as sea-level rises and the 'carbon budget'. But another issue came to dominate the media coverage, particularly in the Anglo-sphere press, which framed the media context in which the IPCC was operating: the so-called climate 'pause'.

The background was that the 2007 IPCC report had made no mention of any slowdown or standstill in temperature rises in the decades prior to the report. Indeed, the report stated that the warming trend over the previous 50 years was 0.13°C per decade, or nearly twice that for the last 100 years. It also forecast that if emissions of carbon dioxide continued on their existing path, over the next century the climate would respond by warming between 2°C and 4.5°C, with a most likely rise of 3°C.[28]

For several years, climate sceptics had already been arguing very vocally that global average surface temperatures hadn't actually gone above the level recorded in 1998 (which happened to be an exceptionally warm year due to the effect of El Niño). The sceptics argued that this had occurred even though the amount of carbon dioxide had reached a record level of 400 parts per million in 2013. This slowdown, hiatus, or pause was used by them to argue that climate models used by the IPCC were too sensitive and exaggerated the effects of carbon dioxide in the atmosphere.

The media's interest in the 'pause' can be traced back to as early as 2006.[29] A particularly prominent example from the mainstream media was a column piece published in April that year by the Australian climate sceptic Bob Carter in the *Telegraph* in the UK, arguing that global warming stopped in 1998.[30] But the interest seemed to increase after the publication of an article in

[27] 'More of the IPCC's Leaked Climate Report: A Round-up of Media Reactions', *Carbon Brief*, 22 Aug. 2013.
[28] www.bbc.co.uk/news/science-environment-24085062.
[29] E. Hawkins et al., 'Pause for Thought', *Nature Climate Change*, 4 (Mar. 2014), 154.
[30] www.telegraph.co.uk/comment/personal-view/3624242/There-IS-a-problem-with-global-warming...-it-stopped-in-1998.html.

the *Economist* in late March 2013, titled 'Climate – a Sensitive Matter', and subtitled 'The climate may be heating up less in response to greenhouse-gas emissions than was once thought'.[31] According to Google Trends Data, the 'pause' narrative began to get more coverage in mainstream media from that moment,[32] and reached another peak at the time of the publication of the WG1.[33] Indeed, some commentators argued that the pause was a media and not a science construct.[34]

Even before 2013, the British journalist David Rose in particular had published several articles on this general theme, usually in the *Mail on Sunday*. For example, he wrote a piece in October 2012: 'Global Warming stopped 16 years ago, reveals Met Office report quietly released . . . and here is the chart to prove it'.[35] The journalist and the paper took up the topic again in an article published on 13 September 2013: 'Top climate scientists confess: Global warming is just HALF what we said',[36] which was re-versioned in the *Telegraph* and the *Australian*. The article was roundly rebutted by mainstream climate scientists.[37] The *Australian* was forced to retract some of the claims made in the article.[38] The *Mail* published a correction in May the following year.[39]

In London, the Science Media Centre organised a meeting in July 2013, at which scientists laid out some of the possible reasons for the pause, including a relatively 'quiet' sun (when the sun is less active and generates slightly less heat) and minor volcanic eruptions.[40] But the main explanation proffered was that the deep oceans were warming and were storing some of the excess heat. To the surprise of one experienced science correspondent,[41] an explanation was also given that computer simulations or models of possible future climate scenarios often show periods of 10 years with no warming trend; some even show pauses of 20–25 years. In other words, global warming was not expected to happen in a neat, linear fashion but in fits and starts, with the possibility of periods of as much as 25 years without any warming. However, the scientists stressed that such pauses only delay the arrival of dangerous climate change by a few years. They also argued that, while surface temperature was an important indicator, it was only one of several indicators; others such as glacier and ice-cap melt, sea-level rise, ocean acidification, ocean temperatures, and the intensity and frequency of extreme weather events all showed clear changes in a worrying direction.

Partly in anticipation of the media's interest in the issue, both the IPCC and other organisations began to take the 'pause' more seriously. For its part,

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[31] http://www.economist.com/news/science-and-technology/21574461-climate-may-be-heating-up-less-response-greenhouse-gas-emissions. In Australia, *The Australian* had picked up on the issue in February. See http://www.theaustralian.com.au/news/nothing-off-limits-in-climate-debate/story-e6frg6n6-1226583112134?nk=f44720bdf17cc10bf3539ee49606300b#.
[32] Chris Mooney, 'Who Created the Global Warming "Pause"?, *Mother Jones*, 7 Oct. 2013.
[33] Hawkins et al., 'Pause for Thought', 155.
[34] Mooney, 'Who Created the Global Warming "Pause"?'
[35] David Rose, 'Global Warming Stopped 16 Years Ago', *Mail on Sunday*, 16 Oct. 2012.
[36] www.dailymail.co.uk/news/article-2420783/Worlds-climate-scientists-confess-Global-warming-just-QUARTER-thought--computers-got-effects-greenhouse-gases-wrong.html.
[37] Roz Pidcock, 'Scientists Take the Mail on Sunday to Task over Claim that Warming is Half What IPCC Said Last Time', *Carbon Brief*, 16 Sept. 2013.
[38] www.smc.org.au/2013/09/rapid-reaction-did-the-ipcc-get-it-wrong-experts-respond.
[39] www.dailymail.co.uk/home/article-2638481/Corrections-clarifications.html.
[40] Fiona Harvey, 'Climate Change Slowdown is Due to Warming of Deep Oceans, Say Scientists', *Guardian*, 22 July 2013.
[41] www.bbc.co.uk/news/science-environment-23409404.

the IPCC had barely considered the 'pause' when it met in 2009 to discuss the content of the AR5, but it was forced to address the issue. An early draft of the Summary for Policymakers in October 2012 did not even mention the 'pause', in part because of the lack of academic material available that addressed it.[42] But as one of the IPCC authors explained, even though the 15-year pause was not a reliable measure of long-term warming, 'it became more and more of a public issue, so we felt we had to say something about it'.[43]

The Release

WG1

Given the pre-launch narrative about the 'pause' followed by many newspapers, it came as no surprise that at the press conference to publicise the WG1 report, formally called *The Physical Science Basis*, held in Stockholm on 27 September, several journalists repeatedly questioned the authors about the 'pause'. This was later reflected in some of the coverage by the right-leaning media such as the *Mail* and Fox News, as we shall discuss in Chapter 5. However, most media organisations gave much more prominence to the headline finding that the report's authors were surer than ever that human activity (chiefly the burning of fossil fuels) had been the main cause of extra warming since the 1950s.[44] The IPCC scientists were now saying that they were at least 95% certain of this, an increase from at least 90% in 2007, at least 66% in 2001, and just over 50% in 1995.

The press release issued on the day focused on this and a selection of other key points, many of them in quotes from the two chairs of WG1 (the main points of WG1 are summarised in Appendix 1):[45]

- It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.
- Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.
- Global surface temperature change for the end of the 21st century is projected to be likely to exceed 1.5°C relative to 1850 to 1900 in all but the lowest scenario considered, and likely to exceed 2°C for the two high scenarios.
- Heat waves are very likely to occur more frequently and last longer. As the Earth warms, we expect to see currently wet regions receiving more rainfall, and dry regions receiving less.
- As the ocean warms, and glaciers and ice sheets reduce, global mean sea level will continue to rise, but at a faster rate than we have experienced over the past 40 years.

Phrases such as 'extremely likely' or 'very likely' were explained in the footnotes of the press release in the following manner: virtually certain means 99–100% probability, extremely likely 95–100%, very likely 90–100%, likely 66–100%. However, it did not include an explanation of confidence levels.

Interestingly there was no reference to the climate 'pause' in the press release. But the final version of the Summary for Policymakers (SPM) did

[42] https://www.ipcc.ch/report/ar5/wg1/docs/review/WG1AR5-SPM_FOD_Final.pdf.
[43] Mooney, 'Who Created the Global Warming "Pause"?'
[44] Mat Hope, 'Three Graphs Breaking Down Media Coverage of the IPCC's Big Report', *Carbon Brief*, 10 Oct. 2013.
[45] https://www.ipcc.ch/news_and_events/docs/ar5/press_release_ar5_wgi_en.pdf.

address the issue at several points, including a sentence explaining that the 'observed reduction in surface warming trend over the period 1998 to 2012 as compared to the period 1951 to 2012, is due in roughly equal measure to a reduced trend in radiative forcing and a cooling contribution from natural internal variability, which includes a possible redistribution of heat within the ocean'.[46] Another paragraph stressed that global mean temperature exhibits 'substantial decadal and interannual variability', and that trends based on short records 'are very sensitive to the beginning and end dates and do not in general reflect long-term climate trends'.[47]

Although it was not mentioned in the press release, it was of note that several of the more seasoned correspondents picked up on the so-called 'carbon budget' as their main headline, which the IPCC included for the first time.[48] In other words, the IPCC set a cap of one trillion tonnes of carbon in the atmosphere if governments wanted a reasonable chance of keeping global warming below 2°C. More than half that amount has been used already.

It is important to stress that the press release was not the only, or even the main, method that the IPCC used to spread the word about the WG1 report. Journalists who did not attend the actual press launch could easily follow the proceedings via a live webcast (later posted on the IPCC website), and some questions were taken to the panel of IPCC authors and others via this method. Two-page summaries of the key points written in simpler language than the SPM, videos, and infographics were all made available. Some tweets using the IPCC hashtag were also sent out, although these were limited in number. Dozens of interviews were also arranged with IPCC authors before and around the times of the launches, particularly for WG2. In some countries, such as Norway, the USA, and the UK, local meetings were organised by research centres, NGOs, or science media centres at which climate scientists were on hand to answer questions from journalists.

WG2

The second Working Group Report on *Impacts, Adaptation and Vulnerability* was officially launched on Monday 31 March in Yokohama, Japan, although as with the WG1 report, several elements of the report had already been widely covered by agency reports and in the print media.[49] For example, in the UK, the *Independent* had run a front-page story on it, emblazoned 'Official Prophecy of Doom',[50] whilst the *Observer* had focused on the threat to millions living in coastal regions in Asia.[51] In India too, one or two newspapers picked up wire pieces on the leaked report in the week before the official launch.

More significantly, the BBC ran an online piece on 25 March suggesting dissent amongst the IPCC authors about some aspects of the WG report, but quoting only one author Richard Tol.[52] Professor Tol is a Dutch economist at

[46] http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf, 15.
[47] Ibid., 5.
[48] See e.g. Justin Gillis, 'U.N. Climate Panel Endorses Ceiling on Global Emissions', *New York Times*, 27 Sept. 2013; Fiona Harvey, 'IPCC: 30 Years to Climate Calamity if we Carry on Blowing the Carbon Budget', *Guardian*, 27 Sept. 2013; Fred Pearce, 'The Trillion-Ton Cap', *Yale Environment 360*, 24 Oct. 2013.
[49] www.carbonbrief.org/blog/2014/03/a-big-un-report-on-climate-change-impacts-is-coming-how-is-it-being-reported.
[50] Tom Bawden, 'Official Policy of Doom', *Independent*, 18 Mar. 2014.
[51] Robin McKie, 'Global Warming to Hit Asia Hardest', *Observer*, 22 Mar. 2014.
[52] Matt MacGrath, 'Dissent among Scientists over Key Climate Impact Report', *BBC Online*, 25 Mar. 2014.

Sussex University in the UK, who was a lead author of a chapter of the report on economics but who withdrew from the team writing the SPM (although he took an active part in the plenary discussion about the SPM). He is also a member of the Academic Advisory Council of the sceptic organisation, the GWPF. He had pulled out of the SPM writing team in September, but apparently waited until the eve of the release of the report to make his withdrawal widely known.[53]

Tol could broadly be characterised as an 'impact sceptic' as he does not question that climate change is happening or that it is largely human caused.[54] He also accepts measures should be taken to mitigate it but is optimistic about human abilities to adapt to change. He essentially argued that the report was too alarmist and that global warming could bring benefits. He put a low estimate on global economic losses due to climate change at between 0.2% and 2.0% of income.[55]

Tol's arguments were publicly contested by many governments[56] and by other experts,[57] but his views were widely picked up in the British press (including the front page of the *Financial Times*, and articles in the *Daily Mail*, *Daily Telegraph*, and *The Times*), and he appeared on several BBC bulletins and programmes. The BBC was criticised for over-egging dissent around the report, when the article mentioned only one dissident author out of the 300-plus authors of the WG2 report, and did not mention the fact that he was linked to a sceptic think tank.[58] Some argued it was part of a pattern by which climate science was distorted in the media by a group of scientists and commentators who support activities by the GWPF in order to argue against action on climate change.[59]

The report was officially released with a press conference at 09:00 Japanese time, which meant that, in Europe at least, the report was widely included in early morning broadcast bulletins, but came too late for the print editions of many media organisations.

The main messages of WG2 can be found in Appendix 1. Some of these were summarised in the press release issued by the IPCC:[60]

- The effects of climate change are already occurring on all continents and across the oceans. Observed impacts of climate change have already affected agriculture, human health, ecosystems on land and in the oceans, water supplies, and some people's livelihoods.
- The world, in many cases, is ill-prepared for risks from a changing climate.
- There are opportunities to respond to such risks, though the risks will be difficult to manage with high levels of warming.
- Adaptation can play a key role in decreasing these risks.

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[53] 'IPCC Author Brands Upcoming Climate Report "Alarmist"', *Guardian*, 28 Mar. 2014.
[54] For the taxonomy of different types of sceptics see Painter 2011: ch. 2.
[55] Richard Tol, 'Bogus Prophecies of Doom Will Not Fix the Climate', *Financial Times*, 31 Mar. 2014.
[56] Suzanne Goldenberg, 'Governments Reject IPCC Economist's "Meaningless" Climate Costs Estimate', *Guardian*, 28 Mar. 2014.
[57] Bob Ward, 'Errors in Estimates of the Aggregate Economic Impacts of Climate Change', *LSE Media Commentary*, 2 Apr. 2014.
[58] Media Lens, 'The Neverending "Wakeup Call"', 2 Apr. 2014.
[59] Michael Mann, 'Climate Contrarians Cook Up New "Controversy"', *Huffington Post*, 21 May 2014.
[60] http://ipcc.ch/pdf/ar5/pr_wg2/140330_pr_wgII_spm_en.pdf.

Some veteran environment reporters noted an important shift from the previous 2007 report in the way the impacts were being framed. They said there was much more emphasis on the widespread human impacts and the basics of food, water, health, and security. Or as one of them put it, 'The Polar Bear is us'.[61] In their analysis of the UK press reporting of WG2, *Carbon Brief* argued that, whereas the WG1 had more of a single storyline (more scientific certainty), the WG2 coverage had multiple story lines including the climate change impacts on world food supplies, including coffee, on security, as well as on the chances of more flooding.[62]

For the purposes of this research, it is important to stress that the word 'risk' was particularly dominant in the way the IPCC framed the WG2. It appeared more than 230 times in the 26-page Summary for Policymakers, more than 5,000 times in the draft full report, and 22 times in the two-page IPCC press release. According to the Red Cross, when the IPCC released their report seven years ago, risk was only mentioned 40 times in the SPM.[63]

But it was the specific concept of risk management that stood out. As the Yale Climate Media Forum pointed out,[64] 'one element that somewhat distinguishes coverage of this IPCC report from those that came before it… is an increased focus on risk management as an approach for managing challenges of a warming climate'.

Professor Chris Field, a co-chair of the IPCC's Working Group 2, placed a considerable amount of emphasis on the idea of framing the climate change challenge as one of risk management. Before the press conference in Yokohama, he had already explained to Reuters why thinking of climate change in this way makes it easier for many to deal with:

> *Climate change is really a challenge in managing risks. And it's not that we're talking about identifying particular things that're going to happen in a particular place, at a particular time.*
>
> *It is understanding how to be prepared in two critical ways: one is decreasing the amount of climate change that occurs, and the other is finding a way to cope as effectively as we can with the climate changes that can't be avoided.*

The press release picked up on the same language. It explained the two reasons why the characterisation of climate change as risk management is helpful:

- It considers 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.
- Characterising climate change as a challenge in managing risks opens doors to a wide range of options for solutions.

The IPCC's video to accompany the report started with the phrase 'climate change is a challenge in managing risk'.

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[61] Cristine Russell, 'Polar Bears 'R' Us', *Columbia Journalism Review*, 28 Mar. 2014.
[62] 'Analysis: How UK Newspapers Covered the IPCC's Report on the Impacts of Climate Change', *Carbon Brief*, 3 Apr. 2014.
[63] www.ifrc.org/en/news-and-media/press-releases/asia-pacific/japan/red-cross-red-crescent-deeply-concerned-by-humanitarian-consequences-of-climate-risks-highlighted-in-new-ipcc-report-.
[64] 'Major News Outlets: Somber Reporting on "Bleak" IPCC Study', *Yale Climate Media Forum*, 3 Apr. 2014.

WG3

The WG3 report, *The Mitigation of Climate Change*, was like its predecessors leaked or made available via websites to several media organisations but was not posted online months in advance. Even the BBC, via its flagship *Today* programme on Radio 4, based an interview on 8 April with the Met Office chief scientist Julia Slingo on what it called a leaked copy of the report. In the days running up to the official launch on 13 April in Berlin, the *Wall Street Journal* was among several newspapers to discuss the report's two key recommendations to cut GHG emissions and move to renewable energy and carbon capture and storage.[65] For its part, the *Guardian* – even before the report's publication – carried criticism from environmental groups of a new technique known as BECCS that the report was due to discuss. This would involve burning biomass to generate electricity, and then capturing the released carbon, pumping it into geological reservoirs underground.[66]

As above, the main messages of the report can be found in Appendix 1. Some of these were included in the press release issued on the same day:[67]

- Global emissions of greenhouse gases have risen to unprecedented levels despite a growing number of policies to reduce climate change.
- It would be possible, using a wide array of technological measures and changes in behaviour, to limit the increase in global mean temperature to two degrees Celsius above pre-industrial levels.
- Scenarios show that to have a likely chance of limiting the increase in global mean temperature to two degrees Celsius, means lowering global greenhouse gas emissions by 40 to 70 percent compared with 2010 by mid-century, and to near-zero by the end of this century.
- Ambitious mitigation may even require removing carbon dioxide from the atmosphere.

As it turned out, large parts of the Western press focused on the first part of the IPCC message that there was still time for countries to act to avoid the worst impacts.[68] Other angles that were covered in detail were the energy mix needed for a shift to low carbon development, including the place of shale gas, and the technologies such as geoengineering which may be needed in the future. One other aspect which received considerable coverage was how much it was going to cost to implement all the necessary mitigation policies and whether this cost was greater or less than the cost of adaptation. Some journalists and commentators complained this was far from clear, and the methodologies hard to follow.[69] One IPCC leading author observed that it was not surprising that half the media coverage said the necessary policies were too costly, whilst the other half said they were doable.[70] As we shall see later, some right-leaning media emphasised the former, some left-leaning media the latter.

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[65] Ben Winkley, 'New U.N. Climate Report Meets a Complicated World', *Wall Street Journal*, 10 Apr. 2014.
[66] Martin Lukacs, 'IPCC Report Proposes Sucking Carbon Out of the Air as Climate Fix', *Guardian*, 9 Apr. 2014.
[67] http://ipcc.ch/pdf/ar5/pr_wg3/20140413_pr_pc_wg3_en.pdf.
[68] *Carbon Brief*, 'Media Reaction', 14 Apr. 2014.
[69] Alister Doyle, 'UN Climate Reports Seeks Clearer Economics to Guide Action', Reuters, 10 Apr. 2014.
[70] Author interview with IPCC author, May 2014.

For the purposes of this study, it is important to point out that one of the key messages was the pressing need to move to renewable energy and the associated benefits like improved health and air pollution that would accompany it. This was a clear example of an 'opportunity' frame as described in the next chapter. But it was also interesting to note that one of the three co-chairs of the report, Professor Ottmar Edenhofer from Germany, said on several occasions that a risk management framework was the right way of approaching the climate challenge. However, unlike WG2, this wording was hardly used in the official IPCC outreach work around the launch in Berlin. The word 'risk' was used three times in the press release and 18 times in the SPM (compared with 22 and 230 times for WG2), but not 'risk management'.

4. Television Reporting of the 2013/14 IPCC Reports

The Focus and Methodology

This study focused on the evening news programme on a highly watched or trusted television channel in six countries, namely Australia, Brazil, China, Germany, India, and the UK. The six countries offered a wide range of different media landscapes, journalistic practice, and political and social contexts in which climate change receives coverage.[71] Brazil, China, and India were included as three large developing countries that are key players in the international climate change negotiations, and to a greater or lesser extent are following domestic policies to switch to lower emissions (Painter 2011, 2013). There is little evidence of a significant presence of scepticism in the media, amongst the elites, or in the general population in all three countries.

The UK was chosen because it is also a key player in the international politics of climate change, and because it has introduced stringent carbon emissions legislation. Articles in the British media, including the BBC website, about climate change are also frequently reproduced in the English-speaking media around the world. The UK is also a location where climate sceptics have mobilised to influence public opinion against concerted action on climate change, similar to Australia but not Germany (Painter and Gavin 2014). Indeed, Australia has been racked by protracted and intense political controversy about how the country should deal with its carbon emissions, which has been reflected in polarised coverage in the media. (McGaurr and Lester, in Painter 2013). Germany is different in that it has little scepticism amongst the population or elites, it is culturally and politically distinct from 'Anglo-sphere' industrialised countries, and it is currently phasing out its nuclear power and fossil fuels and moving towards renewable energy in a transition known as the *Energiewende* (Engels *et al.* 2013).

In each country we focused on a widely viewed news bulletin on two consecutive nights, usually the date before the launch of each report and the date of the report. Because of the time differences, there was a small differentiation between countries as to the dates chosen for examination, but generally they were 26 and 27 September 2013 for WG1, 30 and 31 March 2014 for WG2, and 12 and 13 April for WG3.[72] The channels and bulletins selected were:

Australia: ABC 1 at 19:00 (Sydney time)

Brazil: TV Globo, *Jornal Nacional* at 20:30

China: CCTV-1, *Night News* at 22:00

Germany: ARD, *Tagesschau* at 20:00

India: Aaj Tak News bulletin at 21:00

UK: BBC *News at Ten* at 22:00.

The selection of only two bulletins on consecutive nights on only one channel per country inevitably means that our results are not as robust as would have been the case if more bulletins on more channels had been included in the sample over a longer period before and after the days of release. This is

[71] The USA was omitted as we already had two examples of the 'Anglosphere', and a third may have skewed the results. Also, climate change coverage in the US media is one of the most studied cases in the world.
[72] The exceptions can be found in Appendix 2.

particularly true for the BBC, which ran preview pieces on Monday 23 September and Tuesday 24 September on the *News at Ten*, which included discussion of the climate 'pause'. It also ran pieces before the releases of WG2 and WG3 on 25 March and 11 April. However, outside of the UK, there is anecdotal evidence from our researchers in Australia, Brazil, China, and India that the IPCC reports were rarely reported on the evening TV bulletins outside of these dates, although in some cases there was discussion or reporting in other programmes on the channels reviewed.[73]

Despite the variety of countries and audiences, there is a common picture of television in general being the most used and the most trusted source of news. As the 2013 RISJ *Digital News Report* clearly showed, there is a significant divide by age group between the under 35s who prefer online news and those over 45 who strongly prefer television news.[74] However, overall TV remains the most frequently used mode of news consumption. This is true of the UK, where most television users rate it more highly for trustworthiness and accuracy than other media; and BBC 1 is the most-used news source across all platforms. (See Appendix 2 for all sources quoted and more discussion of usage and media trust in all six countries.)

We also know that television in the UK is the most important source for news about science. In 2014, 42% of the British people regularly used television news as a source of information for science. This figure rises to 68% if all TV programmes are included. This compares to 23% for print, and 15% for online newspapers and news sites. The percentage that regularly uses science blogs was 2%, which had not risen from 2011.

It is a similar story in Brazil, which is often called a 'television country'. Television news is by far the most important source of information for most Brazilians. According to a 2013 survey, 78% of the country (of about 190 million people) preferred TV as the main source of news. More than 70% of Brazilians trust TV as the main source of information about science and technology.

In Australia too, television is the most used source of news. A recent survey of online users suggested that 44% used either commercial channels or public sector broadcasters, followed by online sites (18%), newspapers (17%), and social media sites (4%). Although news on commercial channels is watched more than the public broadcaster Australian Broadcasting Corporation (ABC), television news and current affairs broadcast by ABC is the most trusted media source of information. In January 2013, as in previous years, it far outstripped commercial television and radio news and opinion, as well as news and opinion in daily and local newspapers, as a source in which people had a lot of trust.

In China, it is difficult to have full confidence in survey data or audience figures. But according to one recent survey on media credibility, television was regarded as the most credible (45%), followed by the internet

[73] It is also worth pointing out that if the IPCC reports were going to receive television coverage, they would be most likely to appear in the main evening news bulletins before or on the day of the release of the reports. This is because evening news bulletins often serve as a round-up of the most important news in the previous 12 to 24 hours, as a 'bulletin of record'. We also know that in some cases the reports that were broadcast in other news bulletins were the same reports that appeared in the bulletins we monitored. For example, this was true of the BBC *News at Six* on Sunday 13 Apr., when the same report on the *News at Ten* by the BBC's Science editor, David Shukman, on WG3 was broadcast.

[74] RISJ, *Digital News Report* 2013, figure 1.3c, p. 26.

(34%), newspapers (34%), the social media sites Weibo (28%) and Wechat (14%), then radio at (12%).

In India it is difficult to be sure of audience figures for television because of corruption associated with the television monitoring agency TAM Media Research. A 2012 report on climate perceptions in India noted that 65% of survey respondents watched television as their main source of information about climate change, 54% read newspapers, followed by radio (25%), movies (21%), and the internet (18%) (Leiserowitz and Thaker 2012). The report added that scientists were the most trusted sources of information about global warming (73%), followed by the news media (69%). As regards individual channels, an international survey in 2006 suggested that the most trusted specific news source mentioned then was Aaj Tak. Despite the lack of confidence in audience figures, it is probably the case that Aaj Tak is still the largest Hindi news channel in India, although its market leader status has been threatened on many occasions.

In Germany too, television is the main source of news, although newspapers remain more popular than in other countries in Europe, and some surveys suggest they are more trusted than other types of media. However, according to one survey, the most trusted specific news source mentioned spontaneously by Germans was the channel analysed in this study, namely ARD (mentioned by 22%), followed by ZDF (7%). And it is the best known source of information, even amongst younger generations. On the specific issue of climate change, Germans use television as their main source of information and trust it more than other media.

In all six countries, we have data showing that the channel we monitored is one of the top two leading broadcasters for news measured by audience size or market share, and/or the most trusted source of news. *Jornal Nacional* in Brazil and Aaj Tak in India are market leaders. ARD in Germany comes second (just) behind ZDF (with 12.1% of the audience share compared to 12.8% of ZDF). CCTV at 10 pm and BBC *News at Ten* have the largest number of viewers, along with earlier news bulletins on the same channels. ABC is the exception in that the commercial channels (7 and 9) have a larger audience for their evening news programmes, but ABC is the most trusted.

It is important to note that the combined viewership of the bulletins on these channels is considerable, at nearly 50 million. This breaks down approximately into ABC 1 (1.4 million in major cities), *Jornal Nacional* (18 million), CCTV news at ten (11 million), ARD *Tagesschau* at 20:00 (4.5 million), Aaj Tak at 21:00 (9 million) and BBC *News at Ten* (4.5 million).

To give an idea of the importance of the reach of these channels compared to print, in Brazil the largest circulation newspaper *Folha de Sao Paulo* has a daily circulation of around 300,000 (including digital subscribers) compared with the 18 million who watch *Jornal Nacional*. In the UK, the *Sun* has the largest circulation of any newspaper at just over 2 million and the *Daily Telegraph* is the largest broadsheet with just over 500,000[75] – these figures are much lower than the 4 to 5 million viewers of BBC's *News at Ten*. In China, *Reference News* and the *People's Daily* are thought to have a circulation of between 2 and 2.5 million, compared with the 11 million viewers of television news on the CCTV programme we monitored. In Germany, the tabloid *Bild* has a circulation of a little over 2 million, compared with 4.5 million for ARD's nightly news programme. In Australia, the largest circulation newspaper is

[75] Figures do not include online usage of newspaper sites.

around 400,000, compared with 1.4 million for ABC nightly news. Only in India do print newspapers have readerships that match the figures for television audiences for individual news programmes: readership (not circulation) for Hindi newspapers like *Dainik Jagran* is 15 million and for the *Times of India,* the largest English-language newspaper in the world, the figure is 7 million.

So we know that these channels are highly used and highly trusted, and in most cases reach a much larger audience than other media. In our analysis of the bulletins on these channels, we were particularly interested in three broad areas:

(1) **Editorial importance**: the relative volume of coverage by WG report and country, their inclusion or not in headlines, their position in the running order, and the genre of television reporting adopted by each channel.
(2) **The dominant narratives**: what were the main narratives of the report, divided into the four frames of disaster, uncertainty, risk, and opportunity?
(3) **Specific issues**: the presence of sceptic voices, the inclusion of discussion of the climate 'pause', the presence of the IPCC concepts of confidence and probability levels, and a breakdown of the interviewees appearing on screen during the reports.

We use the concepts of 'dominant narratives' and 'frames' loosely, and have followed the same method found in the 2013 RISJ publication *Climate Change and the Media* (Painter 2013: chs. 4 and 5). Framing is now the subject of a voluminous body of academic work that spans several social science disciplines, and includes study both of the theory and its application to specific issues covered in the media (Nisbet 2009; Entman *et al*. 2009). As the US media scholar Matthew Nisbet writes, 'frames are interpretative storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it' (Nisbet 2009: 15). In this study, we are adopting a quantitative approach, concentrating on what elements of certain frames are present in each story, and their relative weighting, in order to get some insight into what messages about climate change viewers might be receiving when they watch and hear these bulletins. An important drawback of this study is that we only examined the text of the television reports without trying to assess the impact or importance of the dominant images.

There is also now a large body of work laying out several different frames that can be usefully applied to the specific area of media coverage of climate change (Doulton and Brown 2009; Olausson 2009; Nisbet 2009). However, we have followed the broad parameters used in the RISJ 2013 publication and viewed the coverage through the lens of four frames, which can be summarised as in the box.

The **disaster frame** includes mention of possible adverse impacts or effects such as sea-level rises, more floods, water or food shortages, population displacements, damage to the coral reefs, diminishing ice sheets, and so on.

The **uncertainty frame** includes mention of uncertainties about climate science, such as ranges in projections for temperature increases, sea-level rises, the possible adverse impacts, and so on. It can also be indicated by mention of the shortcomings of computer models or the presence of sceptic voices. We also included discussion of the climate 'pause' as a key indicator of uncertainty.

The **opportunity frame** includes (a) opportunities accruing from doing something to reduce the risks from greenhouse gas emissions (the advantages of any move to a low-carbon economy), and (b) those accruing from doing nothing and allowing climate change to take place (such as longer growing seasons in the northern hemisphere, or the prospects of new shipping routes and the possibility of mineral, gas, and oil exploration in the Arctic).

Indicators of the **risk frame** are where the word 'risk' is used, or where the odds, probabilities, or chance of something adverse happening were given, or where everyday concepts or language relating to insurance, betting, or the precautionary principle were included. A 'risk management' approach to the climate challenge would also be a strong indicator of this frame.

So, an example of a 'disaster' headline would be 'more wild weather on the way, UN climate panel says'; of an uncertainty headline, 'climate change effects unknown'; of an opportunity headline, 'the silver lining to Arctic global warming'; and of a risk headline, 'hundreds of millions of people at greater risk from food and water shortages'.

In this study we were also interested in any differences in the dominant framing used between the three WG reports (for example, an emphasis on risk framing in WG2 compared to WG1), any country differences in the presence of the climate 'pause' narrative, the use of the IPCC concepts of likelihoods and confidence levels, and the relative presence of sceptical voices in different countries.

The full coding sheet for the content analysis for WG1 can be found in Appendix 3, along with a brief discussion of the methods used. The sheet was adapted for WG2 and WG3.

Results

VOLUME OF COVERAGE

We examined a total of 36 news bulletins, which breaks down into six for each country/channel over a period of six evenings. Table 4.1 shows the coverage divided by WG report and channel. The key findings are that:

- Coverage of the WG reports was included in 13 of the 36 news bulletins monitored, of which 12 were on the evening of the day of the release of the report. Of the six channels, only the BBC ran a preview piece on the evening before the release of WG1.

- The volume of coverage declined from 6 items for WG1, 4 for WG2, to 3 for WG3. It also declined in terms of the total amount of coverage from 14.45 minutes (WG1), 11.45 minutes (WG2), to 7.15 minutes (WG3).
- The three channels in the Western industrialised countries covered all three reports on the day of the release. Of the three developing countries, *Jornal Nacional* in Brazil covered the first two reports.
- China's CCTV had only a short piece of around 40 seconds in length, read out by the anchor, about the WG1 report. It had no coverage of WG2 or WG3.
- Aaj Tak in India covered none of the reports.

Table 4.1. Number of Bulletins Including Coverage of the Three WG Reports

	WG1		**WG2**		**WG3**	
		Total (mins)		Total (mins)		Total (mins)
Australia						
ABC 1 Sydney 7pm News	1	2.15*	1	2.15*	1	2.15*
Brazil						
Globo, Jornal Nacional	1	2.15*	1	2.15*	0	0
China						
CCTV 1	1	1	0	0	0	0
Germany						
ARD Tagesschau	1	2.15*	1	2.15*	1	2.15*
India						
Aaj Tak	0	0	0	0	0	0
UK						
BBC 10 o'clock News	2	7	1	5	1	2.45
TOTAL	**6**	**14.45**	**4**	**11.45**	**3**	**7.15**

*Any item lasting between 1.30" and 3.00" appears as 2.15".

Other indicators of the editorial importance given to the WG reports in the 13 bulletins are the number of headlines they generated, where the items about the reports appeared in the running order, and the genre of the reporting:

- Six of the bulletins carried the WG reports as a headline at the top of, or during, the programme[76] – the WG1 three times, the WG2 twice and the WG3 once. The BBC was the most likely to run it as a headline (three of the four times it covered the reports).
- There was considerable variation in the placing of the WG coverage in the running orders. They led the bulletin only once (WG2 on the BBC), and mostly fell somewhere in the middle of the bulletin (see below for discussion of other editorial stories covered that day).
- CCTV in China ran the brief mention of WG1 a long way down its bulletin.
- In only two of the bulletins was a reporter shown at the location of the launch of the report (Stockholm, Yokohama, or Berlin). The most common genre was to have the reporter reporting in-house or from elsewhere but including clips from the location.

Dominant Frames

Table 4.2 summarises the headline results for the 13 bulletins that contained coverage of the WG reports. Each of the four frames (uncertainty, disaster, explicit risk, and opportunity) is broken down by presence, salience, and dominant tone. Presence is measured by the appearance of the frame anywhere in an article and salience by their presence in headlines or the opening element of the report. Dominance includes a wide variety of indicators such as the relative weight of a frame throughout an article, salience, prominent quotes, and the use of language such as metaphors and adjectives. In some cases none of these frames were present, or more than one was strongly present in the same report.[77] (For further discussion, see Painter 2013: ch. 5.)

In each case, we also measured the presence of direct quotes from scientists or scientific reports which predominately contained the frame. In the case of the uncertainty frame, we also registered the presence of the 'increasing certainty' frame (for example, scientists are now more certain than ever about some aspect of the science), the presence of (different types) of sceptics, and the presence of the climate 'pause'. We also measured the presence of the IPCC concepts of confidence and probability levels.

[76] There is some variation in the way different news channels present headlines and where they appear.

[77] This accounts for there being fractions in the dominant tone rows, and for the number of dominant tones not adding up to the number of bulletins (13).

Table 4.2. Six-Country Results

	WG1	WG2	WG3	**Total**
Number of reports	6	4	3	**13**
Uncertainty				
Presence	6	1	0	**7**
Salience	1	0	0	**1**
Dominant Tone	1	0	0	**1**
More Certainty	6	1	0	**7**
Direct Quotes	3	0	0	**3**
Sceptics	2	1	0	**3**
Climate Pause	3	0	0	**2**
Disaster				
Presence	5	4	1	**10**
Salience	2	4	0	**6**
Dominant Tone	3.5	3.5	0	**7**
Direct Quotes	3	4	0	**7**
Explicit Risk				
Presence	0	3	1	**4**
Salience	0	1	0	**1**
Dominant Tone	0	0.5	0	**0.5**
Direct Quotes	0	1	0	**1**
Opportunity				
Presence	1	3	3	**7**
Salience	0	0	2	**2**
Dominant Tone	0	0	2.5	**2.5**
Direct Quotes	0	1	2	**3**
IPCC concepts				
Presence	2	0	0	2
Explanation	1	0	0	1

Figure 3 shows in the form of a graphic the same results for presence, salience, and dominant tone for all 13 bulletins; Figures 4–6 break them down according to the three WG reports.

Figure 3. Presence, Salience, and Dominant Tone by Theme, All WG Reports

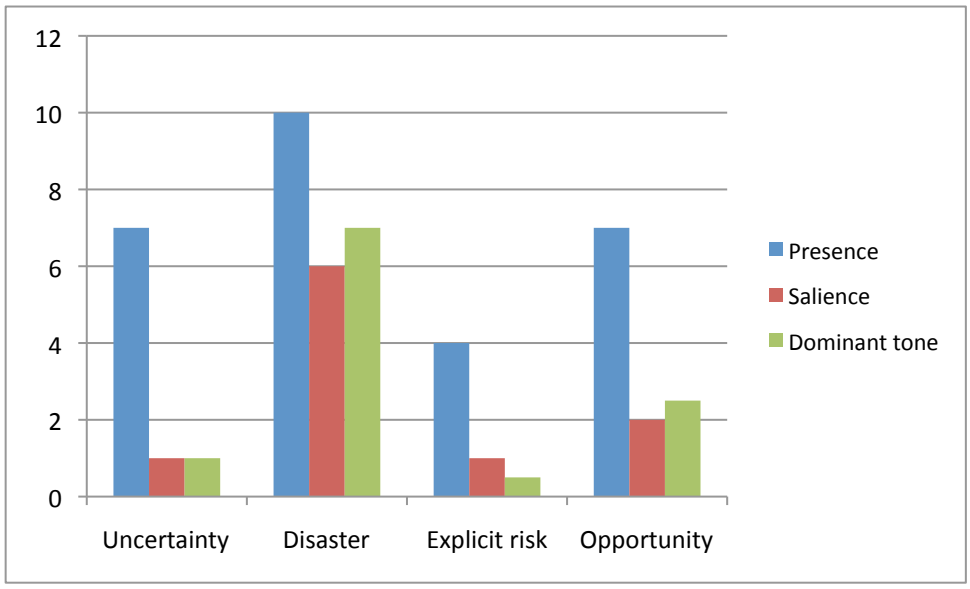


Figure 4. Presence, Salience, and Dominant Tone by Theme, WG1

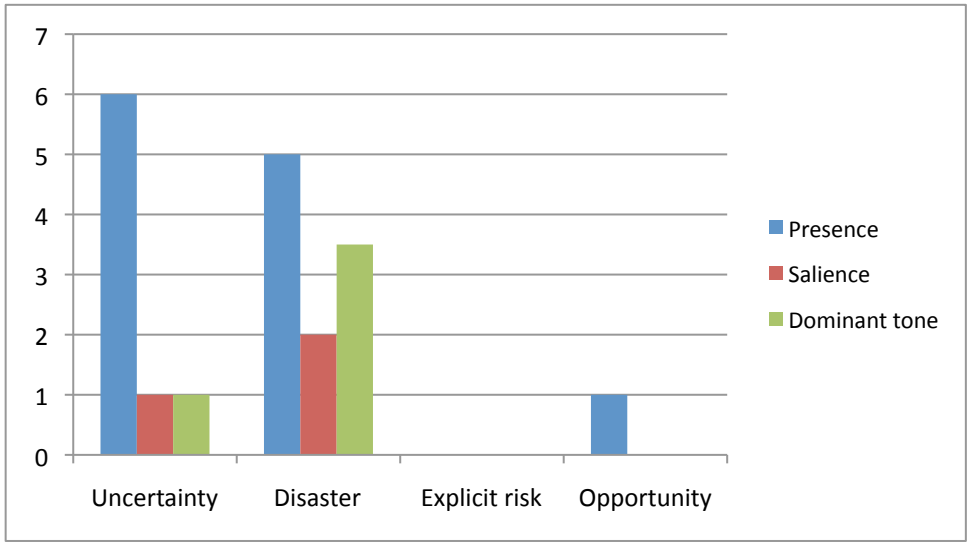


Figure 5. Presence, Salience, and Dominant Tone by Theme, WG2

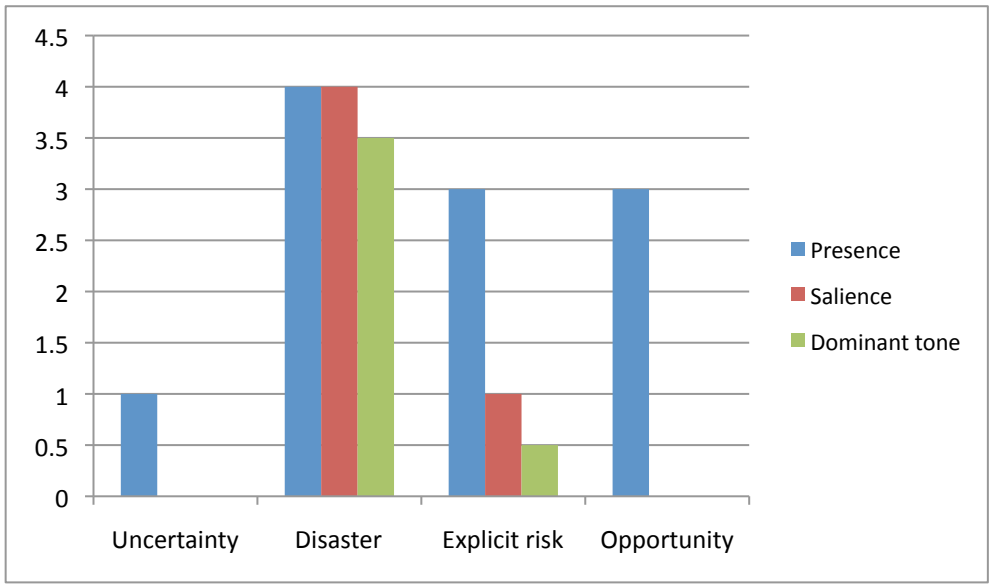
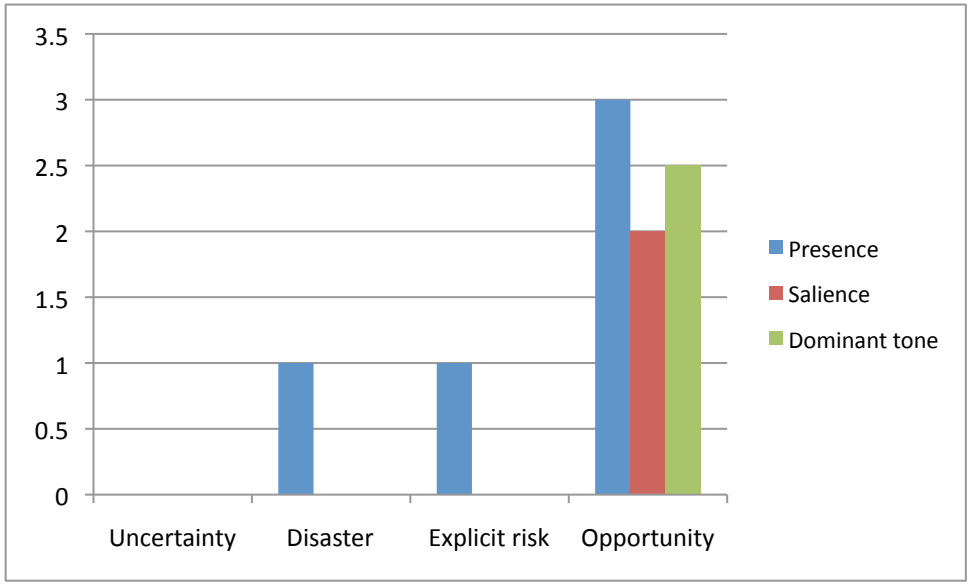


Figure 6. Presence, Salience, and Dominant Tone by Theme, WG3



The key findings are:

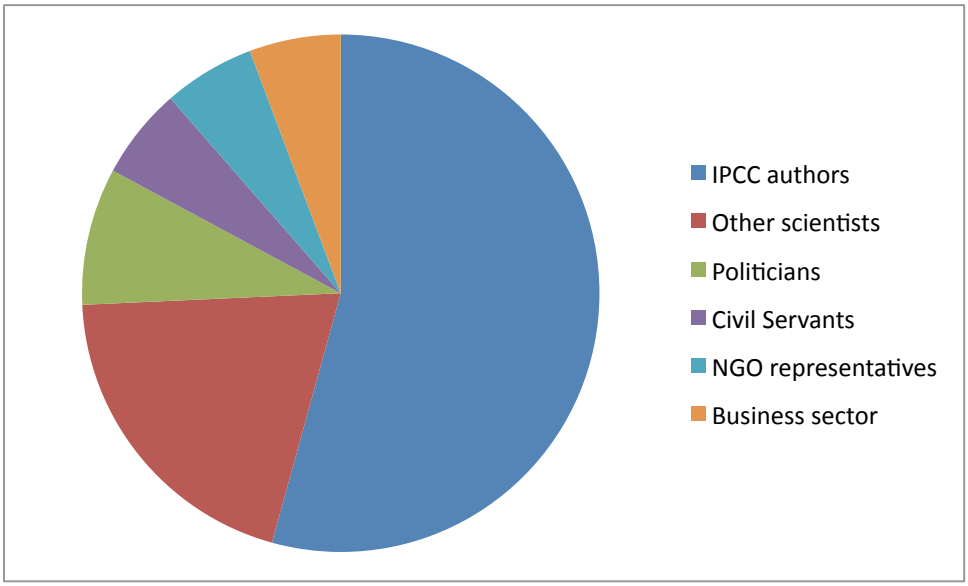
- Across all three reports, the disaster frame was the strongest of all the frames, measured by presence, salience, and dominant tone. As was to be expected, this was particularly true of WG2, which focuses on impacts, but it was also strongly present in the reporting of WG1.
- Uncertainty was present in seven of the 13 reports, and particularly in the coverage of WG1, but it was not particularly salient or dominant.
- The opportunity frame had the same presence as the uncertainty frame (seven), and was as one would expect, strongly dominant in the coverage of WG3.
- The explicit risk frame was the least present, and the least number of times a dominant tone (once). It was only salient in one of the 13 reports.

SPECIFIC ISSUES

As regards the specific issues we were interested in:

- Three of the 13 bulletins mentioned the climate 'pause' in their coverage of WG1; these were on TV Globo, BBC, and ABC. There was no mention of it in any of the coverage on the other channels.
- IPCC authors and other scientists were almost exclusively the interviewees who appeared on screen during the reports. Of the 35 clips of interviewees which appeared, 19 were IPCC authors, and 7 were non-IPCC scientists (see Figure 7). The remaining 9 were made up of 3 politicians, 2 from the NGOs, 2 from the business sector, and 2 civil servants.
- Only one sceptic appeared on screen (a short clip of Professor Richard Tol on the BBC), although there was a generic mention of sceptics on the BBC and *Jornal Nacional* in Brazil.
- Only two of the 13 reports used the IPCC language of likelihood and confidence levels, one of which gave a full explanation of what they meant.

Figure 7. Interviewees Appearing on Screen, All Channels



Discussion

The decline in the volume of coverage from WG1 to WG3 repeats a trend found in the media coverage of the previous IPCC Assessment Reports in 2007. For example, Hulme (2009) found in his study of the UK print media that WG3 received about 30% of the volume of coverage of WG1, whilst WG2 received 67%. Likewise, Painter (2007) found that, for television, only one of the six domestic channels studied included coverage of WG3, compared to four for WG2. And for the eight international news channels (such as CNN, BBC World, Al-Jazeera English) he monitored, the average duration of items on WG2 was 3.10" compared to 1.35" for WG3 (Painter 2007).

The drop in coverage is due to a range of factors, including declining interest from editors in the IPCC reports as the months pass between the

reports (a form of 'climate fatigue'),[78] the content of the reports or nature of the 'story' (contested science or dramatic impacts may be more attractive or easier to cover than solutions), the location, day, and timing of the release of the reports, the strength of other stories to be covered on the day, and the decision to deploy correspondents either to the release location or to locations which could illustrate the reports. In this context, it is worth adding that one of the reasons the BBC had more coverage than most other media organisations was that they sent staff to all three press conferences, Stockholm, Yokohama, and Berlin, coming early to do related stories. Apart from the news agencies no one else did that.[79]

Yet another factor could have been that WG3 was not leaked months in advance, which made it more difficult for journalists to prepare pre-publication articles, and for lobby groups to prepare organised pitches in advance. For example, for advocacy NGOs, WG2 offers a variety of 'pegs' compared to WG3 in terms of impacts in developing countries on food, health, and poverty. It is worth adding that, for television, it is perhaps more difficult to find moving images to illustrate the mitigation or opportunity narrative. In this context, it is interesting to note that ABC in Australia chose to display a strong image of industrial chimneys belching out smoke at the start and end of its coverage of WG3 even though the text of the report was not about the disaster narrative.

It is hard to give a relative weighting to these factors with any accuracy. However, it is worth pointing out that the number of journalists registered for the release of the three reports in 2013/14 dropped from (roughly) 234 for WG1 (Stockholm), to 223 for WG2 (Yokohama), to 143 for WG3 (Berlin). But the day, location, and timing of the release may have been just as significant a factor in the decision to send a reporter as an assessment of the editorial significance of each report. Also, the figures may be misleading: we do not know how many journalists actually turned up, how many of these were journalists rather than technical support, and in any event, how many covered the press conferences via the online streaming on the IPCC website. For example, the Yokohama figures were inflated by the 50-odd technical staff (mostly camera operators) working for Japanese television channels. A different indicator is the number of representatives of media organisations registered from countries other than the host nation. This gives rough figures for the three reports of 135 non-Swedes for WG1, only 32 non-Japanese for WG2, and 69 non-Germans for WG3.

Another significant factor behind the lower volume of coverage of WG3 may have been the fact that it was launched on a Sunday (13 April). The BBC, for example, has a smaller slot available for its *News at Ten* programme (15 minutes, versus 25 minutes on a weekday). *Jornal Nacional* is not broadcast on a Sunday. However, it could be argued that a Sunday is often a 'slower news day' than a weekday so a strong international story could be more likely to receive coverage.

Finally, it is hard to draw any robust conclusions about the degree to which the presence or absence of other strong news stories on the days of the coverage of the WG reports impinged on the editorial importance assigned to them. The difficulty is that, as is to be expected, each of the six news channels covered a wide variety of national and international news stories on those

[78] Alister Doyle, the Reuters environment correspondent, received one reaction from an editor that 'the reports had already been covered' by the time of WG3.
[79] Email exchange with Jonathan Lynn, head of communications and media relations, IPCC.

days. As we have already seen, the election coverage unsurprisingly dominated the Indian bulletins. On the 27 September (WG1), several channels ran the UN debate about Syria higher than the IPCC as a more significant international news story. On 31 March (WG2), there were few strong international stories, which could have been an argument for giving more editorial importance to the IPCC, but there were also strong national stories around. And on 13 April, there were several developments in the Ukraine story which did have the effect of pushing the WG3 report down the agenda that day on the three bulletins that included it.

Country Variations

For the three developed countries included in the survey, the volume of coverage was pretty consistent over the six evenings monitored. All three channels covered all three WG reports on the day of the release of the reports (and the BBC also ran a preview piece the evening before). Of the developing countries, the relatively high level of coverage of climate change in the media in Brazil compared to China and India has been documented in other studies. In 2007, the year of the previous IPCC Assessment Reports, *Jornal Nacional* covered the WG2 and WG3 reports, whereas CCTV-1 covered just the WG2 report and Aaj Tak neither (Painter 2007). The print media in Brazil covered the Copenhagen summit more than any other country monitored in a 2010 RISJ study, although the Indian and Chinese press also offered extensive coverage (Painter 2010: 40). The IPCC says that they get more interview requests from Brazil than any other country.[80]

Our Brazil researcher, Carlos Fioravanti, argues that TV Globo may well have covered the WG3 report in 2014 as well as 2007, if the day of the release had not fallen on a Sunday. He also says that '*Jornal Nacional* editors probably took the view that more climate change news was excessive, as they had already reported the WG2. Also, the WG3 conclusions were more complicated and abstract than those of the two previous reports.' The Brazilian print media covered WG3 extensively, with *Valor Economico*, the main financial newspaper, and *O Estado* both sending correspondents to Berlin. As already discussed in Chapter 2, the high presence of climate change coverage in the Brazilian media in general is probably due to a series of factors including a tradition of strong science units within the print media, strong interest in climate change among the political and business elites, high levels of general concern about climate change and interest in the Amazon amongst the wider population, the presence of Brazilian climate scientists with a high media profile, and possibly even the personal interest of one of the owners of TV Globo (José Roberto Marinho, who is Vice-President for Corporate Social Responsibility and a chair of WWF).

Aaj Tak is not exceptional in India for its lack of coverage of the WG reports. The largest English-language news channel in India, Times Now, did not include any of the reports in its prime-time bulletins between 9 pm and 10 pm. In general, the 200-odd 24/7 news channels in India are driven by intense competition for ratings, which they interpret as a recipe of 'infotainment', often consisting of crime, celebrity, and cricket (Thussu 2007). Foreign news coverage is declining even at a time when India is increasing its influence and presence globally.[81] But the low level of coverage in 2013/14 was mainly due

[80] Email exchange with Jonathan Lynn.
[81] Jasodhara Banerjee, 'The Decline in Foreign News Coverage in the Indian Media', in James Painter (ed.), *India's Media Boom: The Good News and the Bad*, RISJ, 2013.

to the holding of general elections between April and May 2014. As Anu Jogesh, the India researcher for this project, writes:

> *The high decibel electoral process dominated much of the media coverage, as the IPCC reports were released amid fervent campaigning during the multi-phased polls. This is especially true for television channels because newspapers did cover the IPCC reports intermittently. Stories focused on the increasing certainty around the human causes of global warming (WG1), dire impacts in Asia in the impacts study (WG2), and the controversy surrounding the fact that some countries did not endorse the summary for policy makers of the mitigation report (WG3).*

There was one exception. NDTV, an English news channel which boasts a science and environment correspondent, held a newsroom discussion on 1 April, the day after the WG2 report was released, linking the elections to climate change and asking, 'Who cares about climate change?' In its online blurb to the discussion, it wrote 'A new UN report warns of dire consequences from climate change. World leaders speak but India's politicians are silent. Why isn't climate change an issue in these elections?'[82]

It may come as a surprise that there was little coverage of the reports on CCTV-1.[83] But as our China researcher, Ji Li, writes:

> *Compared with other very immediate and visible environmental disasters like smog and water pollution which frequently happen in China, climate change is not a competitive topic for TV to cover. Secondly, there were no really new conclusions or scientific findings in the WG2 and WG3 reports for a Chinese audience this time round. The Chinese government has long recognized the existence of climate change and made efforts to face the challenges. The repetition of the same viewpoint is not attractive either to the media or its audiences. Thirdly, few CCTV reporters attended the press meetings so they did not have new material to report.*

What is interesting is that, in contrast, UN meetings on climate change do receive a lot of coverage in the Chinese media. This is partly because the Chinese government encourages journalists to attend these meetings to be able to be put over its point of view domestically and internationally, particularly as in recent UN meetings they feel their position has been distorted by the Western media. As Ji Li writes:

> *As we all know, climate change goes far beyond being a scientific issue. It is more a political issue for a developing country like China to negotiate and defend its position at the negotiations. It is also an important theme for the public to understand. More Chinese reporters report on how the Chinese government fights against the climate discourse hegemony by developed countries, like the USA. As a result, the audience sees more reports from this perspective.*

[82] http://www.ndtv.com/video/player/left-right-centre/who-cares-about-climate-change/315497.

[83] There was some coverage on the CCTV News Channel: a 1 minute report on WG1 on 27 Sept. and a second, slightly longer report on 28 Sept.

Dominant Frames

The 2013 RISJ study on the coverage in the print media of the WG1 and WG2 reports of 2007 found that the disaster frame was present in 87% of the 151 articles it examined, making it the most common frame along with uncertainty (Painter 2013: table 5.3). However, it was by far the most salient, with 56% of articles containing the frame, far more than the next most salient frame, uncertainty (14%). It was also by a huge margin the most dominant tone, with around two-thirds of the sample exhibiting the frame.

Clearly, our sample size of 13 bulletins covering the 2013/14 reports is much smaller and comes from a different medium. As indicated above, we did not attempt to assess the extent to which the dominant images reflected the four frames. This might have produced different results, although intuitively television images are naturally suited to visually strong negative impacts such as sea-level rise, drought, or other extreme weather events. Despite these caveats, it is still of significance that the disaster frame was the most present, salient, and dominant in the television bulletins we examined. As we wrote in the 2013 study, 'the continuing appeal of the disaster frame is to be expected, and is in line with other studies, confirming that journalists are generally attracted to gloom and doom stories'.

Uncertainty was present in a considerably lower percentage of the 2013/14 news bulletins (54%) than in the print articles examined in 2007 (87%). It was salient and a dominant tone in just one each of the 13 bulletins. This is perhaps surprising given that the various indicators of uncertainties around the science were prominent in the 2013 WG1 Summary for Policymakers (SPM). Indeed, the word 'uncertain(ty/ties)' appeared 36 times in the 29 pages of the 2013 SPM compared to 26 times in the 18-page 2007 SPM. However, the 'increasing certainty' narrative about the human drivers of increased temperatures since the 1950s received a considerable amount of media attention and went some way to providing a strong counter-narrative to all the uncertainties. This made uncertainty much less likely to be a salient frame or a dominant tone, even though it was relatively strongly present. Also, television coverage may find it more difficult to represent uncertainties than print coverage does.

In the RISJ study of the 2007 IPCC reports, opportunity was rarely present, salient, or dominant but this was largely due to the fact that WG3 was not included due to the low level of international coverage. So it is not surprising that in this study which did include the WG3 report, the opportunity frame was much more present (in over half the bulletins) and also a salient or dominant tone in five of them. However, it is of note that the opportunity frame was also present in four of the ten bulletins covering WG1 and WG2. More interestingly, in the RISJ study, which included coverage of the IPCC report on extreme weather events and on Arctic sea ice melt, the overwhelming majority of the articles which included the opportunity frame were the opportunities arising from **not** doing anything about reducing greenhouse gas emissions (such as longer growing seasons in the northern hemisphere, or the prospects of new shipping routes in the Arctic). Only five articles (less than 2%) in the total sample contained a mention of the opportunities from switching to a low-carbon economy, whereas in our analysis of the 2013/14 reports all the opportunities were broadly of this nature.

Finally, perhaps the most surprising result was the low presence of the explicit risk frame. It was a similar picture in 2007. However, the difference in

2014 was that, as we have described in Chapter 3, the IPCC and the co-chair of the WG2 report, Chris Field, placed considerable emphasis on communicating the risk management approach to the climate challenge. The word 'risk' was pervasive in the IPCC print communications. Yet explicit risk was the least present of the four frames, the (joint) least salient, and the least dominant. More description of the IPCC concepts of confidence and likelihood levels would have increased the explicit risk frame. However, print journalists rarely include explanations of them, so it is hardly surprising that television journalists, who have much less space to deal with, follow the same practice.

Other Issues

The BBC and the ABC were the only two channels to delve deeply into the climate 'pause', which, as we discussed in the previous chapter, was a concept promoted by the sceptics in those countries and the USA. *Jornal Nacional* included a brief mention. This study supports the finding from other RISJ studies outlined in Chapter 3 that climate scepticism in the media is a strong feature of the Anglo-sphere countries, but not of most developing countries or other Western European countries (Painter 2010; Painter and Ashe 2012; Engels *et al*. 2013). However, a note of caution should be added. The Indian print media, which unlike the television channels did cover the WG reports extensively, included some coverage of the 'pause', particularly in the run-up to the WG1 release.[84] Secondly, other than the BBC, it was *Jornal Nacional* in Brazil and not ABC in Australia which included some mention of sceptics, albeit just a generic one. ABC is noted for following the mainstream consensus on climate science to a greater degree than privately owned broadcast media and Murdoch-owned print media (Bacon 2013: part 2).

Finally, television journalists in all countries did closely seek out scientists when they covered the 2013/14 IPCC reports, and included them overwhelmingly when compared to politicians, civil servants, or NGOs. In the 2013 RISJ study, 70% of the articles covering the IPCC reports, and nearly 60% of all the articles in the sample, also included quotes from scientists or scientific reports expressing some variant of the disaster frame. Nearly half of all the articles included a quote that indicated some manifestation of uncertainty. In this study, nearly three-quarters of all those appearing on screen were IPCC authors or other scientists. This is not always the case when the science of climate change is covered in the media. In the RISJ study of the 2009 UN Copenhagen summit, scientists from universities represented just 12% of those quoted on the science, only a fraction more than NGOs (Painter 2010). One recent study found that in the coverage of the US National Climate Assessment in May 2014 on the three main cable news stations, politicians featured in 36% of all interviews about the report, compared to 14% for scientists.[85]

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[84] See e.g. *The Hindu* on 5 Sept. http://www.thehindu.com/opinion/op-ed/earth-is-warming-up-but-not-as-rapidly-as-predicted/article5094126.ece?ref=relatedNews.
[85] Laura Santhanam, 'Top Cable News Coverage of Federal Climate Change Report Cast Doubt on Science', *Media Matters*, 9 May 2014.

5. Conclusions

In earlier chapters, we have laid out the case for the importance of including television in any study of media coverage in the communication of the messages from the IPCC reports around the world. We have also shown how the political, social, and media context in which the IPCC reports were launched in 2013/14 has changed compared to the context for previous reports. Our study is undoubtedly limited by the relatively low number of news bulletins that included coverage of the IPCC reports (13 of the 36 bulletins examined). However, it is robust enough to offer some significant insights into issues of importance for anyone interested in how the media communicate climate change. These can be roughly grouped into three areas: the presence of different framings of the climate change 'story'; the volume of media coverage; and the difference between countries in the volume and style of coverage, including the ongoing political polarisation of the climate change issue.

Framing the IPCC Reports

The results outlined in Chapter 4 clearly show that, of the four frames we chose to assess, the narrative around climate change that clearly dominated television coverage of the three WG reports taken together was that of 'disaster', in the sense of adverse impacts. As we mentioned, this was to be expected of the reporting of WG2, but it was also the most salient and dominant in the reporting of WG1, and just behind the 'uncertainty' frame in terms of presence. It is worth reiterating that there are not many positive impacts arising from present or future climate change to report. As Chris Field, a co-chair of WG2, was quoted as saying, 'it is true that we can't find many benefits of climate change, and I believe it's because there aren't many benefits, even though we tried really hard to find them'.[86]

However, one factor that may be more important here is that, visually, adverse impacts are probably easier to illustrate than any other frame. It's a truism but television news needs pictures to tell stories, and is better at telling stories than dealing with issues. The disaster frame lends itself to a strong narrative, whereas risk, for example, is more of an issue than a story. If, as we have argued, television is the most influential medium, and if this remains the dominant grammar of television news, then this will be a major challenge for shifting dominant narratives around climate change.

Early analysis of some of the print reporting of the WG2 report also suggests that it stood out as being a particularly bleak report, particularly for humans (and not just polar bears). Yale University's Climate Media forum carried out a review of the major US newspapers' coverage which it said focused particularly on the adverse impacts already happening or being felt.[87] It headlined its analysis as '*somber* reporting on "*bleak*" IPCC study' (emphasis added). The world's two largest news agencies in English, Reuters and Associated Press, also focused on the negative impacts on humans: Alister Doyle from Reuters told the *Columbia Journalism Review* that 'this time around it's much more about the basics of food, water, health and security.

[86] 'It's a Bit of a Downer: Can Climate Change Be a Good News Story?', *Carbon Brief*, 9 Apr. 2014.
[87] http://www.yaleclimatemediaforum.org/2014/04/major-news-outlets-somber-reporting-on-bleak-ipcc-study.

Widespread human impacts are front and center.'[88] Seth Borenstein from AP gave a similar analysis that 'the dangers of a warming Earth are immediate and very human in this report'. Early results from a comprehensive study of the UK media's coverage of the three reports by a team at Exeter University also suggest that of the 10 frames the researchers used, the disaster frame was one of the two dominant ones for WG2, compared to the 'uncertain science' and 'settled science' frames of WG1 and the 'economic' and other frames found in WG3.[89]

But was this pervasive disaster frame 'alarming' or 'alarmist'? The distinction is important for various reasons, and not least because of the widely held view that alarmist claims about climate change can contribute to a loss of trust in climate scientists.[90] A recent report by a team of researchers at University College London says that climate scientists have difficulty 'delivering messages that are alarming without slipping into alarmism' (Rapley *et al*. 2014). It says the media is partly to blame for seeking 'a striking headline'. But it argues that alarmist language has been used as a 'deliberate strategy by some to engage public interest', when it is often the case that trying to make people reduce emissions by frightening them has 'harmful consequences', because they often respond suspiciously or decide the issue is 'too scary to think about'.

As we saw in Chapter 2, Professor Mike Hulme has argued of the UK reporting of the 2007 IPCC reports that much of it was presenting climate change through 'scary, and almost pre-determined, doom-laden scenarios saturated in the language of fear and disaster'. Although the disaster frame was very common in the television bulletins we examined, our researchers say there was less evidence of the presence of the language of 'doom-laden scenarios' such as 'calamity' or 'catastrophe' that Professor Hulme was criticising. For example, in its reporting of WG2, ABC included an interview with lead author Professor Lesley Hughes, who said 'It's not all doom and gloom if we get a wriggle on and do a lot about it. If we have very, very strong mitigation – that is reduce greenhouse gas emissions – we can hope to stabilise the climate in the second half of the century.'

There is some evidence for thinking that there was less alarmist coverage in the UK print media too. Of the 15 headlines reproduced in one study of WG2 coverage, only two could be described as using the language of doom and catastrophe: the *Independent* 'Official Prophecy of Doom', and the *Telegraph* 'Lifestyle to Blame for our Climate Catastrophe'.[91] Also, one analyst has written of the print reporting of WG1 that 'in 2007, 42% of the articles across all news outlets . . . described the report as *bleak*, *sobering*, *gloomy*, *frightening*, *grim*, *stark* or *terrifying*. These adjectives were absent from the 2013 coverage, which rather used more neutral words such as *most comprehensive*, *most authoritative* or making the *most overwhelming* case (27% of the articles).'[92]

As already mentioned in Chapter 4, the opportunity frame, mostly in the form of the 'positive' opportunities arising from moves to a low-carbon economy or alternative forms of energy, was more present than in previous studies of the media coverage of the IPCC reports. It was present in seven of

[88] Russell, 'Polar Bears'.
[89] Saffron O'Neill, talk at Exeter University, 15 May 2014.
[90] Ben Webster, 'Alarm over Climate Turns People off', *The Times*, 24 June 2014.
[91] 'Analysis: How UK Newspapers Covered the IPCC's Report on the Impacts of Climate Change', *Carbon Brief*, 3 Apr. 2014.
[92] http://blogs.egu.eu/4degrees/2014/01/14/has-climate-change-changed-in-the-media.

the 13 bulletins we examined, of which three each were in the coverage of WG2 and three in the coverage of WG3. This is a much higher percentage than in the studies of print coverage in both the 2013 RISJ study of the 2007 IPCC reports and the Hulme 2009 study, although in both cases direct comparisons are difficult due to different reports being included or different frames being applied (Painter 2013; Hulme 2009). But various studies do tend to show that, in the past, the opportunity frame has been one of the least common frames of the general media coverage of climate change (Painter 2013: 49; Doulton and Brown 2009).

Finally and perhaps more interestingly, the explicit risk frame did not feature in a way or volume commensurate with the amount the word 'risk' and the concept of risk management were being officially promoted by the IPCC. As Seth Borenstein of AP has pointed out, the key message of the WG2 report 'can be summed up in one word that the overall report uses more than 5,000 times: risk'.[93] As we have already described, WG2 co-chair Chris Field used the concept all the time. And yet, the explicit risk frame was salient in only one of the 13 bulletins, and only once was the dominant tone when it was shared with the disaster frame. It may of course be the case that 'risk management' is a specialist or jargon-ridden term, which the media generally find difficult. But as mentioned above, it is also a difficult one to explain visually for television.

It is mildly surprising that the term was hardly picked up in the UK print media either: of the 106 reports in all the UK press mentioning climate change and the IPCC on 30 March, 31 March, and 1 April, 84 of them included the word 'risk', but only three of them mentioned the words 'risk management'.[94] These results stand out in contrast to the finding in the 2013 RISJ study which concluded that in the coverage in the print media of the 2012 IPCC report on extreme weather events, which used the language of risk extensively, the explicit risk frame was present in half of them, and was often a dominant tone.

Volume of Coverage

We have already seen that, in our study, the volume of coverage dropped from WG1 to WG3, and suggested some of the reasons why this might have been the case. It is worth stressing again that sequenced releases may make sense to the IPCC, but many news editors will probably think the story has already been done with WG1 or WG2 and find it hard to go back to it again for WG3.

Other research would seem to back up the drop from WG1 to WG3: the team of researchers at Exeter found that WG1 had the most coverage in the UK newspapers and television, followed by WG2 coverage which was equivalent to roughly three-quarters that of WG1, followed by WG3 which was roughly a quarter of WG1.[95] However, it is also interesting to examine whether the volume of coverage of the 2013/14 reports fell in comparison to the coverage of the 2007 reports, in line with the general decline in the volume of the coverage over this period described in Chapter 2. In 2007, CCTV-1 in China gave more coverage to WG2 than it did in 2014 (four minutes compared to 40 seconds); *Jornal Nacional* in Brazil covered both WG2 and

[93] Quoted in Russell, 'Polar Bears'.
[94] James Painter, 'The IPCC's Risky Talk on Climate Change', *Carbon Brief*, 4 Apr. 2014.
[95] Saffron O'Neill, talk at Exeter University, 15 May 2014.

WG3 in 2007, but as we have seen, the absence of WG3 in 2014 may have been due to the release date falling on a Sunday. Aaj Tak in India did not cover the reports in 2007 either.

Although print coverage was not the focus of this study, it does seem that there was a sharp drop in the volume of coverage in many countries. The chart on the volume of world coverage from 2000–2014 published by Max Boykoff and his colleagues[96] would strongly suggest that the global volume of coverage in the months the 2007 IPCC reports were published (February, March, and April) was significantly higher than the volume for the months the 2013/14 IPCC reports were published (September 2013, March and April 2014). We do not know from the chart what percentage of the total volume the IPCC reports accounted for, but it would be surprising if they did not represent a sizeable component.

A closer analysis of the results for three of the six countries[97] included in this study would suggest a significant increase for the same months for India, but a significant drop for Australia and the UK. Volume of coverage in four English-language newspapers in India increased for the 2013/14 reports to 357 from 245 in 2007, equivalent to a 31% increase. In contrast, coverage in six newspapers in Australia dropped from 3,237 articles in 2007 to 1,076 in 2013/14, a decrease of 67%. Similarly in the UK, coverage in nine newspapers dropped from 3,505 articles in 2007 to 1,538, a decrease of 56%. A study published on the blog hosted by the European Geosciences Union of the volume of coverage in eight UK newspapers in the week of the release of the WG1 reports in 2007 and 2013 registered a smaller, but still significant, percentage drop of 33% (from 33 to 22 articles).[98] We do not have official figures for the number of journalists attending the three report releases in 2013/14 when compared to 2007, but the impression from journalists who attended both was that the numbers had dropped notably.[99]

One of the reasons why it is important to assess the relative volume of coverage is that there is some evidence for thinking that levels of public concern about climate change are partly driven by the volume of media coverage. As already mentioned, Professor Robert Brulle of Drexel University has mapped the various drivers of public concern in the US, of which media coverage is one. He has also commented that nightly news programmes on US television are a very important driver of public opinion, if not at times the single biggest one.[100] However, levels of public concern do tend to rise and then fall after media coverage of climate change 'events',[101] and the relative role that the media play in affecting long-term levels of concern compared to other drivers is highly debated.

[96] http://sciencepolicy.colorado.edu/icecaps/research/media_coverage/world/index.html.
[97] We do not have figures for Brazil, China, and Germany.
[98] http://blogs.egu.eu/4degrees/2014/01/14/has-climate-change-changed-in-the-media.
[99] Author interview with Alister Doyle, May 2014.
[100] Quoted in 'Climate Coverage Soars in 2013, Spurred by Energy, Weather', *Daily Climate*, 2 Jan. 2014.
[101] Ipsos Mori 2014.

Country Differences

Differences between countries in the volume and nature of coverage are also significant. In India, television coverage of all three WG reports was completely absent from Aaj Tak and Times Now. For WG1, two big news stories took up 90% of the coverage on both channels: on 26 September it was the twin terror attacks in Jammu, and on 27th it was a political controversy about a recent ordinance allowing politicians with criminal records to contest the forthcoming elections. Although WG2 included a considerable amount of information on the threat to coastal cities in Asia,[102] there was no coverage of WG2 either. It was the same for WG3, as the reporting was again dominated by election issues. It comes as no surprise that, at a meeting held in New Delhi, one of the authors of the WG3 report observed that 'the IPCC had sank without a trace in the (Indian) media' because of the general elections.

However, this is not true if print coverage is taken into account. There was some intermittent but significant coverage in the Indian print media of all three reports, including front-page coverage of WG2 in the *Times of India* on 1 April. In the past, coverage of climate change has tended to be in the English-language, and not the vernacular, press. Several reasons have been given for this, including the shortage of science journalists able to explain climate change in some of India's 22 languages.[103]

The print media in China also offered some coverage, as it did in Brazil, where although *Jornal Nacional* did not cover the WG3, the print media certainly did. In sharp contrast with the release of the IPCC reports, journalists from all three countries, including from television channels, tend to travel much more to the UN's annual meetings on climate change (the COPs), which guarantees considerable television coverage of these events, which are of course much more political than the IPCC reports.

The sample size is not robust enough to reach strong conclusions about any notable differences between countries in the content of the coverage. However, it is possible to see that some of the strong narratives that were present in the coverage in the UK media before the release of the reports, and particularly for WG1 and WG2, were more present in some countries than in others. As we described in Chapter 3, the climate 'pause' narrative was strongly present in the media in the UK, the USA, and Australia in the run-up to the release of WG1. Some critics of organised sceptic groups argue that these groups were successful in falsely portraying it as the most important issue around WG1 and distorting the media's views.[104]

Our content analysis shows that, at least in the bulletins we monitored, the climate 'pause' was a significant issue for the BBC in the UK and ABC in Australia, and briefly for TV Globo in Brazil. No mention appeared in the coverage in China or Germany. In the case of the BBC, the report on the evening of the release of WG1 included limited discussion of the 'pause', which was strongly contextualised and explained. A report earlier in the week on 23 September on the *News at Ten* was given over entirely to a discussion of the 'pause', which included several possible explanations for the 'pause' and the appearance of a prominent sceptic, Andrew Montford, alongside mainstream climate scientists.[105] The Exeter University team has noted a

[102] www.theguardian.com/environment/2014/mar/22/global-warming-hit-asia-hardest.
[103] Archita Bhatta, 'Why don't Indian Media Write More on Climate Change?', *Alertnet Climate*, Thomson Reuters Foundation, 21 Oct. 2013.
[104] Bob Ward, 'In the Public's Mind', *Nature Climate Change*, 2014.
[105] www.bbc.co.uk/news/science-environment-24213816.

difference between the coverage by the BBC and other British channels. They found that the BBC had more coverage using an 'uncertain science' frame than ITV, and that Channel 4 did not use the 'uncertain science' frame at all.[106] For those unfamiliar with the British context, there is an ongoing heated debate as to whether the BBC is right to give as much coverage as it does to sceptical viewpoints, when is it appropriate to do so, and whether it is 'gagging' sceptical voices.[107]

In the case of the ABC, the reporter in the bulletin we monitored stated that 'the most contentious part of the report is about the sun. Temperatures are rising but over the past 15 years the rate of global warming has almost stalled', adding that this was 'in part due to a combination of La Niña weather patterns, increased aerosols in the atmosphere and oceans soaking up around 90% of the extra heat'. The scientist Andy Pitman replied that 'the really interesting question is why the planet hasn't significantly cooled over the last 15 years, given the forcing'. It is also worth stressing that, as with the BBC, there was also plenty of discussion of the 'pause' elsewhere in the ABC's coverage of the IPCC reports.

It is also true that the prominence given in the general BBC coverage to the views of Professor Richard Tol in the run-up to the release of WG2 was not replicated in the bulletins monitored in other countries, although this could be largely explained by his being a UK-based IPCC author and by his apparent selection of a British (BBC) reporter as the outlet for the 'news' that he had quit the SPM writing team. However, Tol's criticisms of the IPCC were reported on the ABC website before the release of WG2, and also put to Field in a different ABC TV programme on the day of the release. It is perhaps more significant that Tol was the only sceptic to appear in the 13 bulletins we monitored. As noted in Chapter 3, sceptics were mentioned in the Brazilian coverage but only generically.

As already mentioned, we did not include the coverage of the IPCC reports by the US media in our sample, but other analysts have noted the strong presence of sceptics and the climate 'pause' narrative there. According to Media Matters, 41% of overall news coverage of WG1 and over 49% of newspaper coverage mentioned that the rate of warming has been slightly lower over the last 15 to 17 years.[108] The researchers added that 'while many of the articles and segments that made note of this phenomenon explained why it is not a retort to the science indicating long-term climate change, several headlines may have misled readers about its significance'. Other analysts noted the headline treatment given to the 'pause' in some of the US press,[109] although it should be stressed that many of the legacy media did not follow that editorial line in its headlines.[110] One author went as far as saying that six years after the questioning of the IPCC's 2007 report, and four years after Climategate, 'the climate denial camp still controls the message'.[111]

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[106] Roz Donald, 'BBC Most Likely to Portray IPCC Science as "Contested": How Old and New Media Covered the IPCC', *Carbon Brief*, 19 May 2014.
[107] Roz Pidcock, "BBC Upholds Complaint over Today Programme Nigel Lawson Interview', *Carbon Brief*, 7 July, 2014; http://www.dailymail.co.uk/debate/article-2685405/Ive-banned-BBC-Ex-Chancellor-Lord-Lawson-passionate-climate-change-sceptic-accuses-BBC-bosses-silencing-debate-global-warming.html.
[108] Media Matters, 'Media Sowed Doubt in Coverage of UN Climate Report', 10 Oct. 2013.
[109] Mooney, 'Who Created the Global Warming "Pause"?', 10.
[110] 'Early Headlines on the IPCC Report', *Yale Climate Media Forum*, 3 Oct. 2013.
[111] Douglas Fischer, 'What we're Seeing Now', *Daily Climate*, 27 Sept. 2013.

Even if true, this assessment could only apply to the USA, the UK, or Australia (and perhaps other Anglo-sphere countries like Canada and New Zealand). As the RISJ study *Poles Apart* showed, scepticism in the media is largely a phenomenon in the Anglo-sphere countries, although it is now being seen strongly in some Eastern European countries like Poland. So the strong presence of the climate 'pause' in the media coverage of the 2013/14 IPCC reports in the USA, UK, and Australia would be consistent with these findings. This is not the case in Brazil, China, Germany, or India. In *Poles Apart*, we argued that three of the main drivers of scepticism in the media were the presence of politicians espousing some variation of climate scepticism, the existence of organised interests that informs sceptical coverage, and partisan media receptive to this message. These drivers still help to explain the differences between the countries, although all sorts of other factors such as dominant values amongst the public who consume different media, journalistic culture, and media ownership all play a part.

It is also still the case that, within Anglo-sphere countries, the politicisation of the climate change issue impinges strongly on how different media organisations cover the story. This polarisation is not strongly apparent in the television coverage partly due to the dominant public sector ethos in the broadcasters chosen (UK, Australia, Germany, and in a different manner, China). But even a cursory glance at the UK print media shows how left-leaning newspapers such as the *Guardian* and the *Independent* give little coverage or prominence to the pause, whereas the right-leaning *Telegraph* and the *Mail* give a lot. In the USA, 69% of all the guests on the right-leaning Fox News were doubters of mainstream climate science, whereas left-leaning MSNBC gave space to four doubters who were rebutted.[112] In not dissimilar fashion, the coverage of the WG2 report was partly driven by political ideology. In the USA, the Yale Forum notes a different editorial line in the right-leaning *Wall Street Journal* to four other US newspapers.[113] In Australia, newspapers belonging to the Fairfax group such as the *Sydney Morning Herald* and the *Age* gave much more prominence to the WG2 report than the Murdoch-owned *Australian*.[114] In the coverage of WG3, the *Guardian* and the *New York Times* stressed that the sort of measures the IPCC was recommending were affordable, whereas the *Mail* headline on the same report was that the costs were going to shoot up.[115]

According to two US scholars, the presence of the climate 'pause' narrative in the US media contributed to a recent trend of increased scepticism amongst the general population there. Between April and October 2013, the number of Americans who say global warming is not happening went up by 7 percentage points to 23%.[116] While it is always difficult to disentangle media effects from other drivers of scepticism, it is of note that the UK, the USA, and Australia often come near or at the bottom of lists of public belief in the science of climate change in different countries. A poll of 20

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[112] Media Matters, 'Media Sowed Doubt'.
[113] 'On New IPCC Report, WSJ Views Differ Greatly from Those of Other Dailies', Yaleclimatemediaforum, 8 Apr. 2014.
[114] Newsite Crikey, 1 Apr. 2014.
[115] Damien Carrington, 'Fighting Climate Change is Affordable, Says UN', *Guardian*, 14 Apr. 2014; Justin Gillis, 'Climate Efforts Falling Short, UN Panel says', *New York Times*, 13 Apr. 2014; Ben Spencer, 'Britain Must Increase Spending on Green Energy by Ten Times in Next 15 Years to Help Reduce Global Warming, Says UN', *Mailonline*, 11 Apr. 2014.
[116] http://environment.yale.edu/climate-communication/article/Climate-Beliefs-November-2013.

countries by Ipsos-MORI in September 2013 put Australia, the UK, and the USA in the three last places, with 64% of Australians and British people, and 54% of Americans, saying they believed climate change was caused largely by human activity.[117] In the countries in this study, China came top with 94%, India seventh with 80%, Brazil eighth with 79%, and Germany thirteenth with 72%. When asked if 'we are heading for environmental disaster unless we change our habits quickly', China, Brazil, India, and Germany appeared in the top ten of most concerned countries, whereas Australia, the UK, and the USA appeared in the bottom five.

Final Thoughts

Finally, it is worth commenting on the communication of some aspects of the IPCC main messages. As pointed out above, the concept of risk management again proved a difficult one to communicate to the media, and particularly television. The implication of this study is that the concept of risk is still not as embedded into climate change coverage as other strong narratives. There has been ample discussion of the possible advantages of framing climate change as risk management (Painter 2013: ch. 3), particularly for some sectors used to it like policy-makers and business, but journalists clearly do not favour it. There are some exceptions in commentary pieces, like that written by the *Guardian*'s Damian Carrington arguing that climate change action is the best insurance policy in world history, and drawing parallels with taking out house insurance.[118] But such examples are not widespread.

Linked to this is the media treatment of the IPCC concepts of likelihood and confidence levels which try and quantify the uncertainties. There was a small amount of discussion in the media about the importance of the IPCC's carefully calibrated language, and the problems with communicating the concepts to a wider audience. For example, the Reuters environment correspondent Alister Doyle wrote a piece before the release of the WG1 report in which he pointed out that the draft report used the words 'uncertain' or 'uncertainty' 42 times over 31 pages.[119] He quoted several observers emphasising the 'language gap' between scientists on the one hand and policy-makers, the public, and the media on the other. One scientist noted that 'when scientists are explicit about the underlying uncertainties an immediate response from decision-makers and the public is: "Oh, scientists do not really know what they are talking about"'.

In general though, as our study shows, the television media do not make much use of the IPCC concepts of 'likely', 'very likely', or 'extremely likely', or if they do, they seldom include an explanation of what the terms mean. Research carried out by scholars at Nottingham University in the UK came to similar conclusions about news items in English-language media (Nerlich and Collins 2013). They concluded that, although many of the 2,038 news items they examined around the time of the release of WG1 used the term 'extremely likely', just 55 'made only a passing reference to the IPCC definitions of "extremely likely" and "virtually certain"'. They, like many others, stress that conveying information about uncertainty to a lay audience is difficult. Seth Borenstein from Associated Press was one of the few

[117] Ipsos-Mori, *Global Trends Survey*, 2013.
[118] Damian Carrington, 'Climate Change Action is the Best Insurance Policy in World History', *Guardian*, 1 Apr. 2014.
[119] Alister Doyle, 'Amid "Uncertainty", Scientists Blame Mankind for Global Warming', Reuters, 18 Sept. 2013.

journalists to make the effort, writing a piece in which he explained what 95% certainty meant to a scientist, comparing it to the degree of confidence scientists have that cigarettes are deadly.[120]

An anecdote from Professor Myles Allen of Oxford University illustrates one of the problems with the term 'extremely likely' which, in the IPCC lexicon, means 'more than 95% certain'. Appearing live on the BBC 24 News programme to discuss the WG1 report, Professor Allen was asked by the BBC presenter with reference to the finding that it was 'extremely likely' that half the observed warming since the 1950s was due to human activity, 'So what do the other 5% of scientists believe?' In other words, there was a confusion between what the authors of the IPCC report collectively had concluded was true with a very high degree of certainty and what percentage of scientists were in agreement with the statement. Work by scholars also suggests that the public in different countries interpret the likelihoods regressively, or in others words as a lower percentage than the IPCC means by them. In a 2014 study of publics in 24 countries using 17 languages, 'very likely' (more than 90%) was interpreted as 55–90% (Budescu *et al*. 2014). Some commentators advocate dropping such terminology altogether because it is too confusing, cuts down understanding, and even reduces the strength of the call for action.[121]

Clearly, more testing of the efficacy of both risk framing and IPCC concepts to quantify uncertainty is needed for different sectors of society. We do know that the public find scientific uncertainty difficult to understand, and the media's 'construction' of uncertainty can act as an obstacle to understanding and engagement (Painter 2013; Shuckburgh *et al.* 2012; Glasgow Media Group 2012). But we do not know enough about the effects of different (media) frames about the IPCC reports on policy-makers, 'boundary organisations', stake holders, interest groups, and the general public. For example, if it is the case that some policy-makers find the risk frame helpful, do we know which policy-makers (politicians, relevant ministers, civil servants, or negotiators), and in what sense does it 'help'? And do we know enough about what different media representations of uncertainty and risk do in terms of understanding (cognitive), emotional engagement (affective) or willingness to take action (behavioural)?

IPCC scientists have been criticised by some commentators for not getting on the front foot early enough to explain the climate 'pause' to the media.[122] It was beyond the scope of this study to assess the extent to which the media treatment of the 'pause' was merely mentioned or fully contextualised, but it would be interesting to know more about whether the presence and/or the contextualisation of the climate 'pause' narrative had a different effect on levels of public concern, belief in the science, engagement, or behaviour change. As several studies have pointed out, it is predominantly the values which people hold – about politics, religion, society, or the environment – which drive attitudes to climate change, and not more, or better, information about the science (Corner *et al*. 2014). 'Motivated reasoning' (where evidence is not evaluated critically, but deliberately interpreted in such a way as to reaffirm a pre-existing belief) often determines

[120] Seth Borenstein, 'What 95% Certainty of Warming Means to Scientists', AP, 24 Sept. 2013.
[121] John Timmer, 'Preferred Method of Conveying Climate Risk Doesn't Work', *Ars Technica*, 23 Apr. 2014.
[122] Mooney, 'Who Created the Global Warming "Pause"?; Ward, 'In the Public's Mind'.

individual responses to information about climate change.[123] There is still a need for more research on how much of a real difference 'better' communication by scientists makes, and with which sectors of the population. Only the undecided?

It is also worth considering the IPCC's practice of presenting three separate WG reports. As we have seen, the amount of coverage drops off quite markedly between the three reports. One consequence of this is that the problem and the impacts tend to get more coverage than the solutions or the opportunities, which come long after discussion of the problem in WG1. As Professor Mike Hulme has argued with reference to the media reporting of the 2007 reports, there is a *prima-facie* case for the release to the public of a single synthesis report rather than 'three separate and somewhat contradictory partial reports'.[124] This is partly, he argues, because of the way the media represent the more dramatic, or disaster-orientated, aspects of the reports. As we have mentioned, communication specialists often point out that disaster stories are not a good way of engaging the public over the long term or promoting behaviour change. Offering solutions at the same time as presenting the problem can be more helpful. As Celine Herweijer, a Young Global Leader at the 2014 Davos World Economic Forum, has written eloquently:[125]

> *Communication is key. I've worked in business on issues of climate risk and natural disasters for over 15 years, and I've yet to pitch any idea to a client with such a stark and uninspiring tone. You don't want your audience to give up before the real work begins; a picture of solutions, of growth and of positivity motivates human spirit after all. It's that shift in communication style that we now need to see – from business to media to science voices. Not only is the economic transformation needed possible – it can also lead to lifestyle improvements. That's the under-told story.*

[123] David Robert Grimes, 'Denying Climate Change isn't Scepticism: It's "Motivated Reasoning"', *Guardian*, 5 Feb. 2014.
[124] Hulme 2009: 126.
[125] http://pwc.blogs.com/sustainability/2014/01/risky-business-in-davos.html.

Appendix 1: Main Findings of WG1, WG2, and WG3

WG1

Temperatures

One of the clearest signs of climate change is rising temperatures. Between 1880 and 2012, earth's surface warmed by approximately 0.85°C, and the first decade of the 21st century was the hottest since modern records began in 1850. Scientists are 95% certain humans' influence on the climate is the dominant reason earth warmed between 1951 and 2010.

The report notes that, within the long-term warming trend, short periods of slower surface warming have occurred. Between 1998 and 2012, for example, earth's surface has warmed at a rate of 0.05°C per decade – which is slower than the trend since 1951 of 0.12°C per decade. The report notes:

> *Due to natural variability, trends based on short records are very sensitive to the beginning and end dates and do not in general reflect long-term climate trends.*

The current slower rate of warming is due to two factors – roughly in equal measure – says the report. First, natural fluctuations in the climate system have cooled surface temperatures, to some extent by redistributing heat within the ocean. 1998 was an unusually warm year due to an ocean and atmosphere cycle known as an El Niño event. And second, the amount of sunlight reaching earth's surface has declined – partly due to natural cycles in the sun's orbit and partly due to the release of volcanic ash which reflects incoming sunlight.

Despite the short-term slowdown, the report predicts the long-term trend of warming will continue. As carbon dioxide levels in the atmosphere double, earth is expected to warm by between 1.5°C and 4.5°C. By 2100, that could translate to as little as 0.3°C warming compared with 1986–2005 levels – but only if we undertake drastic emissions cuts from 2020. Following a high emissions pathway means temperatures could rise by 4.8°C.

Oceans

The oceans are another indicator of major changes in the earth's climate. By absorbing human-produced carbon dioxide, the oceans are becoming more acidic. On top of that, they are warming. The oceans have taken up more than 90% of the heat trapped by greenhouse gases since the 1970s, the report states.

Water expands as it warms. At the moment this thermal expansion of water is the main reason sea levels are rising. Over the last two decades (1993–2010), they've risen by more than 3 mm per year, but much more is in store in the future, the report says.

With radical emissions cuts, sea-level rise may be limited to 26 cm by the end of the century. If not, up to 82 cm of sea-level rise is possible. That's a big increase on the predictions in the IPCC's last report of between 18 and 59 cm. Since then, scientists' knowledge of ice sheets has improved, allowing them to include ice sheet melt in sea-level projections.

Ice Sheets, Glaciers, and Sea Ice

Both Antarctica and Greenland are losing mass, the report says. With very few exceptions, glaciers around the world are melting too. The melting of the glaciers and ice sheets, which the report says is very likely to have been influenced by human activities, is the other major factor driving up sea levels.

Rising temperatures are shrinking and thinning sea ice too. In the Arctic, the area of ocean covered with ice has been shrinking in every season, and every successive decade since satellite records began in 1979. The report notes that the loss of Arctic sea over the past three decades, at a rate of around 3.5–4.1%, is unprecedented. The change in the summer months has been particularly strong, with ice extent decreasing 13% per decade.

Sea ice surrounding the Antarctic ice sheet has not behaved in the same way as Arctic sea ice, growing by between 1.2 and 1.8% per decade. Scientists are still uncertain about why this has happened. Only limited data have been collected about the vast region, which makes it difficult to separate natural from human-caused changes.

Extreme Events

Climate change is also manifesting as changes to extreme weather events. For some extreme events, the changes are clear. For example, it is very likely there are already fewer cold days and more hot days around the world – a trend the report states is virtually certain to continue in the future. Large parts of Europe, Asia, and Australia have also experienced more frequent and long-lasting heatwaves – another trend that's very likely to continue.

For other extreme weather there aren't yet enough data for scientists to be confident about future and past trends. For both droughts and hurricanes, it's less clear whether there have been changes in past trends and to what extent humans' activities have contributed. Despite this, scientists are still able to identify that certain parts of the world have experienced more drought, and that in the North Atlantic, for example, the intensity of hurricanes has increased.

Looking forward, it is more likely than not – so more than a 50% chance – that hurricanes will become more intense in the Western North Pacific and North Atlantic. It's also likely drought will last longer and become more intense on a 'regional to global' scale.

Looking to the Future

As the report shows, major changes to the climate system are already taking place, and are set to continue to the end of the century and beyond. But the report also spells out that the severity of these changes depends on the emissions pathway humans choose.

For the first time, the IPCC has laid out a 'budget' for human emissions, starting from the beginning of the industrial era, that we will have to keep within to limit temperature rise to widely considered safe target of 2°C.

To have a 66% chance of staying within that budget, humans can only emit 1,000 billion tonnes of carbon, or around 800 billion tonnes when you include other factors that warm the climate system. By 2011, more than 500 billion tonnes of carbon had already been released.

The IPCC's lowest emissions scenario suggests keeping below 2°C is possible if global emissions peak by 2020 and decline rapidly after – something that is unlikely unless there is an international emissions agreement. If not, we are in for much greater warming, faster sea-level rise, and a new era of extreme events.

SOURCE: *Carbon Brief*, 27 September 2013.

WG2

We are Already Seeing the Impacts of Climate Change

That the planet is warming is not in doubt. Global temperature has risen by 0.85°C over the industrial period (1880 to date). We are already seeing the impacts of this amount of warming over much of the land and oceans. The Summary for Policymakers (SPM) says some risks of climate change are considerable at 1 or 2°C above preindustrial levels and that further warming will 'increase the likelihood of severe, pervasive, and irreversible impacts'. Greater confidence in the extent and pace of climate change since the last assessment report comes from having more data and new ways of analysing earlier measurements.

Our Weather Will Get More Extreme

Climate change is already leading to more hot days and nights and fewer cold days and nights. Heatwaves have become more common and more intense in the last half century. In general, wet places are set to get wetter and dry places to get drier. Some parts of the world are already seeing more frequent and more serious drought, leading to a reduction in water availability. In other regions, changing rainfall patterns and melting glaciers are altering river flow, causing a rise in flooding. The SPM says:

> *The fraction of global population experiencing water scarcity and the fraction affected by major river floods increase with the level of warming in the 21st century.*

Sea-level rise is projected to greatly increase the risk of flooding in low-lying and coastal regions, particularly in East, South, and Southeast Asia.

The Most Visible Impacts are on the Natural World

Warming is causing marine and terrestrial species to alter their seasonal behaviour and to migrate into new geographical territories. As surface waters warm, fish and invertebrates are moving towards the poles or into deeper water in search of cooler temperatures.

Redistribution of fish populations will have consequences for food security and livelihoods in regions that depend on marine resources. Falling productivity, ocean acidification, and overfishing will all contribute to the declining health of the oceans out to 2100. If species can't move or adapt fast enough, this will lead to local extinctions. The SPM says:

> *A large fraction of both terrestrial and freshwater species faces increased extinction risk under projected climate change during and beyond the 21st century, especially as climate change interacts with other stressors, such as habitat modification, over-exploitation, pollution, and invasive species.*

Ecosystems under pressure may cross critical thresholds known as 'tipping points', leading to abrupt and drastic changes. The precise point at which tipping points are triggered is uncertain, but there are already early warning signs of the Arctic and coral reef systems undergoing irreversible regime shifts.

Climate Change is Bad News for Food Security

Moderate warming in tropical and temperate regions, like North America and Europe, will see decreases in the major crop yields – wheat, rice, and maize – though individual locations may see short-term benefits. After 2050 the risk of more severe yield impacts increases. The SPM says:

> *Based on many studies covering a wide range of regions and crops, negative impacts of climate change on crop yields have been more common than positive impacts.*

Impacts on food production are likely to hit rural communities hardest and scientists expect a greater risk of malnutrition as food production decreases in poor regions. Changes in food production and quality will have consequences for market prices and food security. The potential for food shortages will be made worse by crop demand increasing 14% by 2050.

Climate Change has Other Consequences for Human Health

The number of people dying of heat-related illnesses has increased in some regions, and will continue to rise as the global population escalates. As temperatures rise, there will be a modest reduction in the number of people dying from cold in some areas, which will offset some of the heat-related deaths. Changes in temperature, sea-level rise, and rainfall patterns have changed the distribution of disease vectors, such as biting insects. The frequency of injury, disease, and death due to more intense storms, floods, and fires is expected to increase in the next few decades. While

climate change is and will continue to be a contributor to poor global health, bigger causes of ill-health exist around the world.

How Much will Climate Change Cost?

Economists have attempted to estimate the economic cost of climate change by assessing the costs incurred as a result of various different impacts. Existing estimates of the cost of 2.5°C of warming are between 0.2 and 2% of GDP. The real economic costs of climate change will be higher than estimates suggest, however. This is because they can't include impacts without a monetary value attached, such as the decline in biodiversity and loss of ecosystem services. The SPM says:

> *Global economic impacts from climate change are difficult to estimate. Economic impact estimates completed over the past 20 years vary in their coverage of subsets of economic sectors and depend on a large number of assumptions, many of which are disputable.*

Another important point is that very little is known about the economic impacts above 3°C. The risks become much higher above 3°C because of the potential for a large and irreversible sea-level rise from ice sheet loss, the report says.

Who will be Most Vulnerable?

The impacts of climate change are not evenly distributed across the world. Developing countries and rural communities are likely to be the hardest hit because of impacts on food production, livelihoods, and local economies. The SPM says:

> *People who are socially, economically, culturally, politically, institutionally, or otherwise marginalized are often highly especially vulnerable to climate change.*

Climate change can exacerbate social and economic inequalities, making vulnerable populations even more so. As more people move to cities, the risks will become more concentrated for a growing proportion of the global population, people living in places affected by violent conflict, or where access to food and water is already limited. In some places, populations might be exposed to several impacts at the same time – these are known as climate impact hotspots.

Adaptation Can Help Manage Risks from Climate Change

Some of the risks posed by climate change can be managed through adaptation. This involves minimising exposure to the physical impacts while at the same time reducing vulnerability through introducing climate-resilient infrastructure, ecosystem restoration programmes, better water management, social and sustainable development programmes, and livelihood diversification. For example, the new IPCC report says adaptation would lead to an overall gain in crop yield of about 15–18% of current yields compared to the non-adaptation case, with the greatest benefits for wheat, rice, and maize in temperate regions rather than tropical ones.

Adaptation can have co-benefits in terms of alleviating poverty and enhancing development, particularly in developing nations. There are still barriers to climate change adaptation, particularly in developing countries, mainly because of a lack of access to human and economic resources.

Making Decisions in an Uncertain World

The report highlights that there are a number of directions future climate change and societal development could take. And the actions we take now determine how much we are able to narrow those possibilities. The underlying message of the report is that uncertainty about the scale, timing, and location of physical impacts shouldn't be a reason to delay on climate change action.

Adaptation can reduce the impacts of climate change but it can't avoid them altogether. So mitigation of carbon dioxide emissions is important alongside

adaptation, to reduce the scale of climate impacts. As well as reducing the cost of damage, a low emissions pathway would also lower adaptation costs.

SOURCE: *Carbon Brief*, 31 March 2014.

WG3

Emissions Rising

Between 2000 and 2010, greenhouse gas emissions grew at 2.2% a year – a faster rate of increase than over the previous three decades. Human-caused emissions were 'the highest in human history' in the first decade of this century, the IPCC says. And they are slated to keep going up in the future. Under the scientists' 'business as usual' scenario, emissions will surpass the limit associated with a temperature rise of 2°C above pre-industrial levels by 2030. The international community has agreed to hold temperature rise to 2°C in order to avoid 'dangerous' human interference in the climate system.

Economic growth and rising populations are largely responsible for the rise – with the growth in the economies of poorer countries a particularly important factor. Without explicit efforts to reverse the rise, 'emissions growth is expected to persist' in the future, the report says. At this rate, the world could experience a temperature rise of somewhere between 3.7 and 4.8°C by the end of the century, compared to pre-industrial levels. This level of warming could lead to 'severe, pervasive and irreversible' effects, according to the IPCC's earlier impacts report.

Predictions and Promises

The worst impacts of climate change are not a given, however – because there is still time to stop the increase in greenhouse gas emissions reaching dangerous levels. It is possible to limit temperature rise to below 2°C by the end of the century, the IPCC says. But it would take a pretty epic effort – reducing global emissions by at least two-fifths by 2050, and at least tripling or quadrupling the share of energy the world gets from low-carbon energy by the same date.

Emissions are rising so fast at the moment that it probably also means allowing concentrations in the atmosphere to 'overshoot' the safe limit, and then return to lower levels by the end of the century. In order to achieve this, we may need to use a new technology known as bioenergy with carbon capture and storage (BECCS), the IPCC suggests. BECCS involves burning wood, plants, or other crops, capturing the carbon dioxide that is released, and then planting more. Because the new plants capture more carbon, it is theoretically a carbon negative process. But – like many other geoengineering techniques – BECCS is controversial, and as yet, there is only limited evidence that it will work.

How to Reduce Emissions

One big reason why emissions are going up around the world is that we are using more and more energy – and generating increasing amounts of it from coal, which is very polluting. Decarbonising the world's power supplies is a crucial part of plans to reduce greenhouse gas emissions, the IPCC says. It is likely to mean increasing the amount of power generated by nuclear power stations, renewables, or fossil fuel fitted with carbon capture and storage technology, from 30% of global supply at the moment, to more than 80% by 2050.

Carbon dioxide emissions from air travel, trains, and road traffic are projected to approximately double by the middle of the century – with the increasing amount of transport used outweighing attempts to reduce emissions. Behavioural changes, technical solutions, changed transport patterns, and changes to infrastructure could reduce this rise by 15 to 40%, however.

Emissions from industry and manufacturing – also increasing rapidly – could be tackled by using materials more efficiently and by reducing overall demand for products. These measures would be 'cost-effective, profitable and associated with

multiple co-benefits', the IPCC says. But few countries have managed to achieve them so far, so it's not clear how they're going to happen in practice.

In other areas change is already taking place. Some countries have introduced new low-energy building codes as an effective way of reducing emissions – and significantly reduced the amount of energy used to heat or cool houses by retrofitting new technologies to old buildings.

Good News on Forests?

This might all sound rather daunting. There is some good news, however. Over the last few years, deforestation rates have declined – and as a result emissions from agriculture, forestry, and land use have probably also gone down. The trend is likely to continue in the coming decades. Vegetation and the land could even be a carbon sink by the end of the century, rather than a source, the IPCC says – although if forests are adversely affected by climate change, then that might change matters.

Bioenergy could also play a critical role in reducing emissions. But this is only if important ecosystems like forests, grassland, and peatland aren't converted to create plantations for bioenergy products. Otherwise, large-scale bioenergy deployment has the potential to increase emissions, instead of decrease them. The IPCC says there are 'crucial issues to consider' on bioenergy, and scientific debates on whether it can reduce emissions are not resolved yet.

Costs and Benefits

Limiting emissions to a level that would give a reasonable chance of avoiding a 2°C temperature rise this century will entail global consumption losses – a measure of gross domestic product – of 2–6% by 2050, according to the report. This equates to an annual reduction in consumption growth of 0.04–0.14% a year, the IPCC says. World economies will still grow, according to the IPCC – just by slightly less. The figures also don't include the benefits of tackling climate change, or the savings that come from reducing the scale and seriousness of climate change impacts. There are many co-benefits from cutting emissions, the report says. Shifting to lower carbon transport systems can create more access, mobility and safety for citizens, better health and greater energy security, for example.

Introducing Policies

Countries around the world have introduced a variety of different policies and strategies with the aim of reducing emissions – from market-based systems, to reductions in subsidies for fossil fuels, city-wide climate action plans, and regulations like energy efficiency standards. In 2012, 67% of global greenhouse gas emissions were subject to some kind of national legislation or strategy. But policies vary in their effectiveness. Cap and trade systems like the European Emissions Trading Scheme, for example, are being established in a growing number of countries. But, says the IPCC, 'their short run environmental effect has been limited' because the caps that have been introduced have not been tight enough.

Climate change 'has the characteristics of a collective action problem at the global scale', the IPCC says – because most greenhouse gases accumulate over time and mix in the atmosphere – and tackling it therefore requires international cooperation. It adds:

> *Effective mitigation will not be achieved if individual agents advance their own interests independently.*

Different countries have to work out how to share the costs and benefits of tackling climate change – a problem some have contributed to more, and others less, in the first place. This means that ethical considerations – including issues of well-being, justice, and fairness – come into play in deciding on how they should be reduced. Countries are more likely to reduce emissions if the outcome they're aiming for is seen to be fair. SOURCE: *Carbon Brief*, 13 April 2014.

Appendix 2. Audiences, Usage, and Trust in Media

AUSTRALIA

A 2011 survey of more than 1,000 online users suggested that 36% used commercial TV as their main source of news, 18% used Australian news or newspaper websites, 17% newspapers, 8% public service broadcasters (ABC and SBS), 4% each for social media sites and radio, and 15% other (Australian Communications and Media Authority 2011). Even though these figures represent the responses of online users and not the general population, it is significant that television scores so highly at 44%.

Television news and current affairs broadcast by the publicly funded, commercial-free ABC is the most trusted media source of information in the country. In January 2013, as in previous years, it far outstripped commercial television and radio news and opinion, as well as news and opinion in daily and local newspapers, as a source in which people had a lot of trust. When figures for those who had a lot of trust were added to figures for those who had some trust in a media source of information, ABC television news and current affairs scored 73%, compared to 48% for news and opinion in daily newspapers, 55% for news and opinion in local newspapers, 44% for commercial television news and current affairs, and 40% for news and opinion web sites (Essential Media 2013).

ABC television news rates third in popularity after news on commercial television networks Nine and Seven (OzTAM in Dyer 2014). On the night the release of the IPCC WG3 report was reported on ABC 1's 7 pm news bulletin, the ABC television news attracted 1.4 million viewers nationally, which is similar to the average national audience of 1.3 million for weekday bulletins of the 7 pm television news on ABC1 quoted in the corporation's 2012–13 annual report (ABC 2013). Nationally, the commercial channels Nine and Seven News had about 1.9 million and 1.6 million viewers respectively in April 2014.[126]

ABC was chosen in part because the national 7 pm news bulletins on the private channels Nine and Seven News on 27 September 2013 did not report the release of the WG1 report, perhaps due to the tight timeframes as a result of the time difference between Australia and Stockholm. Despite the time difference, the release did feature in the 7 pm news bulletin on ABC 1 on 27 September. In view of this, and the high level of public trust in ABC television news, we decided to monitor and code the 7 pm bulletins on ABC 1 for the releases of all three reports. The WG3 report was released after 7 pm Australian Eastern Standard Time on 13 April 2014 and was not reported until 14 April, which made it necessary to start the two days of monitoring on that occasion a day later than other countries. Like the most popular commercial television news bulletins, the 7 pm news bulletins on ABC 1 differ from state to state. The ABC bulletin we monitored was the one screened in New South Wales, where the state capital is Australia's largest city, Sydney.

BRAZIL

Television news is the most important source of information for most Brazilians (Becker and Bustamente 2009). According to the 2013 Brazilian Media Survey, led by the Institute of Statistical Research (Ibope), 78% of the country (of about 190 million) preferred TV as the main source of news. Of the 18,000 people interviewed, 65% of them said that they watched TV on the main local networks every day, 25% read news on the internet, 19% preferred radio, 5% read newspapers, and 1% magazines (Floro 2014). Figures from 2010 show that more than 70% of Brazilians trust TV as the main source of information about science and technology (MCT 2010).

[126] http://www.crikey.com.au/2014/04/15/glenn-dyers-tv-ratings-abcs-quality-programming-wins-the-evening.

A worldwide study on trust showed that the most trusted specific news source then was Rede Globo (mentioned by 52%), followed much further back by the newspaper *O Globo* (4%), *Folha de Sao Paulo* (3%), and TV Record (3%).[127] Rede Globo is one of the largest private media companies in the world, and still dominates the Brazilian television sector, albeit to a much lesser extent than in the 1980s. It receives almost one-third of the total advertising expenditure in the country and enjoys an average national audience share of 65% (Silva 2008). The programme analysed in this study, *Jornal Nacional*, is the most important television news programme in Brazil, with an average of 18 million nightly viewers in 2013, which was down from 25 million in 2007, but still equivalent to about a quarter of the nightly total audience (Rede Globo 2013).

We chose to monitor the bulletins on 31 March and 1 April for WG2 as there is no edition of *Jornal Nacional* on a Sunday; and for WG3, we chose 12 and 14 April for the same reason.

CHINA

It is difficult to be sure of survey data or audience figures in China. But according to a survey conducted in 2013 on media credibility by *Insight China*,[128] television was regarded as the most credible (45%), followed by the internet (34%), newspapers (34%), the social media sites Weibo (28%) and Wechat 14%, then radio at (12%). An international survey of 18 countries in 2010 found that television was regarded by Chinese people as a 'good or excellent source' of climate change information: 50% of respondents stated television, followed by websites (48%), and newspapers (44%).[129]

CCTV has a virtual monopoly of television news in mainland China. It has four national channels and around 40 in the provinces. Its domestic coverage reaches 96% of the population. CCTV 1 targets the national audience while CCTV 4 pays attention to an international audience too. According to the Beijing Normal University website,[130] the credibility of CCTV in general was ranked first in all of the 12 sample cities. According to the research company CVSC-SOFRES MEDIA,[131] in the first half of March 2014, CCTV 1's *Night News* programme at 22:00 had an audience of around 11 million, one of the largest for an evening news programme in China. The news programme broadcast on the same channel between 7 pm and 7.30 pm has a larger audience, according to some sources.

GERMANY

Germans are unusual in some respects in terms of their news consumption. In the 2013 RISJ *Digital News Report*, Germany emerged as the country with the lowest level of online news access (along with France), but showed a strong allegiance to traditional news platforms.[132] Television was mentioned as the main news platform by 43%, compared to online (41%), print (15%), and radio (13%). It is also the European country in the survey which comes out highest in terms of buying a newspaper once a week (56%) and those with a subscription which includes home delivery (33%).[133]

It is perhaps not surprising then that newspapers should command a lot of trust: one survey from 2011 showed that the respondents' first choice for most

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[127] BBC/Reuters/Media Center Poll, *Trust in the Media* (2006). Available at http://www.globescan.com/news_archives/bbcreut.html.
[128] *Insight China* is a monthly magazine primarily covering financial and economic news, and is affiliated with the publishing institution of *Qiushi Journal*, a bi-monthly political theory periodical published by the Central Party School and the Central Committee of the Communist Party of China.
[129] www.synovate.com/news/article/2010/05/climate-change-concern-remains-high-across-the-globe-says-synovate-and-deutsche-welle-global-study.html.
[130] http://news.bnu.edu.cn/mtsd/53344.htm.
[131] The survey was conducted in 35 cities in mainland China.
[132] *Digital News Report*, RISJ, 2013, 25.
[133] Ibid., 81.

trusted media was newspapers: 45% compared to 21% for internet, 19% for television and 15% for radio (van Eimeren and Ridder 2011).

The most trusted specific news source mentioned spontaneously by Germans in a 2006 survey was the channel we analysed, namely ARD (mentioned by 22%).[134] The programme included in this study (*Tagesschau* on ARD) is 'by far the most renowned source of information in Germany; this is also true of the younger age group between 14 and 29' (Hasebrink and Hölig 2013). In 2013 ARD's audience share was 12.1%, compared to ZDF's 12.8% for all channels. Audience figures were between 4 million and 6 million depending on the night.[135]

Most importantly, on the specific issue of climate change, Germans use television as their main source of information and trust it more than other media (Schäfer and Schlichting 2014).

INDIA

A 2006 survey found that the most important news sources for Indians in a typical week was television (mentioned first by 37%), newspapers (36%), radio (7%), and news magazines (4%), although this was carried out before the boom in internet penetration.[136] According to the same survey, Indians placed the most trust in national/regional newspapers and national television (85% give each a lot or some trust). Also strongly trusted are local newspapers (76%), friends and family (70%), and public broadcast radio (69%). The most trusted specific news sources mentioned then was Aaj Tak, (mentioned by 11%), the channel included in this study.

A 2012 report on climate perceptions in India noted that 65% of survey respondents watched television as their main source of information about climate change, 54% read newspapers, followed by radio (25%), movies (21%), and the internet (18%) (Leiserowitz and Thaker 2012). The report added that scientists were the most trusted sources of information about global warming (73%), followed by the news media (69%).

Despite the lack of confidence in television audience figures, it is probably the case that Aaj Tak is still the largest Hindi news channel in India. According to the Indian Readership Survey, total television viewership in India was 578 million in the last quarter of 2012. Of this, Aaj Tak was the largest Hindi news channel. According to one report in 2012 it had a total viewership for all programmes of 59 million, 'higher than the viewership of national Hindi and English News Channels put together'.[137]

The figure used in this report for the nightly news bulletin on Aaj Tak is reached by using the TAM viewership figure for an average edition of the 21:00–22:00 news slot on Aaj Tak of 3.3 million individuals for the week ending 7 June 2014. The TAM figures only cover (a large part) of urban households but not rural households, equivalent to 57 million households with televisions out of 153 million households with televisions. So assuming an equal penetration in all households with televisions, Aaj Tak would have an audience of 8.9 million in the whole country.

UK

There is a considerable amount of data available that show (a) how much television in general is used and trusted for news, (b) how much television is used for science news, (c) how much the BBC and BBC journalists are trusted, and (d) how much the particular news programme we analysed (*News at Ten*) is watched. Ofcom provides detailed figures on usage and trust (Ofcom 2013, 2014).

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[134] BBC/Reuters/Media Center Poll, 2006.
[135] www.daserste.de/programm/quoten.asp.
[136] BBC/Reuters/Media Center Poll, 2006.
[137] http://www.indiantelevision.com/release/y2k12/june/junrel44.php.

- TV remains the most important and frequently used mode of news consumption, and one in five people say their only source of news is television. In 2014, 75% of adults said they used the television to access news, compared to four in ten saying they used newspapers, the same proportion using the internet (either on a computer or mobile), while radio was used by just over one-third (36%).
- When asked about the reliability, trustworthiness, accuracy, and range of the different news sources they used, most TV news viewers rate their sources highly. Ratings are more varied for newspaper readers, and broadsheet readers rate newspapers particularly highly as being trustworthy. Online users rate websites in more differentiated ways than other platforms. Twitter is rated most highly by its users for offering a range of opinions.
- The top two news sources, in terms of reach, among UK adults are TV channels, with BBC 1 being by far the most used (53%).

It is of course important to stress again that younger age groups have very different news consumption practices to older age groups, as the RISJ *Digital News Report* (2013) very clearly illustrates. For under 45s, almost half of the population, the internet is now the main source of news as well as their most frequently accessed; for between 12% and 18% of the over 45s, the internet is the main source. In contrast, for over 45s, TV remains the preference for over half of that segment, whereas for under 45s it is about 25%.

However, the decline in television viewing figures is probably much slower than would have been predicted 10–20 years ago. We also know that television in the UK is the most important source for news about science. In 2014, 42% of the British people regularly used television news as a source of information for science. This figure rises to 68% if all TV programmes are included. This compares to 23% for print, and 15% for online newspapers and news sites. The percentage who regularly use science blogs was 2%, which had not risen from 2011 (BIS 2014).

In a 2006 poll, the most trusted specific news source mentioned spontaneously in the UK was BBC News (mentioned by 32%), followed by ITV News (8%), Sky News (7%), the *Daily Mail* (3%), and the BBC News website (3%).[138] There is also some evidence that BBC journalists are trusted more than other journalists specifically for information about climate science (31% compared to 11–16%), which is lower than climate scientists (69%), but significantly higher than social media sites and blogs (8%) and politicians (6%).[139]

In March 2013 the audience for BBC *News at Ten* was around 5 million viewers, which made it the second most watched news bulletin (only by a few thousand) in the UK after BBC *News at Six*.[140]

[138] BBC/Reuters/Media Center Poll, 2006.
[139] www.carbonbrief.org/blog/2013/04/polling-reveals-public-trusts-scientists-most-on-climate.
[140] www.barb.co.uk/viewing/weekly-top-30.

Appendix 3. Research Coding for WG1

1. Background Details:

Country:……..;

TV channel ……Name of programme monitored…….

2. Time of broadcast (date and local time) ……

3. Total length of news broadcast (in minutes) …….

4. Story: Was the IPCC's WG1 report included in the news programme? Yes …. No ….

Code as Yes-No, and do the same for the following questions unless otherwise indicated.

5.1 If yes, did the IPCC report feature as one of the headlines at the top of the programme?

Yes …. No….

5.2 If yes, did the news report on the IPCC last … ?

Short (1)	Less than 30 seconds
Medium (2)	From 30 seconds to 1½ minutes
Large (3)	1½ to 3 minutes
Extra Large (4)	More than 3 minutes

Code as 1-4

6. Placing of report: where in the running order did the news report appear?

First story (1)

Second story (2)

Third story (3)

Fourth story (4)

Fifth story (5) ...

More than ninth story (10)

Code as 1-10

7. Genre:

7.1 Was the report essentially …?

Anchor only (reading content of report)	(1)
Anchor and reporter (on the spot in Stockholm)	(2)
Anchor and reporter (in the studio or on the spot elsewhere)	(3)
Anchor, reporter plus at least one interviewee in Stockholm	(4)

Studio interview (for example, anchor and expert in studio) (5)

Other (6)

For 'other' category, please describe briefly .....

Code as 1-6

7.2 Did the report include the use of info-graphics (including moving images/computer simulations, etc.) to depict the WG1 findings?

Yes …. No ….

8. Which voices appeared as interviewees in any part of the report (see note 1)?

8.1 IPCC author	Yes ….	No ….
8.2 Other Scientist	Yes ….	No ….
8.3 Politician	Yes ….	No ….
8.4 Civil Servant	Yes ….	No ….
8.5 NGO representative	Yes ….	No ….
8.6 Business People	Yes ….	No ….
8.7 Media/Journalist	Yes ….	No ….
8.8 Common Person	Yes ….	No ….
8.9 Other	Yes ….	No ….

For all categories, if the answer is 'Yes', please add number of such voices in brackets

Main Narratives:

9. Uncertainty frame:

9.1 Did the report contain mentions any of the uncertainties about climate science, which might include ranges in projections for temperature increases, sea level rises, etc.?

a) Yes …. No ….

If yes, how many times did the report contain mention of such ranges of projections?

b) None .... Once …. Twice …. Three times .... etc.

Code exact number as 0, 1, 2, 3 etc

9.2 Did the report contain such terms as 'increasing certainty' or 'increasing evidence' to portray the movement to more certainty about aspects of the climate science, including future projections?

Yes …. No (does not mention such terms) ….

9.3 Did the report mention scientists describing the shortcomings of computer models?

Yes …. No ….

If yes, was it scientists (1) or NGOs (2) or others (3) describing the shortcomings?

Code as Yes (1), etc.

9.4 Were there direct quotes (see note 2) of named scientists or the scientific report which predominately contained uncertainty?

a) Yes …. No ….

If yes, how many different quotes? ….

b) Once …. Twice …. Three times .... etc.

Code exact number as 1, 2, 3 etc.

9.5 Were sceptical voices included in the report which question some elements of mainstream climate science (see note 3)?

a) Yes…. No…….

If yes, how many times?

Once …. Twice …. Three times .... etc.

Code exact number as 1, 2, 3 etc. in brackets

b) If yes, how did they appear mostly?

as interviewee (1) or generic mention ('sceptics say that …') (2)

Code as 1-2

c) 1) Were sceptical voices included in the report which do not question the science but do question the need to take robust action (see note 3)?

If yes, how many?

Once …. Twice …. Three times .... etc.

Code exact number as 1, 2, 3 etc. in brackets

c) 2) If yes, how did they appear mostly?

as interviewee (1) or generic mention ('sceptics say that….) (2)

Code as 1-2

c) 3) If yes to 9.5 a) or c), were they in the headline and/or the first minute of the report?

Yes …. No ….

d) Roughly what percentage of the report did their views represent?

0–10% .... (1) 10–50% .... (2) 50–90% .... (3) 90–100% .... (4)

Code as 1-4

e) If sceptic voices are included, did the report state where the dominant scientific consensus lies?

Yes …. Yes, strongly .... No …. Not sure ….

9.6 Salience (see note 4):

a) Was the headline predominately one that contains uncertainty?

Yes …. No ….

b) Was the first element of the report predominately one that contained uncertainty?

Yes …. No ….

9.7.1 Was the 'climate pause' mentioned in the coverage?

Yes .... No ....

9.7.2

If Yes, for how many seconds of the report was it covered?

Less than 30 .... (1) More than 30 .... (2)

10 'Disaster' frame (see note 5):

10.1 Did the report include general, un-sourced general statements mentioning the possible adverse impacts or consequences from climate change?

Yes …. No ….

10.2 Did the report include sourced statements from scientists/experts or scientific reports mentioning the possible adverse impacts or consequences from climate change?

Yes …. No ….

10.3 Were there direct quotes of named scientists or the scientific report which predominately contained the 'disaster' frame?

a) Yes …. No ….

If yes, how many?

Once …. Twice …. Three times .... etc.

Code exact number as 1, 2, 3 etc in brackets

10.4 Salience

a) Was the headline predominately one that contained 'disaster'?

Yes …. No ….

b) Was the first element of the report predominately one that contained 'disaster'?

Yes …. No ….

11. Opportunity frame (see note 6):

11.1 Did the report include general or sourced statements mentioning opportunities?

Yes …. No ….

11.2 Were these a) the advantages of any move to a low-carbon economy), or b) those accruing from doing nothing and allowing climate change to take place (such as

longer growing seasons in the northern hemisphere, or the prospects of new shipping routes and the possibility of mineral, gas, and oil exploration in the Arctic).

a) …. (1) b) …. (2) c) both …. (3)

Code as 1-3

11.3 Were there direct quotes of named scientists or the scientific report which predominately contained the opportunity frame?

a) Yes …. No ….

If yes, how many?

Once …. Twice …. Three times .... etc.

Code exact number as 1, 2, 3 etc. in brackets

11.4 Salience

a) Was the headline predominately one that contained opportunity?

Yes …. No ….

b) Was the first element of the report predominately one that contained opportunity?

Yes …. No ….

12 Risk Frame (see note 7)

12.1 Did the report include general, un-sourced general statements containing the risk frame?

Yes …. No ….

12.2 Did the report include named sourced statements from scientists/experts or scientific reports containing the risk frame?

Yes …. No ….

12.3 Were there direct quotes of named scientists or the scientific report which predominately contained the risk frame?

a) Yes …. No ….

If yes, how many?

Once …. Twice …. Three times .... etc.

Code exact number as 1, 2, 3 etc. in brackets.

12.4 Salience

a) Was the headline predominately one that contained the risk frame?

Yes …. No ….

b) Was the first element of the report predominately one that contained the risk frame?

Yes …. No ….

13. General tone/tenor? a) In the report, was there a dominant tone or tenor to the report?

13.1 i) Uncertain(ty) …. ii) Disaster .... iii) Opportunity …. iv) Risk …. v) a combination of more than one of these .... none of these ….

Code as 1–5

13.2 Was there a key quote or element of the report which can be pulled out to give support to the choice of coding above? If so, what was it? And who said it?
……
……
……
……..……..

14. Did the report make use of the IPCC concepts of likelihood and confidence (see note 8)?

14.1 Yes …. No….

14.2 If yes, did it mention the IPCC in connection with these concepts? Yes …. No ….

14.3 If yes, did it explain what the IPCC means by these concepts? Yes …. No ….

15. Which years were mentioned in the report as important for either the international negotiations or the possible impacts?

15.1 2015	Yes ….	No ….
15.2 2020	Yes ….	No ….
15.3 2030–40	Yes ….	No ….
15.4 2050	Yes ….	No ….
15.5 2100	Yes ….	No ….
Other (please indicate)	.....	
15.6 None of these	Yes ….	No ….

16. Did the report highlight policy implications which arise from the scientific findings of the report?

16.1 Yes …. No …. Implicitly ….

16.2 If yes, who does the report suggest should have responsibility for following up on the policy implications?

Politicians …. (1) Business Sector …. (2) Civil Society …. (3) Other …. (4)

Code as 1-4

Note 1: By 'voices appearing as interviewees', we mean only those who appear in the report, not those who are quoted by an anchor or reporter. If more than one voice from a category appear (e.g. two IPCC authors), then this should be coded as Yes (2), and so on. We are not coding sceptics separately here as they will be captured in section 9.5.

Note 2: By 'direct quote', we mean a statement which is clearly assigned to a scientist or scientists, even though they may not have appeared in person in the report. An example of this would be 'IPCC scientists say that temperature increases could be between 1.5 degrees and 5 degrees Celsius by the end of the century'.

Note 3: Under 9.5 a) we should include either trend sceptics (who deny the global warming trend), or attribution sceptics (who accept the trend, but either question the anthropogenic contribution saying it is overstated, negligent or non-existent compared to other factors like natural variation, or say it is not known with sufficient certainty what the main causes are; under 9.5 b) we should include impact sceptics (who accept human causation, but claim impacts may be benign or beneficial, or that the models are not robust enough) and/or question the need for strong regulatory policies or interventions.

Note 4: An example of an uncertainty headline would be 'climate change effects unknown'; of a 'disaster' headline 'more wild weather on the way, UN climate panel says'; of an opportunity headline, 'The silver lining to global warming'; and of a risk headline, 'hundreds of millions of people at greater risk from food and water shortages'.

Note 5: The disaster frame includes mention of possible adverse impacts or effects such as sea level rises, more floods, water or food shortages, population displacements, damage to the coral reefs, diminishing ice sheets and so on.

Note 6: The opportunity frame includes a) those accruing from doing something to reduce the risks from greenhouse gas emissions (the advantages of any move to a low-carbon economy), and b) those accruing from doing nothing and allowing climate change to take place (such as longer growing seasons in the northern hemisphere, or the prospects of new shipping routes and the possibility of mineral, gas and oil exploration in the Arctic).

Note 7: Indicators of the risk frame are where the word 'risk' is used, or where the odds, probabilities, or chance of something adverse happening were given, or where everyday concepts or language relating to insurance, betting, or the precautionary principle were included. Inclusion of the IPCC's confidence and likelihood terminologies also counts as a risk frame.

Note 8: The IPCC uses the following terms for levels of confidence and uncertainties:

Confidence Terminology	Degree of Confidence in Being Correct
Very high confidence	At least 9 out of 10 chance
High confidence	About 8 out of 10 chance
Medium confidence	About 5 out of 10 chance
Low confidence	About 2 out of 10 chance
Very low confidence	Less than 1 out of 10 chance
Likelihood Terminology	**Likelihood of the occurrence/ outcome**
Virtually certain	> 99% probability
Extremely likely	> 95% probability
Very likely	> 90% probability
Likely	> 66% probability
More likely than not	> 50% probability
About as likely as not	33 to 66% probability
Unlikely	< 33% probability
Very unlikely	< 10% probability
Extremely unlikely	< 5% probability
Exceptionally unlikely	< 1% probability

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Abbreviations

ABC	Australian Broadcasting Corporation
AR	Assessment Report (of the IPCC)
ARD	Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten der Bundesrepublik Deutschland (Consortium of public broadcasters in Germany)
BBC	British Broadcasting Corporation
CCTV	Chinese Central Television
GHG	Greenhouse gas
GWPF	Global Warming Policy Foundation
IAC	InterAcademy Council
IPCC	Intergovernmental Panel on Climate Change
NGO	Non-Government Organisation
RISJ	Reuters Institute for the Study of Journalism
SPM	Summary for Policymakers
WG	Working Group (of the IPCC)
ZDF	Zweites Deutsches Fernsehen (Second German Television)

About the Author

James Painter is Director of the Journalism Fellowship Programme at the RISJ, which belongs to the Department of Politics and International Relations at Oxford University. He first came to the RISJ as the BBC Journalist Fellow in 2006 and was subsequently a Visiting Fellow. During that time he wrote the RISJ Challenge, *Counter-Hegemonic News: A Case Study of Al-Jazeera English and Telesur.*

Since then he has turned his attention to the study of climate change in the media, regularly writing on the issue and speaking at major international conferences. He is the author of three RISJ publications on climate change: *Summoned by Science: Reporting Climate Change at Copenhagen and Beyond* (2010); *Poles Apart: The International Reporting of Climate Scepticism* (2011); and *Climate Change in the Media: Reporting Risk and Uncertainty* (RISJ/I.B.Tauris, 2013).

James teaches the MSc module on the media and the environment at the ECI, School of Geography, Oxford University. He has carried out several consultancies in recent years for Oxfam, UNDP, Conservation International, and other organisations on the impact of climate change in Latin America and South East Asia.

James joined the BBC World Service in 1992, and worked as head of the Spanish American Service, head of the BBC Miami office, and Executive Editor Americas.

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