

A discernible human influence on the COP15?

Considering the role of media in shaping ongoing climate science, policy and politics

Session Summary. 12 March 2009

Theme 6: Mobilising the Populace – Human Dimensions of Climate Change.

Session #53 – role of media in dealing with climate change

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Sharon Dunwoody – *University of Wisconsin-Madison* (USA)

Olive Heffernan – *Nature* (UK)

Imelda Abano – *Science & Development Network, Inter Press Service, Business Mirror* (PHILIPPINES)

Piyaporn Wongruang – *Bankok Post and SciDev.net* (THAILAND)

Patrick Luganda – *chair, Network of Climate Journalists in Greater Horn of Africa* (UGANDA)

Myanna Lahsen – *University of Colorado* (USA)

Naomi Oreskes – *University of California, San Diego* (USA)

Riley Dunlap – *Oklahoma State University* (USA)

William Freudenburg – *University of California, Santa Barbara* (USA)

Anabela Carvalho – *University of Minho* (PORTUGAL)

Sarah Mander – *Tyndall Centre for Climate Research* (UK)

James Kanter – *The New York Times, International Herald Tribune* (Belgium)

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Summary:

This session explored the dynamic and highly contested terrain of the role of mass media in contributing to combating climate change. Mass media are important interpreters of climate science and policy information. Studies, surveys, and polls have repeatedly found that the public frequently learns about science (and more

specifically climate change) from the mass media. Media representations – from news to entertainment – are critical links between the everyday realities of how people experience climate change, and the ways in which these are discussed at a distance between science, policy and public actors. However, media attention to climate change competes for a ‘news hole’ with many other pressing contemporary (flashpoint and chronic) ecological, social, political, cultural, and economic issues. *Guardian* journalist (and panel participant) Paul Brown commented, “Journalists work in a highly competitive environment. The stories environmental specialists produce have to compete for space in their papers or on radio and television with football, crime, education, war and terrorism. It takes skill, hard work and ingenuity to get news desks interested in climate change against all the other competition for space and air time. For a relatively slow-burning topic, journalists need a constant stream of new and interesting developments to keep the subject alive.”

Most broadly, mass media range from entertainment to news media, and spanning television, films, books, flyers, newspapers, magazines, radio and internet. In the last decade, there has been a significant expansion from consumption of traditional mass media – broadcast television, newspapers, radio – into consumption of ‘new media’, such as the internet, and mobile phone communications. This movement has signalled substantive changes in how people access and interact with information, who has access, and who are these ‘authorized definers’ or ‘claims makers’. In tandem with technological advances, these communications are seen to be a fundamental shift from ‘one to many’ (often one-way) communications to ‘many to many’ more interactive webs of communications. Panel participant and *Nature* Editor Olive Heffernan commented, “Web 2.0 is charting a new course for science communication, with much of the discourse on climate change now happening on blogs. Blogs may not yet have the breadth of

readership of other media, but are none-the-less highly influential, as they are source of information for journalists, as well as interested laypeople". She continued, "Those with scientific credibility and stature have a responsibility to lead climate-related discussion on the blogosphere. Scientists would serve society well by engaging with discussions on blogs. Journals such as Nature too have a responsibility here to facilitate and provide informed discussion of climate research and its wider implications. Without such leadership, climate discussions will become dominated by ill-informed contributors." Together, these media are constituted by a diverse and dynamic set of institutions, processes and practices that together serve as 'mediating' forces between communities such as science, policy and public citizens. Members of the communications industry and profession – publishers, editors, journalists, and others – produce, interpret and communicate images, information and imaginaries for varied forms of consumption. Panel presenter and University of Wisconsin-Madison academic researcher Sharon Dunwoody cautioned though that not all modes of media production should be considered equally. She said, "because of their extensive reach and concomitant efficiencies of scale, mediated information channels such as television and newspapers have been the traditional channels of choice for information campaigns. But research on how individuals actually use mass media information suggests that these channels may be better for some persuasive purposes than for others." She went on to discuss how these factors interact with the power of subjective norms, which together act as surrogates for understanding the world.

That said, connections between media information and potential behavioral change are far from straightforward. Coverage is not 'truth' translated. Coverage certainly does not *determine* engagement. Information is not bestowed upon the public in order to make 'the correct' decision (this is an outmoded way of approaching these issues called 'the deficit model of communications'). Rather, information communicated through mass media shapes perceptions, perspectives, possibilities for various formulations of environmental

governance. This is a process of complex interactions. Session presenter and University of California-San Diego academic researcher Naomi Oreskes remarked through her presentation, "When trying to communicate broadly--to the public or the press--scientists follow a deficit model that presumes that their audiences are ignorant and need to be "supplied" with good, factual information. I call this a "supply-side model" of scientific communication. However, the model has failed, because it addresses the wrong problem." Clearly science and politics have influenced media coverage of climate change over time. But conversely, journalistic representations have also shaped ongoing scientific and political considerations, decisions and activities.

Our two-part session proved particularly relevant for politicians, climate negotiators, and the public as the assembled speakers were composed of environmental journalists and research scholars. Overall, these presentations aimed for the content in these sessions to prove useful in the lead up to COP15. The presenters in the sessions represented perspectives and views from multiple regions and country contexts: these included Brazil, the UK, Belgium, Portugal, the Philippines, Uganda, USA, and Thailand. For example, *Bankok Post* journalist Piyaporn Wongruang spoke in her presentation about how historical communist influences in countries such as Thailand "have limited the ability of working journalists to cover emerging debates in climate change". As another example, in considering differences across space and place, presenter and University of Minho-Portugal academic researcher Anabela Carvalho discussed European media coverage of climate change, with a particular focus on Portugal, Germany, Spain and Sweden. She said, "Analysis has shown that media in several European countries have promoted the global as the appropriate locus of action: most articles focus on international – and particularly intergovernmental – politics. Responsibility for mitigation is often placed at the transnational/global level. Citizens view climate change as mainly a global problem, rather than a national and local one. Several studies also show that citizens' personal engagement with climate change is relatively low. The media have not

contributed to this engagement. The media have legitimated a particular form of governance of the issue, dominated by official institutions and taking place at the global level and to a less extent at the national level and not at a multi-level governance with official and non-official actors”. Furthermore, in comparing media representations between South American and North American contexts, University of Colorado-Boulder academic researcher Myanna Lahsen commented:

Patterns in both North and South America clearly show that vested interests limit the role of mass media in contributing to combating climate change in the Americas. The role of mass media in contributing to combating climate change in the Americas is profoundly limited by current media policy; policies structuring communications media need to be reformulated to give the public the information, perspectives and public debate necessary to grapple with the deeper implications and requirements for successful mitigation and adaptation measures. Policy makers should use broadcast media dependence on access to the public airwaves to require public services, and the content of the latter should be defined through democratic, future-looking processes integrating education and debate about what societies need – and need to do – to better address the socio-political, economic and environmental challenges associated with climate change and, more broadly, sustainability. The economic structures of the media need to be rethought and reshaped with the above in mind. Governments and societies need to think of new ways to support diverse, non-profit and non-commercial media rather than the current structures in which the commercial media outlets receive government subsidies (through free use of the public spectrum; tax breaks and deregulation) whereas non-commercial, non-profit and citizen groups are left without support, having to buy access to the airwaves – all in a context where financial and political elites work actively – and largely successfully – to divert attention from solutions in

conflict with their vested, financial interests. Journalistic and academic analyses should limit themselves relatively less to how the science is represented and focus more on solutions to climate change – on how solutions are framed by political actors and in the media, and how such discussions compare against independent, peer-reviewed, expert analyses.

Media coverage of climate change first emerged on a mass scale in the 1930s. Media coverage of human contributions to climate change continued to sporadically appear through the subsequent five decades. But, as international and domestic climate policy began to take shape in the mid-1980s, the three media-science-policy spheres collided in the mid-1980s, when media coverage of climate change science and policy increased dramatically; therefore, many climate science and governance issues flowed into public view. A number of high-profile interventions-turned-spectacles generated substantial attention and became emblems for newfound public concern on the issue. Presenter Anabela Carvalho, who has been one who has tracked this rise in coverage over time, commented, “Climate change has been on the media agendas of most Western countries for at least two decades with significant fluctuations associated to scientific and, especially, political activity in relation to this issue.”

During this period and into the 1990s, climate scientists were widely quoted and called upon in the media as ‘authorized’ speakers on behalf of the climate. In addition, carbon-based business and industry interests and environmental non-governmental organizations (ENGOS) have grappled for their particular discursive and material actions to address climate challenges. Many struggles to represent climate change in the 1980s and 1990s were thus also dominated by business interests and ENGOS. In the process of understanding changes in the climate, many entities, organizations, interests and individuals battled to shape awareness, engagement and possible action. Among business interests, over time those enmeshed in carbon-based energy production became particularly interested in these challenges. The variously embattled efforts to define the ‘climate question’ and

frame the problems, predicaments and possible solutions have expanded tremendously to a variety of ‘actors’ in subsequent years.

Moving from the 1990s into the new millennium, the amount of media coverage of climate change continued to rise. This reached a high-water mark in 2006 and into 2007. Figure 1 shows the ebbs and flows of news articles on climate change or global warming from January 2004 through May 2009 in 50 newspapers across 20 countries. To introduce the theme, session chair Max Boykoff presented these new data – co-authored with Maria Mansfield – from fifty news sources in twenty countries tracking coverage of ‘climate change’ or ‘global warming’ (Figure 1). Abundant coverage of ‘climate change’ or ‘global warming’ can be attributed to a number of key and concatenate events. Among them, mid-2006 marked the global release of the Al Gore film ‘An Inconvenient Truth’. Moreover, the much anticipated, discussed and criticized ‘Stern Review on the Economics of Climate Change’ was released on 30 October 2006. Intense media coverage of the ‘Stern Review’ then fed into media attention on the Twelfth Conference of Parties (COP12) meeting in Nairobi, Kenya that began approximately a week later. Following on in 2007 were highly fluctuating oil and gasoline prices, as well as the releases of the highly-influential UN IPCC Fourth Assessment Reports.

In addition, one can note from this figure that there has been a discernible leveling off or decrease in the amount of coverage in later 2007, through 2008 and into 2009. This could be attributed to a number of intersecting influences. Among them: media attention on the global economic recession may have displaced the ‘news hole’ for climate change reporting; issues formerly discussed explicitly as ‘climate change’ or ‘global warming’ are now treated as ‘energy’ issues, ‘sustainability’ considerations, and other associated themes (e.g. ‘carbon trading’); upon the 2007 release of various Working Group reports for the IPCC Fourth Assessment Report, fewer fundamental issues were deemed as ‘controversial’ as in previous assessments (e.g. human contributions to climate change). Amid this larger trend, **it is important to note that to the extent that policy actors and negotiators think of mass**

media attention to climate change as a proxy for public attention to climate change (and pressure for action), the *diminished* amount of coverage can be seen as detrimental to putting forward a strong and urgent agreement in Copenhagen,, and more generally, the future of significant international policy action on climate change.

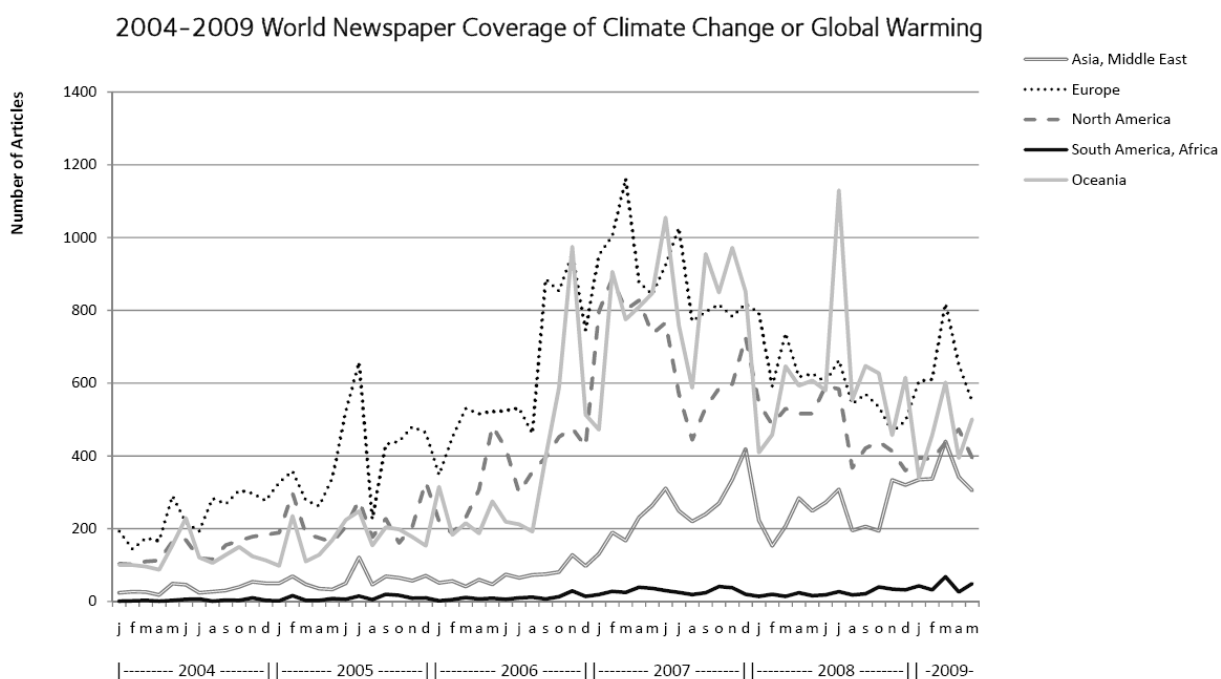
Also on this figure, one might note the low number of stories on climate change or global warming in the regions of South America and Africa. This can partly be attributed to the low number of sources sampled in these regions. However, the trends have remained low. This aspect points to an ‘information gap’ in reporting on these issues, and relates to capacity issues and support for reporters in these regions and countries (developing and poorer regions/countries). Presentations from journalists Patrick Luganda (Uganda), Imelda Abano (Philippines) and Piyaporn Wongruang (Thailand) contained comments consistent with this message. They, and others, commented that **those most at risk from the impacts of climate change typically have had access to the least information about it through mass media. This shortcoming is detrimental to efforts to build resilient communities with improved capacity to adapt to changes in the climate, address climate impacts, and mitigate greenhouse gas emissions.** *Inter Press Service* and *Business Mirror* journalist, as well as panel presenter Imelda Abano commented, “While the threat of global warming has only become more urgent and media interest in Asian countries increased, resources, skills and knowledge related to climate change are limited. As a result, comprehensive discussions of climate change and its effects on local environments rarely make it into the mainstream news.” She went on to discuss the work of some pioneering organizations and networks to overcome these challenges, such as the Climate Change Media Partnership, Internews, PANOS Institute and the Earth Journalism Network.

Many of the speakers on the panel sessions discussed these capacity issues in the context of larger political economic pressures and processes. For example, *Guardian* journalist Paul Brown commented in his presentation,

“The amount of resources in travel and time the reporter is allowed to use to chase the story has diminished. All over Europe and America staffs are being cut and budgets for getting out of the office slashed.” Generally, modern multi-national media organizations – dominated by developed-country interests – have continued to consolidate and/or close. The news industry has faced tremendous challenges since the economic downturn in late 2007. In challenging economic times, new examples – particularly in the

newspaper industry – become evident nearly every day. From 1989 to 2006, the number of newspapers featuring weekly science sections shrunk by nearly two-thirds, while in recent years, nearly one newspaper journalist in five in the United States has been laid off since 2001. Moreover, in December 2008, international cable news network CNN cut its entire science, technology and environment news staff, signalling a reduction in capacity of television news to cover these stories. The dominance of

Figure 1



(c) Dr Maxwell Boykoff and Maria Mansfield, ECI, Oxford University

Caption: This figure tracks newspaper coverage of climate change or global warming in 50 newspapers across 20 countries and 6 continents over a five year period (January 2004 – May 2009). These newspapers (appearing alphabetically by newspaper) are: *The Age* (Australia), *The Australian* (Australia), *Business Day* (South Africa), *Clarín* (Argentina), the *Courier-Mail* (Australia), the *Daily Express* (and *Sunday Express*) (United Kingdom), *Daily Mail* (*Mail on Sunday*) (United Kingdom), the *Daily News* (United States), the *Daily Telegraph* (Australia), *Dominion Post* (New Zealand), *Fiji Times* (Fiji), the *Financial Mail* (South Africa), *Globe and Mail* (Canada), the *Guardian* (and *Observer*) (United Kingdom), *The Herald* (United Kingdom), the *Hindu* (India), *Hindustan Times* (India), the *Independent* (and *Sunday Independent*) (United Kingdom), *Indian Express* (India), the *Irish Times* (Ireland), *Japan Times* (Japan), the *Jerusalem Post* (Israel), the *Jerusalem Report* (Israel), the *Korea Herald* (South Korea), the *Korea Times* (South Korea), the *Los Angeles Times* (United States), the *Mirror* (*Sunday Mirror*) (United Kingdom), the *Moscow News* (Russia), the *Nation* (Pakistan), the *Nation* (Thailand), *National Post* (Canada), the *New Straits Times* (Malaysia), the *New York Times* (United States), *New Zealand Herald* (New Zealand), the *Prague Post* (Czech Republic), *The Press* (New Zealand), *The Scotsman* (and *Scotland on Sunday*) (United Kingdom), the *South China Morning Post* (China), the *South Wales Evening Post* (United Kingdom), *The Straits Times* (Singapore), *The Sun* (and *News of the World*) (United Kingdom), *Sydney Morning Herald* (Australia), the *Telegraph* (and *Sunday Telegraph*) (United Kingdom), the *Times* (and *Sunday Times*) (United Kingdom), *The Times of India* (India), the *Toronto Star* (Canada), *USA Today* (United States), the *Wall Street Journal* (United States), the *Washington Post* (United States), *Yomiuri Shimbun* (Japan).

corporate media structures and organizations mean that efficiency and profit are overarching factors driving the production of news content. Economic developments and cut-backs therein, have proven to have a detrimental effect on training for news professionals in covering varied news ‘beats’ such as climate science and policy.

In this context, many of the presentations explored the content of coverage, and more specifically, the ‘framing’ of the climate challenge through media representational practices. As scientific work on climate change has coalesced on basic points that the climate is changing and that humans have played a part in such changes, early ‘actors’ have responded, via the media, to these findings. Wrapped into these questions pursued in the presentations are ongoing and persistent challenges in avoiding treating many distinct environmental processes as one ‘great global warming debate’. Due to a number of political economic, cultural, social, and journalistic pressures, some of the presentations discussed how there has been a tendency in reporting to highlight conflict in places where complexities and convergent agreement in science and policy actually reside. Panel presenter and University of Oxford academic researcher Max Boykoff argued that, “particular problems and snags in this web of interaction have contributed to critical misperceptions, misleading debates, and divergent understandings – this is detrimental to efforts that seek to enlarge rather than constrict the spectrum of possibility for appropriate responses to climate challenges”.

Speakers addressed various influences contribute to this pattern, from the ideological factors (comments from Dunlap, Oreskes, Lahsen), as well as contributions from institutional journalistic and wider professional practices (comments from Brown, Boykoff, Freudenburg, Carvalho). For instance, presenter Naomi Oreskes emphasized this point, (and some mentioned above) in the following way:

While the public and press may sometimes be ignorant, they have also been subject to deliberate disinformation campaigns. Many of the people involved have had prior connections with other disinformation campaigns,

such as those surrounding ozone, acid rain, and second-hand smoke, and often they have been funded, at least in part, by the tobacco or fossil fuel industry, or by conservative or libertarian think-tanks, such as the CATO institute. These groups have also hired professional PR firms, and done market research, to determine how best to influence public opinion. Ironically, they were more scientific about the question of how to promote their views than scientists have been. Supplying more, high quality scientific information will not solve the problem, because it can always be undermined by still more disinformation. To counter-disinformation, it must be identified as such. This is hard for scientists to do, because it requires acknowledging such unscientific factors such as funding sources, political motivation, and intent, which scientists are loathe to talk about, and typically do not understand very well. Scientists need to understand the true nature of the opposition they face, in order to effectively address it.

On this dynamic battlefield of competing knowledge(s) and representations, presenters Riley Dunlap, Naomi Oreskes, William Freudenburg and Myanna Lahsen talked about the influences of conservative think tanks (CTTs) are often shaped by conservative ideologies and funded by carbon-based industry actors. These opposition movements have been dubbed ‘contrarians’, ‘denialists’, ‘inactivists’, or ‘sceptics’. Panel presenter and Oklahoma State University academic researcher Riley Dunlap spoke of how these CTTs are predominantly US-based, and stated, “Not only has the USA been the major impediment to effective international policy-making on climate change, but multi-national public opinion polls reveal that Americans are less concerned about climate change than are citizens of other economically advanced nations. This “American exceptionalism” has been attributed to the fact that major media in the USA have been much more likely to portray climate-change as scientifically questionable than is the case for media in other Western nations”.

These presenters spoke about how ‘denialists’ frequently amplified uncertainties

regarding various aspects of climate science, de-emphasized the human contribution to climate change, and called attention to the costs of action, such as mode-switching to renewable energy sources. These messages were repeated in multifarious ways, 1) through subtle “scientific certainty argumentation methods” (discussed by William Freudenburg), 2) by exploiting the confusion between peer reviewed and non-peer reviewed literature (discussed by Myanna Lahsen), 3) more deliberate politics of manipulation (discussed by Riley Dunlap in book publishing) and 4) overtly deceptive disinformation campaigns and initiatives (discussed by Naomi Oreskes in regards to the Western Fuels Association and the ‘greening of Planet Earth’ campaign). Expanding on the first point, panel presenter and University of California-Santa Barbara academic researcher William Freudenburg commented that in the US “it is still common to hear questions about whether emerging climate disruptions will be as severe as scientists currently expect. Such questions reflect a failure to understand the power of a phenomenon known as “the asymmetry of scientific challenge,” or ASC.” He continued by stating that, “new findings and hypotheses pointing to the seriousness of anthropogenic climate disruption have been subjected to extensive criticism and scrutiny, while findings and hypothesis pointing in the opposite direction have received far less scrutiny. The net result of such a process, over time, can be a subtle but cumulatively significant “steering” of consensus views -- one that, ironically, is likely to operate in precisely the opposite direction from the one that has most often been suggested. Preliminary evidence suggests that the ASC phenomenon may well have been operating in the case of internationally accepted scientific estimates of global climate disruptions. Rather than being “too pessimistic,” the consensus views expressed by organizations such as the Intergovernmental Panel on Climate Change appear likely not to be pessimistic enough. In published work, the supposed “skepticism” has been identified as an example of “Scientific Consensus” Argumentation Methods (or SCAMs)”. Overall, these presentations drew attention to how these activities, in turn, have

been found to inspire and catalyze, as well as dampen social movements for change.

These issues intersect with processes such as journalistic norms and values, to further shape news content. Various talks also discussed how fairness, accuracy and precision in media reporting remain critical to covering various aspects of climate science and policy as they change in visibility and importance. In the last decade, questions raised across this spectrum throughout mass media sources have largely moved away from ‘is the climate changing?’ and ‘do humans play a role in climate change?’ to more textured considerations of governance and economics. For instance, many articles have addressed questions regarding how to effectively govern the mitigation of GHG emissions from sources contributing to climate change, and how to construct and maintain initiatives to help vulnerable communities adapt to already unfolding climate impacts. Mass media articles on economic and political costs and benefits have played a key part in framing considerations for policy action as well as public understanding and engagement. Journalist (and panel participant) James Kanter – from the *New York Times* and *International Herald Tribune* – commented, “Editors are becoming increasingly interested in follow-the-money stories. Editors want to know where money is generated in the new “green” economy and how it is spent. This line of reporting is separate from stories about whether climate change is real, or whether there needs to be more research into global warming.” He added, “The burgeoning trade in carbon permits is a fruitful area for inquiry. In Europe, coal-fired power utilities lobbied heavily for large quantities of free carbon permits....Journalists who take a critical eye to policies and technologies aimed at curbing climate change or its effects are not necessarily denying the seriousness of climate change or questioning its scientific basis. Instead these journalists are seeking to shed light on whether the policies and technologies actually will work in the time frames identified by scientists as necessary to take action that can curb climate change”. Presenter and UK-based Tyndall Centre for Climate Research academic researcher Sarah Mander discussed UK media representations of Carbon Capture and Storage

(CCS) technology, and the influence on public understanding and acceptance/resistance to such measures. (This particular issue has grown in importance since UK Department of Climate Change chief Ed Miliband has made a strong push for the widespread adoption and implementation of CCS technologies on new coal-fired power plants in the UK, despite significant technological challenges).

As mass media serve a vital role in communication processes, media portrayals of climate change will shape ongoing perceptions and considerations for action along the road to the Copenhagen's 15th UN Conference of Parties (COP15) in December. Media stitch together formal climate science and policy in the everyday. Representations construct and negotiate meaning, and shape how people make sense of and value the world. Clearly the role of the journalist is not that of a parrot. Choices about how to represent climate science and policy through the media hinge on interpretation, perspectives, available information, and contextual social, political, economic, as well as environmental factors. Nonetheless, in this high-stakes environmental challenge, journalists and editors as well as scientists and policy actors need to be intensely scrupulous. While media interventions seek to *enhance understanding* of complex and dynamic human-environment interactions, vague and decontextualized reporting instead can *enhance bewilderment*. The critical point here is that media representations need to more readily and better portray the contours of the varied aspects of climate change – from human's role in it to whether it is 'serious' – as better reporting has critical implications for understanding, meaning and potential public engagement and possible support for policy action. Panel participant Olive Heffernan commented, "The mainstream media still has a vital role as watchdog for reporting on how the world is tackling climate change and especially on issues such as perverse incentives that can arise from emissions trading schemes."

Overall, there remain formidable and resilient challenges in communicating about the nuances of climate change issues. But this is a critical window of time for communications and climate change, with COP15 on the horizon,

assembling a post-2012 climate policy apparatus for ongoing international action. Panel participant journalist Paul Brown boldly remarked, "In my view it is probably a last opportunity for scientists to get their case across. Politicians can and will only push difficult policies if they are left no choice by public opinion. So far they have not been pushed hard enough. Whatever journalism's failures in the past, this is probably everyone's last chance to make a difference. We should use it."

More careful, coordinated and concerted efforts, like those outlined in the presentations in Theme 6, Session 53, are critically needed. The process of media framing involves an inevitable series of choices to cover certain events within a larger current of dynamic activities. More media coverage of the environment – and fair, precise, and accurate coverage at that – will clearly not be the solution. Improved reporting through greater specificity and contextualization through combined efforts of journalists, editors and scientists will certainly help to more effectively engage the public, and widen the spectrum of possibility for appropriate action. Ultimately, a more informed public space, and better-supported links between science, policy and media are in our collective self-interest. Panel presenter Patrick Luganda – chair of the *Network of Climate Journalists in the Horn of Africa* – concluded, "We need an educated public with improved abilities to make better decisions on climate choices". In this session theme, the presentations captured the many political economic, technological, institutional and cultural factors that continue to pose challenges, as well as opportunities for media reporting on the environment as we move further into the 21st century.

COP15 Field Study Reflection - Free download as Word Doc (.doc), PDF File (.pdf), Text File (.txt) or read online for free. My reflection on a 2-week field study to the U.N. Climate Change Conference COP15 in Copenhagen, Denmark, while staying with two host families in Landskrona, Sweden. According to the human impact report on the human cost of climate change published by the Global Humanitarian Forum, Estimates of suffering due to climate change today: Deaths - over 300,000 per year. As human Class II HDACs are known to undergo nucleocytoplasmic shuttling, we previously demonstrated that HDA15 shuttles to the nucleus under light (Alinsug et al., 2012). Moreover, phytochrome interacting factor 3 (PIF3) associates with HDA15 repressing chlorophyll biosynthesis and photosynthesis in etiolated seedlings (Liu et al., 2013). Binding to COP1 is associated with the nucleocytoplasmic shuttling of AtHDA15. (A) In vitro and (B) in vivo interaction between COP1 and AtHDA15 indicates their direct binding inside the nucleus. On the other hand, it appears that HDA15 is the most stable among the three proteins with an instability index of 37.11, noting that it only has two residues as prospective sites for ubiquitination. About that 15 percent of officers who regularly abuse their power: they exert an outsize influence. Not only was this excessive, it was tactically asinine if Brelo believed they were armed and firing. But they weren't armed, and they weren't firing. I got the officer off of him. But because an aid call had gone out, several other officers had arrived on the scene. One of those officers, who was black, ascended the stairs and asked what was going on. My partner pointed to the young man, still lying on the porch, and said, "That son of a bitch just assaulted me." The black officer then went up to the young man and told him to "get the fuck up, I'm taking you in for assaulting an officer." The young man looked up at the officer and said, "Man you see I can't go." Ability to quantify the human influence on global climate is currently limited because the expected signal is still emerging from the noise of natural variability and because there are uncertainties in key factors. These include the magnitude and patterns of long-term natural variability and the time-evolving pattern of forcing by, and response to, changes in concentrations of greenhouse gases and aerosols, and land surface changes. Nevertheless, the balance of evidence suggests that there is a discernible human influence on global climate. (e) Climate is expected to continue to change in the ... The text contains 15 figures and some 250 references. Chapter 8 - Detection of Climate Change and Attribution of Causes. 8.1. Introduction.