14 Media coverage of discourse on adaptation

Competing visions of "success" in the Indian context

Maxwell T. Boykoff, Aditya Ghosh, and Kanmani Venkateswaran

Introduction

How have mass media covered issues of climate adaptation over time? How has climate adaptation garnered media attention amidst associated issues of climate science, mitigation, impacts, politics, and policy activities? By way of media, how do adaptation strategies connect across scales – from the individual and local up to the national and international levels? This chapter seeks to address these questions as it considers how media portrayals facilitate or impede activities that seek to successfully engage with citizens and communities where they are and in ways that resonate with their everyday concerns. This is not to suggest that successful climate adaptation will emerge directly from successful media engagement with these issues; rather, increases in media attention, careful reporting and discussions, and particular framings can provide necessary but not sufficient conditions within which climate adaptation efforts may proceed, and possibly achieve perceived "success."

Media discussions of adaptation strategies may cover deliberations of adaptation choices, the robustness, costs, and implications of different alternatives in the context of uncertain climate, economics, politics, and culture. These portrayals are at times framed as scientific/technical matters, as ethical considerations, as issues of competing knowledges, or differences in perceptions of climate risks held by communities or individuals. We posit that explorations of media reporting can provide vital insights into how notions of "success" are deliberated and achieved, as well as how diversity in perceptions of adaptation are treated in the public sphere (Tanner *et al.* 2009).

As we embark on these questions of how to appraise climate adaptation "success" via media portrayals, we must caution that *more* media coverage of climate adaptation – even supremely fair and accurate portrayals – does not necessarily achieve *more* successful adaptation to challenges associated with the changing climate. In other words, we must not assume there is a direct correlation between increased media attention and increased adaptation or greater success. In fact, more media attention to climate adaptation has the potential to unearth more questions to be answered and *greater* understanding actually can contribute to a *greater* supply of complexity and multiple perspectives regarding what may

constitute "success" (Sarewitz 2004). Journalists have commented that this actually can make it *more* challenging and complex to cover issues like climate adaptation as more of the complexities are understood (e.g. Russell 2008). At best, media reporting helps name, frame, and discuss the issues, but not resolve them. Yet, we argue that analyses of media coverage can open discursive spaces and the creative imaginaries that are needed in order to think through complex questions of "successful adaptation."

Climate adaptation concerns have increasingly been taken up and considered in the public sphere by way of media portrayals, through scientific, political, social, cultural, environmental, and economic frames (Dryzek 2005). Figure 14.1 shows media coverage of stories that invoke the broad terms of "climate change" or "global warming" in their texts and transcripts. This survey of the wider landscape then provides context for Figure 14.2, which shows media coverage of "climate change" or "global warming" paired with coverage of "adaptation" over this period of time in the same news sources.

This tracking is also consistent with Moser (2009), who surveyed US newspaper coverage of adaptation, impacts, and climate change from 1980 through 2008. Overall, while the ebbs and flows of coverage show similar trends between Figures 14.1 and 14.2 – increases in 2006 into 2007, and again in late 2009 (discussed in the next section) – the amount of coverage devoted to adaptation is merely 2 per cent of the overall coverage of climate change or global warming. In fact, when coverage of climate adaptation reached its "high-water mark" in December 2009, it remained only 3.5 per cent of the total coverage of climate change or global warming during that month.

Examining cultural interpretations of climate risk management and adaptation strategies through media portrayals helps to better understand how meaning is constructed and negotiated across space and place (Boykoff 2011). Yet a few words of caution for interpreting these data are warranted. These surveys of media coverage capture only *explicit* mentions of climate adaptation (not implicit allusions, or discussions cloaked in corollary language of "managing impacts," "reducing vulnerability," "resilience," "preparedness," or concrete sector-specific activities). They also only cover print newspaper texts (not television, radio, new/social media discussions). Thus, they should not be interpreted as complete reflections of media discourses on adaptation, but rather be taken as an impressionistic and possibly indicative reading of the wider conditions of public discourse on climate adaptation. Nonetheless, these indications provide some guidance on the tone, tenor, and content of climate adaptation discourse in the public arena, in which we can explore questions of adaptation success.

The selection of media sources here was based on factors involving their circulation and influence among policy-makers and the public both domestically and internationally. Furthermore, reliable access to the newspapers' archives was important, which set the January 2004 starting point for monitoring.

More generally, stories tracking issues, events, and information on "environmental issues" (of which climate change is a subset) have continued to occupy a small nook in news ecosystems. Relative to health, medicine, business, and

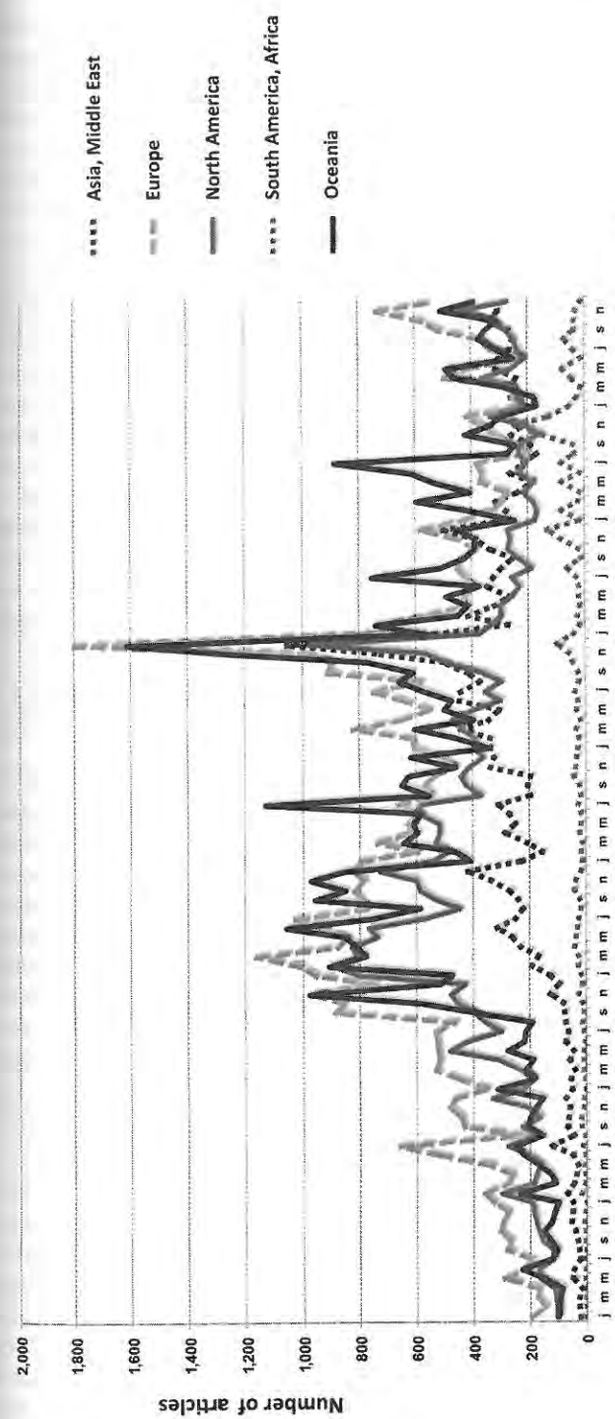

Figure 14.1 World newspaper coverage of climate change or global warming, 2004–2012.

Source: Boykoff 2012a.

Note: This figure tracks newspaper coverage of climate change or global warming in 50 newspapers across 20 countries and 6 continents over a seven-and-two-thirds-year period (January 2004–February 2013) by number of articles per newspaper per month. For a full list of the newspapers monitored, see http://sciencepolicy.colorado.edu/media_coverage/.

crime stories, climate stories have remained a small portion of the news. Precise data on these trends remain difficult to collect across countries and regions.

Research into media coverage of climate change has already addressed questions of climate science (e.g. detection and attribution of anthropogenic signals), mitigation (e.g. greenhouse gas reductions, policy negotiations), and climate impacts (e.g. on charismatic megafauna, through connections to weather extremes) (e.g. Boykoff 2011, 2008). It has been a relatively recent development where policy attention – from the international to city-scale – has begun to address complex and challenging questions of climate adaptation (e.g. UN Habitat 2008; Jacobs *et al.* 2010). To the extent climate adaptation has been depicted in media accounts at all, it is portrayed in varied ways, from an important climate risk management strategy, complementary to mitigation (Tol 2005), to concessions that undermine mitigation priorities and objectives (Moser 2009). These trends are also reflected beyond media coverage, in climate politics and policy discourse over the past decades (see Chapter 9).

As we develop further below, the Indian context provides a useful window into trends in media coverage of climate adaptation, as well as into the role media can play in facilitating creative imaginaries of what "success" might mean. But first, we will trace the development of adaptation discourses via mass media briefly over the past quarter century more generally.

Changing media portrayals of climate adaptation over time

Ideas regarding what constitutes climate adaptation have changed over time in the public arena, focusing on a range of issues from the local and individual to international climate decision-making (Parry *et al.* 2005). These discussions have been animated through media attention paid to actors on the stage of climate science policy. These "actors" have included climate scientists, high-level politicians, business industry representatives, and environmental non-governmental organization (ENGO) activists, collectively referred to as non-nation-state actors (NNSAs). Among them, the media community served a vital role in communication processes linking science, policy, and the public citizenry. Whether in newspapers or books, television or films, radio or the Internet, a groundswell of diverse actors and institutions make climate change meaningful, and "bring climate change home" (Slocum 2004: 413; see also Chapter 17).

The critical issue of "climate change" first unfolded in the public sphere in the late 1980s, and media accounts largely turned to climate scientists and policy-makers as authorized and expert "claims makers" and "interest group entrepreneurs" (Boykoff 2011). As journalists, editors, producers, and publishers sought to make sense of this newfound issue in the public arena, they faced many competing claims, and representations that they worked to sift through. In the late 1980s and into the 1990s, many predominantly US-based think-tanks – often influenced by conservative ideologies and/or funded by carbon-based energy industry actors – amplified uncertainties regarding various aspects of climate

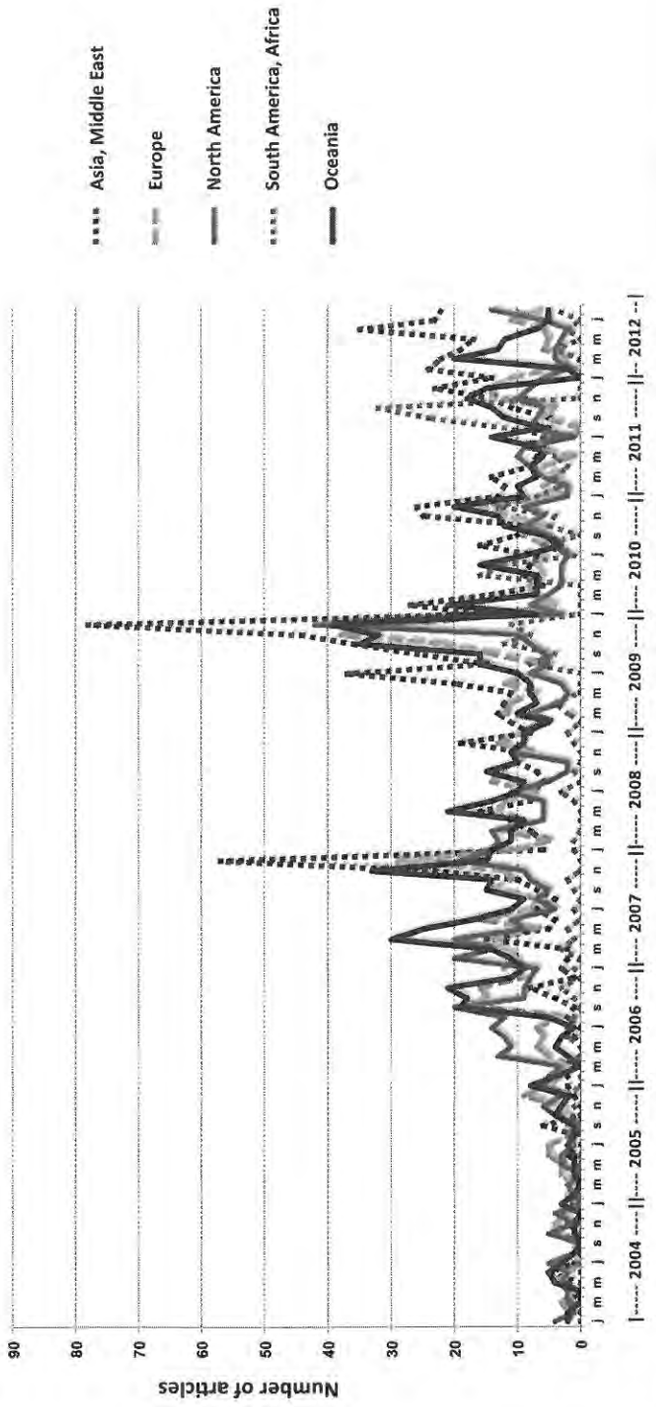

Figure 14.2 World newspaper coverage of climate change, global warming, and adaptation, 2004–2012.

Note: This figure tracks newspaper coverage of climate change or global warming and adaptation in 50 newspapers across 20 countries and 6 continents over a seven-and-two-thirds-year period (January 2004–August 2012). For a full list of the newspapers monitored, see http://sciencepolicy.colorado.edu/media_coverage/.

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 (Oreskes and Conway 2010). Meanwhile, many ENGOs pilloried these industry actions as they sought to raise public awareness and concern among policy actors regarding "negative externalities" of climate risk as well as impacts. Yet the focus during this time was largely on climate science and mitigation strategies.

Moving into the new millennium, engagements with climate change in various segments of popular culture surged (Moser 2009). The engagement of NNSAs in public discourse also helped open new spaces and dimensions for considerations of climate adaptation. Increases in media attention to climate adaptation began in 2005 and continued in 2006 (Figure 14.2). Specific and simultaneous events contributed to this media attention. Among them, in 2005, adaptation discussions surfaced in media coverage of Hurricane Katrina, which made landfall in August 2005 in the Gulf Coast of the US. This event tapped into many related issues of risk, hazards, vulnerability, responsibility, and adaptation, and media stories pursued questions regarding what the causes were, who was responsible, and what needed to be done to protect people and ecosystems from this happening again (Liu *et al.* 2008). Furthermore, in 2006, media coverage of the UK's *Stern Review* on the economic costs of climate change mitigation, impacts, and adaptation further spurred media coverage across the world. The film *An Inconvenient Truth* featuring Al Gore was also widely considered an illustrative watershed moment in the media attention to climate change as climate politics met popular culture through a set of considerations involving climate change causes and consequences (Luke 2008). Yet, as Moser (2009) described in *Good Morning America!*, this influence on wider media coverage of climate change did not necessarily contribute to climate adaptation coverage: in part because the film did not discuss climate adaptation, and in part because Gore had focused largely on climate mitigation.

Figures 14.1 and 14.2 show a peak in media coverage of climate change or global warming and adaptation in 2007. This increase has been attributed to the highly influential IPCC *Fourth Assessment Report*, released in stages over the first half of the year amidst a backdrop of highly fluctuating oil and gasoline prices (Boykoff 2011). Then, in the final months of 2009, media attention to climate change soared, mainly related to the highly anticipated United Nations climate talks in Copenhagen, Denmark (COP15), along with news about the hacked emails of scientists from the University of East Anglia's Climate Research Unit. Overall, the volume of coverage at the end of 2009 was about five times greater than that at the turn of the millennium (Boykoff 2011).

At present, emergent international negotiations around the Adaptation Fund for climate change consequences has ignited a new wave of multilevel governance questions (see Chapters 5 and 8). Developed nations agreed in Copenhagen in 2009 to raise climate adaptation aid, now about $10 billion a year, to an annual $100 billion from 2020 onward. Dispersal mechanisms, however, remain contested (Liverman and Billett 2010).

Media attention has been paid to conflicts involving commitments and allocations. For example, discussions regarding Official Development Assistance (ODA) as they relate to pledges and commitments to this Fund have generated media attention in numerous outlets across prominent newspapers around the world.

Media coverage of adaptation in the Indian context

Four critical, dynamic, and intersecting aspects characterize the landscapes within which media coverage of climate change in India emerges: 1) the continually fraught nature of global North–South relations on climate change (Mathur and Varughese 2009); 2) the rise in attention paid to climate adaptation (Michel 2009); 3) the increased presence and importance of various actors invested in climate governance; and 4) the intersections between formal climate science–policy negotiations and everyday culture, political economy, and society (Douglass 1992). Media coverage of climate change, and more specifically climate adaptation, has increased over time, consistent with global trends. Figure 14.3 shows coverage of climate change or global warming in India from January 2000 through July 2012.

Of note, the Centre for Science and Environment and the Centre for Policy Research – both think-tanks based in the capital of New Delhi – sponsored journalists to attend and report from COP15 in Copenhagen. A team of approximately a dozen journalists have also attended subsequent COPs, offering journalists significant exposure to international negotiations. This resulted in a simultaneous rise in coverage and interest among journalists in the geopolitics of climate change. Journalists such as Nitin Sethi of *The Times of India* and Chetan Chauhan of the *Hindustan Times* have started writing prolifically on international negotiations as well as domestic climate policies and politics since that time (also explaining the rise in volume of coverage at the end of 2010 and 2011 in Figure 14.3).

India is now the second fastest-growing global economy after China, yet it is a developing country (non-Annex I country in the United Nations Framework Convention on Climate Change) in terms of ongoing international climate policy negotiations. As a non-Annex I country, India is not currently obligated to reduce its emissions of greenhouse gases. India is also expected to become the 5th largest economy in 2020, and ranks 134th among 187 countries in the Human Development Index (HDI), which assesses long-term progress in health, education, and income indicators (Anon 2011). A low HDI is associated with greater vulnerability and lower adaptive capacity – i.e. with lower capacity of resident populations to cope with extreme events and prepare for and adapt to changing environmental conditions (Ghosh 2012).

Not surprisingly then, India has become a key player in ongoing climate negotiations and a key voice in the ongoing North–South dialogues regarding climate governance and action (Jha 2009). Additional factors – such as its susceptibility to climate-related hazards (droughts, heat, typhoons, and monsoon-related flooding), its "double exposure" to globalization (O'Brien and Leichenko 2000), and its large and socioeconomically diverse human population – make

Figure 14.3 Indian newspaper coverage of climate change or global warming, 2000–2012.

Source: Boykoff 2012b.

Note: This figure tracks newspaper coverage of climate change or global warming in four Indian national newspapers – *The Hindu*, *Indian Express*, *Hindustan Times*, and *Times of India* – across an eleven-and-two-thirds-year period (January 2000–February 2013).

India a place where insights into media treatments of climate adaptation can be instructive for other spaces and contexts.

Conditions in India have given rise to contentious discussions within and between political actors and other NNSAs (Commission of Climate Change and Development 2009). In a recent study of adaptation challenges in the largest mangroves of the world – Sundarbans along the Indian and Bangladesh coast – the Centre for Science and Environment highlighted the importance of how mainstreaming adaptation discourse in the developmental agenda and already inadequate resource management shaped perceptions of "adaptation needs" of the poor (Ghosh 2012). Of course, it would be a mistake to conflate mainstreaming of adaptation *discourse* with the mainstreaming of *adaptation*; mismanagement of resources, places, and communities will eventually be revealed, regardless of claims to the contrary or assertions of "adaptation success." But media discourses of adaptation can still produce insights through contents and trend analyses as to how the public debate is being shaped, how adaptation is framed, and how outlooks of success are being constructed through the media.

By analyzing the content of news articles in the four major English-speaking Indian broadsheet newspapers in India – *The Hindu*, *Hindustan Times*, *Indian Express*, and *Times of India* – we sought to assemble an impressionistic understanding of the discourse about (successful) climate adaptation in India, and in that process to better understand trends in media coverage of climate adaptation more broadly. We focused on the coverage in 2007 and 2009, which experienced increased coverage of climate adaptation. We coded articles from 2004 through 2009.

Data were gathered through the search terms "global warming" and "climate change." From the population of articles generated from the keyword search "global warming" and "climate change," we assembled the sample set of texts through random selection of every fifth article as it appeared chronologically. It was initiated by systematically opting in from a random starting point in January 2004, and ending on 31 December 2009, drawing on archives in *Proquest: Dow Jones – Factiva* and *Westlaw UK*. The sample consisted of approximately one-third from *The Hindu*, one-sixth from the *Hindustan Times*, one-sixth from the *Indian Express*, and a final third from the *Times of India*. Multiple stages of pilot testing were undertaken by each of us independently on three framing analysis measures (Rubin and Babbie 2005).

We sought to analyze possible media coverage of adaptation strategies, priorities, and actions. Framing analyses focused on five themes (with nested sub-themes), considered as primary and secondary frames (listed in Table 14.1). These analyses were based on previous work on media coverage of climate change in the United Kingdom (Boykoff 2008). Accounting for spuriousness in the way we coded our sources, the framing analysis of news articles from the English-speaking Indian press across an approximately five-year period produced an overall inter-coder reliability rate of 87 per cent, exceeding validity and reliability thresholds (Krippendorff 2004).

As Figure 14.4 shows, we found that media accounts focused overwhelmingly on the rhetoric and actions of prominent political actors, both domestically and

Table 14.1 Common frames in world newspaper coverage of climate change or global warming, 2004–2009

Ecological/meteorological
• Weather events (e.g. heat waves, droughts, floods)
• Biodiversity, agriculture, food
Political economic
• Political actors (rhetoric, action)
• Economics, business (from international funding to losses and adaptation costs)
Culture and society
• Popular culture (e.g. celebrities, Bollywood),
• Justice and risk (public health, ethics, adaptation)
Scientific
• Scientific discoveries and new studies
• Science funding
• Applied science, technologies (e.g. dam projects)
Other

Note: This table lists the four primary frames – ecological/meteorological, political, culture/society, scientific, along with their associated secondary frames. This provided the basis for content analysis in four major English-speaking Indian broadsheet newspapers in India – *The Hindu*, *Hindustan Times*, *Indian Express*, and *Times of India* from 2004 through 2009.

internationally. Attention was also paid to weather events (e.g. floods), polling data, and applied science and technologies. However, these analyses also showed consistently low levels of coverage of issues of justice, risk, and adaptation. This was the case throughout all sources and over the full time period of the study.

This work provides a platform for analysis in relation to related research endeavors. For example, Simon Billett (2010) examined how English-language, nationally circulated newspapers serving an elite Indian readership actually fortified ongoing frames of climate change as the responsibility of actors, institutions, and national governments external to India. Extending from these findings, Billett (2010) argued that the de-politicization of the scientific question of "whether humans contribute to climate change" is supplanted by a strong normative and political frame around (Indian) risk – and thus an implied unfair "adaptation burden" and unmet (Global North) responsibility. Yet, Billett found discourses largely encased in a set of climate mitigation discourses, with little attention paid to adaptation issues.

Apart from these observations based on the elite English-speaking news media of India, it is important to note that the ways in which certain voices gain traction in the public sphere via mass media has been changing, in India and elsewhere (Leiserowitz and Thaker 2012). Primarily, the power of new and social media is already being harnessed in ways that have begun to change these climate mitigation discussions and is fostering a growing number of adaptation discussions (see Chapter 15; and is see Chapter 12 for exploration of enhanced risk communication in cases elsewhere). For example, *Internews Europe* have engaged both rural farmers and urban slum dwellers through mobile phone technologies as a media communications platform for both literate and illiterate users through both

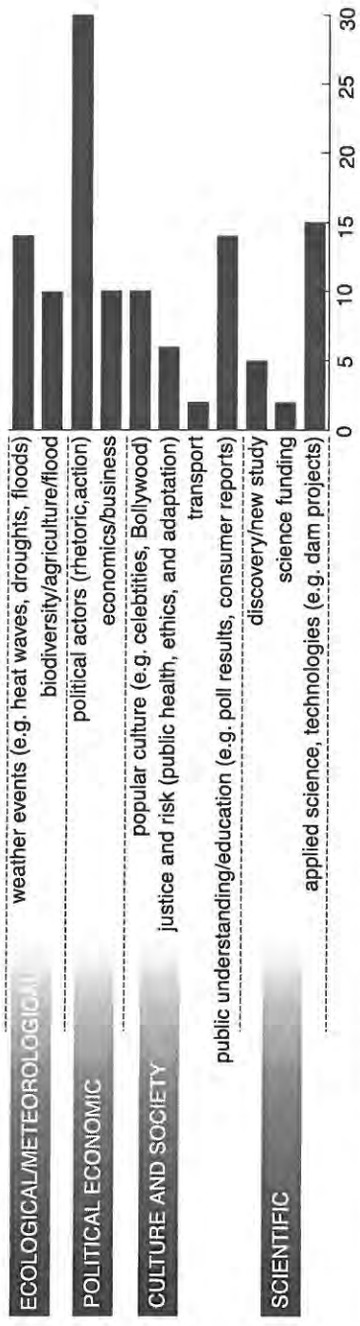

Figure 14.4 Primary and secondary frames in Indian English-speaking national newspapers, 2004–2009.

Note: This figure tracks primary and secondary framing in four Indian national newspapers – *The Hindu*, *Indian Express*, *Hindustan Times*, and *Times of India* – across a four-and-a-half-year period (January 2004–June 2009). The x-axis notes the percentage of articles in which the frames are invoked across this time period.

text and images (West 2008). As an outgrowth of this trend, up-to-the-minute commercial weather forecasting and crop pricing services have become increasingly available through mobile phone communications for Indian farmers (Ghosh 2009). These new media, however, tend to focus on weather and on assisting people in coping with local climate variability and extremes, rather than on shaping the larger national discourse on adaptation to anthropogenic climate change. It thus appears as if the elite discourse is rather separate and distinct from that which is unfolding more locally through new and social media.

Another example in India, the Ashoka Trust for Research in Ecology and the Environment (ATREE), found that farmers practicing hilltop rain-fed agriculture in Valayar communities in semi-arid Natham, Tamil Nadu were not benefiting from the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) – a federal initiative that guarantees 100 days of paid employment for members of rural communities. MGNREGA was intended to improve the adaptive capacity of particularly vulnerable groups by providing access to secondary employment; however, this was not the case, given its poor implementation by the state government. Coverage of these issues within Indian national media opened a discursive space – facilitated by ATREE and other stakeholder groups – for the farmers of Tamil Nadu to work with MGNREGA to more appropriately, capably, and successfully adapt to changing climatic conditions.

Yet, journalists in India and elsewhere continue to face challenges in their ability to collect and interpret meaningful anecdotal evidence in culturally appropriate ways, and then to bring that evidence to bear on opening spaces for creative and constructive imaginaries of successful climate adaptation. While framing of climate issues in elite media still largely excludes adaptation and – when covered at all – addresses the unjust burden of risk carried by countries of the South such as India, media activity focusing on local, climate-related issues is deeply enmeshed in national and local politics and, by and large, divorced from the international discourse on anthropogenic climate change. Thus, a dynamic tension between scales and between elite press and new media emerges reflecting international and national/local dimensions of power that critically contribute to the extent to which and how mass media portray climate adaptation.

Seeking "successful" climate adaptation in media accounts

Media clearly do not dictate particular behavioral responses regarding climate adaptation. Yet, media portrayals continue to influence – in non-linear and dynamic ways – individual to community- and international-level perceptions of climate science and governance (Wilby 2008). Research has shown that low levels of media coverage, and fear-inducing and catastrophic tones in climate change stories that do appear – mixed with already existing beliefs, attitudes, perspectives, and intentions – effectively deprioritize climate action in the public sphere, while fostering feelings of paralysis through powerlessness and disbelief rather than motivation and engagement (e.g. Brulle *et al.* 2012, O'Neill and Nicholson-Cole 2009).

In this chapter, we have briefly surveyed how mass media – globally and in the Indian national context – may have helped to bring climate adaptation "home" through media accounts, shaping the variegated, politicized terrain within which people perceive, understand, and engage with climate adaptation. As mass media comprise a community where climate adaptation strategies and possibilities can be discussed in the public arena, the way that these issues are covered in the media can – in theory – have far-reaching consequences in terms of informing or stimulating ongoing scientific inquiry and influencing policy-maker and public perceptions, prioritization, and public engagement. They could play an important role in framing expectations of the future and in shaping visions of adaptation success.

In these contemporary and contested interactions between climate science, policy, media, and the public citizenry, NNSAs compete to influence the discourse over decision-making and policy priorities at many scales of governance (Liverman 2004). Yet, we find that media treatment of climate adaptation largely has failed to appraise "success" of either local adaptation efforts or international development aid that aims to support climate adaptation. As a consequence, media have also failed to open a space for discussion, deliberation, and debate regarding how to critically address different adaptation alternatives.

Thus, at present, coverage in India does not assist in fostering an overt public discourse on "success" in the public sphere. Our analysis instead revealed two largely separate, parallel discourses relevant to adaptation: one at the national level in the elite media that largely frames climate change risks and adaptation as matters of injustice; the other – away from the international climate policy discourse and maybe even divorced from anthropogenic climate change as such – as a matter of practical coping with climate variability, which is deeply embedded in and linked with the internal politics of the country. The former implies (but does not explicitly state) a vision of adaptation success that revolves around North–South justice, economic development, and equality; the latter aims at a far more practical, local sense of empowerment and attainment of sustainable livelihoods.

This preliminary study then brings to light the existence of "parallel media discourses," each with different NNSA representatives echoing different frames, foci, and politics around adaptation. This hints at the power the media have in shaping climate adaptation discourses and different policy agendas, and – through simultaneous, and potentially competing, articulations of climate adaptation – visions of success. For instance, the news articles under analysis in India do not shed any light on the relationship between unrestrained economic development (with continuously rising emissions of greenhouse gases), as is promoted and occurring in India, and climate adaptation needs, and thus help little in exploring the implications for success.

Future work is needed in these areas to further interrogate in detail how these visions and discourses interact through media accounts. Further research also must investigate the implications of co-existing discourses on adaptation for how the public and key policy actors understand and think about the possibility of success.

As we collectively move past the remit of the Kyoto Protocol and expand into new adaptation-focused policy tools such as the Adaptation Fund, considering what may constitute adaptation "success" via media accounts can provide useful indications of movements in the larger public arena. Mass media link formal climate science and policy spaces together with everyday adaptations, shaping, translating, and negotiating meaning, thereby influencing how citizens make sense of and value the world (Boykoff *et al.* 2009). To the extent elected officials, (climate) policy negotiators, and rank-and-file policy actors view amplified media attention to climate change as a proxy for public attention to climate change (and pressure for action), increases in the amount of media attention to climate adaptation have the potential to catalyze policy initiatives on climate adaptation (and mitigation). By the same token, relative and ongoing low levels of coverage can similarly dampen possibilities for climate adaptation policies and on-the-ground actions.

Bibliography

Anon. (2011) 'India ranks 134 in human development index', *Hindustan Times*. Online. Available HTTP: <http://www.hindustantimes.com/News-Feed/India/India-ranks-134-in-human-development-index/Article1-764014.aspx> (accessed 31 August 2012).

Billett, S. (2010) 'Dividing climate change: global warming in the Indian mass media', *Climatic Change*, 99(1/2): 525–537.

Boykoff, M. (2008) 'The cultural politics of climate change discourse in UK tabloids', *Political Geography*, 27(5): 549–569.

—(2011) *Who Speaks for the Climate? Making Sense of Media Reporting on Climate Change*. Cambridge, UK: Cambridge University Press.

—(2012a) 2000–2012 World Newspaper Coverage of Climate Change or Global Warming. Center for Science and Technology Policy Research, University of Colorado and Oxford University. Online. Available HTTP: <http://sciencepolicy.colorado.edu/media_coverage> (accessed 26 April 2013)

—(2012b) 2000–2012 Indian Newspaper Coverage of Climate Change or Glogal Warming. Center for Science and Technology Policy Research, University of Colorado and Oxford University. Online. Available HTTP: <http://sciencepolicy.colorado.edu/media_coverage/india/index.html> (accessed 26 April 2013).

Boykoff, M., Goodman, M.K. and Curtis, I. (2009) 'Cultural politics of climate change: interactions in everyday spaces', in M. Boykoff (ed.), *The Politics of Climate Change: A Survey*, pp. 136–154. London, UK: Routledge/Europa.

Brulle, R.J., Carmichael, J. and Jenkins, J.C. (2012) 'Shifting public opinion on climate change: an empirical assessment of factors influencing concern over climate change in the US, 2002–2010', *Climatic Change*, 114(2): 169–188.

Commission of Climate Change and Development (2009) *Closing the Gaps*. Stockholm: Ministry of Foreign Affairs.

Douglass, M. (1992) 'The political economy of urban poverty and environmental management in Asia: access, empowerment and community based alternatives', *Environment and Urbanization*, 4(9): 1–32.

Dryzek, J. (2005) *The Politics of the Earth: Environmental Discourses*. Oxford: Oxford University Press.

Ghosh, A. (2009) 'The sunshine industry', *Hindustan Times*, 5 April, p. 14.

—(2012) *Living with Changing Climate: Impact, Vulnerability and Adaptation Challenges in Indian Sundarbans*. New Delhi: Centre of Science and Environment.

Jacobs, K.L., Wilbanks, T.J., Baughman, B., Beachy, R.N., Buizer, J.L., Chapin III, F.S., Cherry, W.P., Davis, B., Ebi, K.L., Harris, J., Kates, R., Kunreuther, H., Mearns, L., Mote, P., Rosenberg, A., Schwartz Jr., H.G., Smith, J.B. and Yohe, G. (2010) *America's Climate Choices: Adapting to the Impacts of Future Climate Change*. Washington, DC: National Academies Press.

Jha, P.S. (2009) 'Indian public perceptions of the international climate change negotiations', in D. Michel and A. Pandya (eds), *Indian Climate Policy: Choices and Challenges*, pp. 31–36. Washington, DC: Stimson Regional Voices.

Krippendorff, K. (2004) *Content Analysis: An Introduction to its Methodology*. Thousand Oaks, CA: Sage Publications.

Leiserowitz, A.A. and Thaker, J. (2012) 'Climate change in the Indian mind', *Yale Project on Climate Change Communication*. New Haven, CT: Yale University. Online. Available HTTP: <http://environment.yale.edu/climate/files/Climate-Change-Indian-Mind.pdf> (accessed 31 August 2012).

Liu, X., Vedlitz, A. and Alston, L. (2008) 'Regional news portrayals of global warming and climate change', *Environmental Science & Policy*, 11: 379–393.

Liverman, D. (2004) 'Who governs, at what scale and at what price? Geography, environmental governance and the commodification of nature', *Annals of the Association of American Geographers*, 94(4): 734–738.

Liverman, D.M. and Billett, S. (2010) 'Copenhagen and the governance of adaptation', *Environment*, 52(3): 28–36.

Luke, T.W. (2008) 'The politics of true convenience or inconvenient truth: struggles over how to sustain capitalism, democracy, and ecology in the 21st century', *Environment and Planning A*, 40(8): 1811–1824.

Mathur, U. and Varughese, G.C. (2009) 'From "obstructionist" to leading player: transforming India's international image', in D. Michel and A. Pandya (eds), *Indian Climate Policy: Choices and Challenges*, pp. 43–48. Washington, DC: Stimson Regional Voices.

Michel, D. (2009) 'Introduction', in D. Michel and A. Pandya (eds), *Indian Climate Policy: Choices and Challenges*, pp. 1–6. Washington, DC: Stimson Regional Voices.

Moser, S.C. (2009) *Good Morning America! The Explosive U.S. Awakening to the Need for Adaptation*, California Energy Commission and NOAA Coastal Services Center. Online. Available HTTP: <http://www.csc.noaa.gov/publications/need-for-adaptation.pdf> (accessed 10 September 2012).

O'Brien, K.L. and Leichenko, R. (2000) 'Double exposure: assessing the impacts of climate change within the context of economic globalization', *Global Environmental Change*, 10: 221–232.

O'Neill, S. and Nicholson-Cole, S. (2009) 'Fear won't do it: promoting positive engagement with climate change through visual and iconic representations', *Science Communication*, 30: 355–379.

Oreskes, N. and Conway, E.M. (2010) *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury Press.

Parry, J.E., Hammill, A. and Drexhage, J. (2005) *Climate Change and Adaptation*. London: International Institute for Environment and Development.

Rubin, A. and Babbie, E.R. (2005) *Research Methods for Social Work*. Belmont, CA, Wadsworth.

Russell, C. (2008) 'Climate change: now what?', *Columbia Journalism Review*, July/August. Online. Available HTTP: <http://www.cjr.org/feature/climate_change_now_what.php> (accessed 10 September 2012).

Sarewitz, D. (2004) 'How science makes environmental controversies worse', *Environmental Science & Policy*, 7: 385–403.

Slocum, R. (2004) 'Polar bears and energy-efficient light bulbs: strategies to bring climate change home', *Environment and Planning D*, 22: 413–438.

Tanner, T., Mitchell, T., Polack, E. and Guenther, B. (2009) 'Urban governance for adaptation: assessing climate change resilience in ten Asian cities', *IDS Working Papers*, 315: 1–47.

Tol, R.S.J. (2005) 'Adaptation and mitigation: trade-offs in substance and methods', *Environmental Science & Policy*, 8: 572–578.

UN Habitat (2008) *Cities and Climate Adaptation*, UN Habitat Donors Meeting, Seville, Spain, 15–16 October 2008.

West, J. (2008) *The Promise of Ubiquity: Mobile as Media Platform in the Global South*. Paris: Internews Europe.

Wilby, P. (2008) 'In dangerous denial', *The Guardian*, 30 June, p. 9.

15 Risk communication and adaptation in settlements on the coast and in deltas of the Mekong Region

Louis Lebel, Bach Tan Sinh, Ngo Cong Chinh, Sakaradhorn Boontaveeyuwat, and Ham Kimkong

Introduction

The potential impacts of climate change on low-lying deltas and coastal areas in the Mekong Region are high (World Bank *et al.* 2010; ADB 2009). Expansion of human settlement is placing more infrastructure, property, and human lives at risk from floods and sea-level rise (Fuchs *et al.* 2011; McGranahan *et al.* 2007). National and city governments in the region face significant challenges in formulating and implementing successful adaptation strategies (Garschagen and Kraas 2011; Fuchs *et al.* 2011; Lebel *et al.* 2009b).

Successful adaptation to climate change reduces risks or vulnerability without compromising sustainability (Doria *et al.* 2009). What constitutes an acceptable reduction of risk, of vulnerability, and of the prospects of sustainability, however, is not straightforward to agree upon or measure. For this reason, design, implementation, and monitoring of adaptation interventions will often benefit from multi-stakeholder processes.

This chapter argues that effective risk communication is a key element of successful adaptation. It focuses on how risks are communicated about water-related disasters, under current and plausible future climates. Illustrations are drawn from initiatives in cities and towns in the low-lying deltas and along the coasts of Thailand, Vietnam, and Cambodia. In each country, access to information is often constrained, in particular, public disclosure around larger water infrastructure projects that have significant implications for distribution of benefits and risks (Lebel and Sinh 2009). This part of the Mekong Region is emphasized because it includes key and dynamic economic centers vulnerable to sea-level rise and flooding due to climate change.

The chapter starts with a brief overview of how climate-related risks are currently managed and how adaptation is planned. Unsuccessful and ambivalent examples of adaptation far outnumber clear successes. Among the many barriers, problems with communicating risks are highlighted as important challenges for