Mass Media Coverage of Environmental Issues: Impact on Disaster Public Policy

John R Fisher
ABSTRACT

Reporting of environmental security concerns links either directly or indirectly to the development of environmental and disaster policies. These policies have impact on larger security concerns in both developing and developed countries. This chapter will examine mass media coverage of environmental issues and the impact of the coverage on environmental security as well as disaster and security public policy. In addition to giving a theoretical framework of mass media and policy making, the chapter will examine various disaster public policies and their relationship to environmental issues and their application to security practice, as well as to the media coverage of the environment particularly in disaster situations. This examination results in a better, more comprehensive view of complex relationships and global interdependencies and the impact of environmental issues and press coverage and their links to environmental security, national security and human security.

Both case study and theoretical approaches are used. The chapter also provides possible discussion questions and case studies to promote in-class learning.

Learning objectives:
- Explain how media coverage confuses rather than clarifies the issues involved in environmental security.
- Provide guidelines for working with the media to enhance and improve the message of climate change and its impact on environmental security.
- Describe how media coverage is used to influence the development of environmental and disaster public policy.

INTRODUCTION

Recent happenings in the global warming debate have the potential to change attitudes about whether climate change is human-caused and about the need for U.S. legislation and global climate policy. Among the occurrences are revelations about the integrity of research, harsh weather conditions, a global financial crisis, and polls showing a lack of popular support. Even with these changes many politicians seem to be determined to move ahead with what may prove to be very unpopular and financially devastating legislation.

Prior to 2000 Ross Gelbspan and other environmentalists lamented about the stranglehold that the fossil fuel industry had on media coverage. “The fossil fuel lobby has mounted an extremely effective campaign of disinformation to persuade the public and policy-makers that the issue of atmospheric warming is still stuck in the limbo of scientific uncertainty,” wrote Gelbspan. However, advocates of human-caused global warming began their own lobbying effort that won over the press and a majority of the public to what became known as the consensus view (Matthews, 2005; Begley, 2007). The media stopped listening to global warming skeptics, some labelling them as lunatics and corporate hacks. In much of the media, alternative viewpoints are no longer sought nor listened to. Reporters adopted a view that, like the dangers of smoking, global warming is a “reality” caused by human consumption and something must be done. Closure of the press debate on global warming leads to a failure to discuss viable alternatives that might promote economic growth, and policies that discourage industry and competitiveness.
Who are journalists

David Weaver and his colleagues (2009) have gathered information about American journalists since the 1980s. The latest survey results show some remarkable changes in demographics (average age is 47) and in attitudes toward social media. (Most accept social media and embrace them.) The survey asked 1080 full-time journalists from 552 organizations questions about their work, their colleagues and the profession. Here are some of the results reported by the Indiana University Media School (Healey, 2014):

- 59.7 percent of journalists said journalism was heading in the wrong direction.
- 62.6 reported that the size of the workforce had shrunk. “This is probably a reflection of the state of the business,” co-author Lars Willnat said.
- The median age of the American journalist is 47. “The profession is getting older,” Willnat said. “This might be a reflection of baby boomers staying on and less young people entering.”
- The profession is 62.5 percent male and 37.5 percent female. Disparity in pay is $53,000 vs. $44,000. Only 33 percent of women stay in the business more than 20 years.
- Journalists avoid party affiliation, with 50.2 percent identifying themselves as independent, 28 percent as Democrat and 7.1 percent as Republican. “Journalists are very sensitive now to being labeled as biased,” Willnat said.
- Nearly 54 percent use microblogs such as Twitter. The same percentage said social media has a positive effect on journalism.
- 78 percent used social media to check breaking news, 73 percent to check on what other news organizations report, and 80 percent to promote themselves and their work. “It’s obviously about self-promotion and occasionally engaging with your audience,” Willnat said.
- Journalists seek training in video shooting and editing, social media engagement and data journalism. The least important additional skill was knowledge of world affairs, 8.6 percent, a statistic Willnat called “stunning and depressing.” “This is a big change from years past, when people wanted more training in the subjects they reported on,” Weaver said.

Weaver and Willnat also conducted a survey of 1,230 non-journalists to compare public opinion of journalism to that of people working in the industry. Just 25 percent of the public thought that providing analysis of complex problems was an important role of journalism, versus 68 percent of journalists.

Diffusion of Innovation

Journalists exert influence on each other. Journalists often gain their knowledge of events and issues from other journalists through reading and listening to the media. Although journalists may take an attitude of neutral observer, they at some point also adopt ideas or innovations. Most journalists appear to have adopted the notion that global warming or climate change is human caused and that governments must do something to reduce the levels of carbon dioxide (Fisher, 2007). Ryan and Gross (1943) described adopters in terms of five categories: (1) innovators (2.5%), (2) early adopters (13.5%), (3) early majority (34%), (4) late majority (34%), and (5) laggards (16%). Rogers (2003) enlarged on these categories by defining their application. The notion of adoption is described as diffusion of innovation.

Media channels are usually the most effective way of making adopters aware of an issue. However, it is usually through interpersonal contact that people are persuaded. While mass media channels are relatively more important at the knowledge stage, interpersonal channels are more important at the persuasion stage in the innovation-decision process. Similarly, the mass media are more important than interpersonal channels for earlier adopters than for later adopters (Rogers, 2003). Adoption of ideas or innovations follow an S-curve first observed in 1903 by the French sociologist Gabriel Tarde, who plotted the original S-shaped diffusion curve. Innovators and early adopters are shown at the bottom of the S-curve while laggards are at the top of the curve.
Although numerous studies have been done of the public as adopters, little is known about journalists and their patterns of adoption. Their patterns are likely similar, with some possible variations related to the nature of the journalistic trade, although many may be early adopters. Journalistic adoption of global warming would likely fit this pattern.

When it comes to the process of innovation-decisions, Rogers (2003) mentioned that there are five stages.

1. Knowledge + or – (selective exposure or awareness of news)
2. Attitudes + or – (people have positive or negative attitude toward innovations)
3. Adoption (Decision): people decide to adopt the innovation
4. Implementation (regular or standard practice)
5. Confirmation (comparing and evaluating)

Good innovations need the following characteristics: (1) relative advantage (2) compatibility (3) complexity (4) triability (5) observability. An individual uses these characteristics when deciding to adopt an innovation. However, an innovation must be perceived as better than the product or idea it replaces. “When an individual decides to adopt new media or switch old media with new media, the perceived characteristics of innovations play an important role in reducing some uncertainty about the innovations,” wrote Rogers.

Communication Theory Impacting Policymaking

What is news?
To be newsworthy, a story must involve important people, affect many lives, and be interesting. It may also have past or future implications. It must be new, unique, and have qualities of drama and action. Conflict and controversy are important in creating drama and action. It must also have appeal to a wide audience. Then, if the timing and space requirements are right, if the item fits the preconceived angle or frame, and, if the competition has not already "scooped" the idea, the story may make the news.

Herbert Gans (1980) provides a more extensive list that news people use for judging newsworthiness:

1. Stories must be either important or interesting, "the ideal being an important story that is also interesting" (p.147). Stories are important because they involve important people. "The higher an actor is in the governmental hierarchy, the more his or her activities are of importance" (p.147). Stories are also important because they affect the "interests" and "well-being" of the nation (or the province or the community). In addition, they have impact on many people and "significance for the past and future" (pp.148-152). Interesting stories are "prototypically, people stories" (p.155).
2. A second criterion is production considerations. This is where "medium... connect story selection to technology" (p.157). This is part of McLuhan's (1964, p. 7) meaning when he said "the medium is the message." Because of deadlines and space requirements some stories make the news, while other stories may not.
3. Next, novelty is a reason. Is the story new? "Like bakery products, news can be fresh or stale, although staleness is more often a synonym for repetition than for old age." Because journalists are often reporting the same story "over and over again," they become bored with the story and assume that the reader is also bored (pp. 167-171).
4. Not only must a story be new, but it also must be good. A quality story reports "dramatic activities or emotions," but if it doesn't have action, "journalists try to add what they can during story production." It must make its point and be well written (pp. 171-173). One way of dramatizing a story is by framing it in terms of a debate with opposition and conflict.
5. Stories are also selected on the basis of balance. The mixture of stories in an edition of the newspaper must be diverse and also provide geographic, demographic, and political balance in order to appeal to a wide audience (pp. 173-176).
6. Finally, competition is an important consideration. Editors and production managers may choose stories "because they expect the rival to do so." And, "to avoid being viewed as imitating or falling behind the competition, [they] will also drop or play down a story that has already been used by a rival" (pp.176-181).
Agenda Setting
Up until the 1950s the media were perceived as having a powerful influence on what people think and do. Called the “hypodermic needle theory,” it implied the mass media had a “direct, immediate and powerful effect on its audiences.” But researchers in the 1960s determined the press was not all powerful. Bernard Cohen (1963) stated: “The press may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about” (p.120). This statement is the basis for agenda setting. In their studies of voters in 1968, 1972, and 1976, McCombs and Shaw (1972; McCombs, 1982) concluded that the mass media exerted a significant influence on what voters considered to be the major issues of the campaign.

Agenda-setting states the media create public awareness and concern for important issues. While the press does not reflect reality, they filter and shape it. Also, media attention on a few issues and subjects leads the public to perceive these issues as more important than other issues.

Framing
The concept of framing expands on agenda-setting by focusing on the essence of the issues at hand rather than on a particular topic. By focusing attention on certain events, the media place them within a field of meaning (Fairhurst & Star, 1996).

In agenda setting by selecting the topics, the media decide what people think about. Framing extends this to the media telling the audience how to think about topics. A frame refers to the way journalists and media gatekeepers organize and present the events and issues they cover, and also how audiences interpret them. Frames are abstract notions that serve to organize or structure social meanings. Framing also is used by organizations and organization leaders.

Priming
Derived from the cognitive psychological concept of priming, researchers in the 1980s extended agenda-setting by offering the audience a prior context to interpret subsequent communication. The media provide the audience with standards and frames of reference. While agenda-setting refers mainly to the importance of an issue, priming tells whether something is good or bad and whether it is communicated effectively. The media have the ability to prime the audience about what a news program looks like and what a credible person looks like (Domke, Shah, & Wackman, 1998; Scheufele, 2001).

Objectivity and Worldview
Journalists, who pride themselves as being “objective,” bristle when someone suggests they have a worldview, according to Willis (2010, p. 28). They look at a worldview as something that may create bias or prejudice. However, no doubt journalists have a worldview and this viewpoint influences the “frame” or context for the story and how the story is written. Yet, Willis writes two people can come up with the same set of facts about a story and write them up in the same way in a news story. This ability to write objectively is trained into the journalist.

Objectivity is humanly impossible, writes Michael Perlstein. “Journalists can and should achieve fairness, balance, and accuracy in every story. But a reporter cannot block out his or her biases, experiences, and gut-level emotions.” The reality of this became more apparent as Perlstein covered Hurricane Katrina as it hit his hometown New Orleans in August 2005 (Willis, 2010, p. 63).

“Objective reporting quickly gave way to subjectivity (and even advocacy) in the storm’s aftermath, and the immense scale of the calamity and our personal immersion also gave rise to another level of journalism that I have coined “hyper-objectivity.” Those of us in the floodwaters also were fueled heavily by reporting instincts, journalistic training, sense of duty to get the story out, loyalty to our newspaper, and the realization that this was “the big one,” the story of a lifetime in which our words carried immediate weight and urgency and [which], eventually, would become the first draft of this history of tragedy” (Perlstein in Willis, 2010, p. 218).

Boykoff & Boykoff (2007) claim that objectivity gets in the way of the real coverage of the news. “…the explicit principles of journalism – such as objectivity and its recent lexical replacements, fairness, balance, accuracy, truth, and comprehensiveness – have proven to be more of a lofty ideal than a consistent, quotidian practice. Moreover, the professional, pragmatic norms and rules have combined to affect news content, as we have seen with US mass-
media coverage of anthropogenic climate change” (p. 1201). The U.S.-backed international policy to combat global warming is “not random,” claim the Boykoffs. “Rather, the translation is systemic and occurs not only because of complex macro-political and economic reasons rooted in power relations, but also, in part, because of the micro-processes that undergird journalism.”

Media Impact on Public Policymaking

Most studies of mass media impact on the political system surround elections. Fewer studies examine media impact on the political decision making process. Even fewer studies look at policy making at the state and local levels. Part of the reason is that the media give little coverage to these decisions. When issues are not prominent in news coverage, it is difficult to examine the effects of mass media in the policy process (Berger, 2001).

Culture is shaped through the accumulation of transmitted messages over time (Sutter, 2002). Media messages play a role in the development of political attitudes by presenting political messages and dramatic portrayals involving political beliefs (Brossard and Shanahan, 2003). While the news media serve as intermediaries for the thousands of politicians, policy researchers and opinion makers who wish to transmit information to the public, they also act as gatekeepers as they select to transmit only a fraction of the millions of potential messages to an audience. The issues that get coverage represent only a fraction of the thousands of issues, in the form of bills, which are actually introduced, debated, and usually rejected by policymakers each year.

Because the goal of commercial media today is to make a profit and maximize company value, social goals (like the development of public policy) are secondary. The media ignore or provide minimal coverage of programs and information that support public interests because they don't attract large audiences and are often expensive to produce. Rather they focus on stories about conflict, accidents, deviance, and celebrities, often presenting them in a "sensational and salacious manner." When they cover public affairs, it is usually with "sound bites and polarized attacks on participants with other views" (Picard, 2008, p. 215). Public policy coverage often comes from the same special interests and is packaged and reused again and again. When the media produce their own material, they often pick up on the same ideologies, thus limiting the perspectives and breadth of coverage (Picard, 2008, p. 221).

The role of the media in public policy is often determined by interest groups (Sato, 2003). The active involvement of interest groups in politicizing an issue affects the function of mass media over time. In the early period of issue development, when no visible social interests surround an issue, media reports may appear to be independent criticism of governmental inaction. These reports supply news and provide a public forum on an issue. When advocacy groups emerge, as the media focus on their activities, they amplify and convey their voices to the public and the policymakers. When these advocacy groups take on the role of watchdog, the media also function in that way. Some of the social functions Picard (2008, p. 212) identifies are: providing a wide range of information, opinions, and perspectives on developments that affect the lives of citizens; mobilizing members of the public to participate in and carry out their responsibilities in society; helping citizens identify with and participate in the lives of their community, their state, and the nation; serving the needs and representing the interests of widely differing social groups; and ensuring that government, economic, or social constraints do not narrow information and ideas. The media keep institutions in society competitive.

Media coverage of politics shows a wide range of influences on what or how the public thinks about political issues. Johnson (2002) outlined three ways by which the media may influence public opinion. First, the media can directly influence public opinion, by communicating ideas or events that draw attention to a particular issue. Second, the media may openly express "what already seems to be public opinion." Finally, the media may mirror society, giving a sense of prevailing public opinion.

In the policy process, according to Entman (2003), public opinion sometimes cascades up through the media to influence the policy elites. If the news creates impressions that an idea is held widely and intensely by large numbers of the public, it can affect leaders' decisions on an issue. Also, news coverage can produce a ripple effect on policy by shaping public expectations (Seib, 2000). One way the media influence public opinion is through an agenda setting function. By giving more coverage or more prominence to some issues, the media influence the importance of these issues in the minds of the audience. The perceived salience of the issues then influences the public's evaluation of political actors, in a process called priming. Mass media affect "the standards by which governments,
policies and candidates for public office are judged." Political issues that are most salient or accessible in a person's memory will most strongly influence perceptions of political actors and figures (Scheufele, 2000). Priming, based on attribute agenda setting, is a key process for decision making and consensus building in local communities. This is particularly true where the number of media outlets is limited and the media play a key role in indirectly shaping public opinions for a wide variety of issues on a day-to-day basis (Kim, Scheufele and Shanahan, 2002).

While early studies of agenda setting suggested a linear causal relation between media, public, and policy agendas, research over the last 30 years shows that the relationship is not that straightforward. According to Bardhan (2002), "media framing suggests that the media not only tell us what to think about, but also how to think about it, and consequently what to think." According to Fortunato (2000), the mass media have power in two critical dimensions: (1) the power to potentially influence the public as studied in agenda-setting research and (2) the power to perform a gatekeeping function through processes of selecting and framing issues that will be exposed to an audience.

Through in-depth interviews with senior policymakers, Bardhan (2002) found that most policymakers tend to accord high importance to media coverage of issues, especially in the early stages of an issue or if it is a crisis/conflict situation. Also, the level of accountability in coverage may significantly impact policy agendas. When accountability is not clear-cut and news stories are passive, even a high volume of coverage may not lead to any policy outcomes.

According Tsfati (2003) in the discursive model of public opinion, the media facilitate the creation of communities through the advancement of a shared agenda. The news media bear the responsibility for providing public opinion with a variety of "important" issues, which are required for the creation of some minimal consensus regarding the problems of the day. This agreement about "what our problems are" (as opposed to a possible lack of agreement about the solutions for these problems) is necessary in order to sustain any discussion on topics that are collectively perceived as important.

Bessant (2003) reports that many political actors continue to see the press simply as one of the many interests that make up the policy community, with a role that is "merely as a conduit for information - to observe newsworthy events and report them." However, the media play a central role in both the discovery of the problem and in contests over meanings and identities, both of which are activities critical to having an issue placed on the policy agenda. As Schindlymayr (2001) states, of the many societal factors, the media are arguably the most important, for they are "the conduit, the pipeline, the funnel regulating the flow of communication between the policymakers (and therefore the policy itself) and others in the political system who might seek any different policy."

Most coverage of politics and policy making occurs at the federal level. At the state and local levels, according to Graber (2006, p. 298), "because of the lack of it between media markets and political units, most of the local news avoids detailed discussion and in-depth analysis of localized public issues, leaving these issues bereft of essential coverage." Cooper (2002) claims that state legislators often solicit media exposure and that soliciting media exposure is an effective way to put an issue on the legislative agenda, to convince other legislators to support policy proposals, and to stimulate discussion of policy alternatives. State legislators, like their congressional counterparts, often use media tactics in their law-making efforts. Interest groups and the public outside of their constituency are also prime targets of legislative media tactics. However, Cooper (2002) indicated, policy-oriented legislators do not use the media as often and do not see the media as particularly influential. Legislators concerned primarily with election often use reporters as a source for information, but they do not believe these reporters are influential in making policy.

State legislators rated the media and Internet as less important sources of information. Although the media may seem like an obvious vehicle for disseminating information, Jackson-Elmoore, (2005) found they are less useful to state legislators. "More targeted sources of information should be considered to influence legislative decision making. The sources should be targeted to the audience."
Functions of the Media in Policymaking

In a study of mass media impact on educational policy making, Fisher (1991) found the mass media play a lesser role in influencing the public policymaking than other actors. He found that opinion leaders exert more influence on lawmakers. The media had little impact on the policy decisions, other than to inform. This study seems to support Fico's (1984) conclusions that reporters are more influential in functions involving transmittal of information to the public and have less impact in functions involving personal and professional influence in the legislative setting. In addition, the study seems to bear out Lambeth's (1978) conclusions that the impact of the press on elected officials is low to moderate.

Fisher (1991) identified 16 media functions in six policy stages. Content analysis of newspaper articles about education was used to test the typology. Table 1 shows the typology developed through Fisher's content analysis, listing the functions with their policy stages.

<table>
<thead>
<tr>
<th>Policy stage</th>
<th>Media function</th>
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<tbody>
<tr>
<td>1. Problem identification/articulation</td>
<td>a) Identification of problems by media</td>
</tr>
<tr>
<td>2. Policy recommendation/aggregation</td>
<td>a) Identification of groups and proposals</td>
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<tr>
<td></td>
<td>b) Identification of policymaker proposals</td>
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<tr>
<td></td>
<td>c) Media suggestion of content</td>
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<tr>
<td>3. Policy decision/ adoption</td>
<td>a) Setting tempo of decision making</td>
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<td></td>
<td>b) Recommending how to vote</td>
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<tr>
<td></td>
<td>c) Informing public of content</td>
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<tr>
<td>4. Policy implementation</td>
<td>a) Prescribing administration</td>
</tr>
<tr>
<td></td>
<td>b) Alerting public to problems</td>
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<tr>
<td>5. Policy evaluation</td>
<td>a) Evaluating effectiveness</td>
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<td></td>
<td>b) Reacting to policy</td>
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<tr>
<td>6. Policy resolution or change</td>
<td>a) Stimulating review</td>
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<td></td>
<td>b) Proposing change or termination</td>
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Fisher and Soemarsono (2008) studied mass media impact in higher education policy making. They used Fisher’s 1991 framework to study the functions of the media in the policy making situation. News stories were examined using content analysis. Table 2 shows the distribution of stories according to Fisher’s 1991 framework.

<table>
<thead>
<tr>
<th>Policy Stage</th>
<th>Media function</th>
<th>Number of stories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Problem identification and articulation</td>
<td>a) Providing background information</td>
<td>20</td>
</tr>
<tr>
<td>2) Policy recommendation and aggregation</td>
<td>a) Information about the policy</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>b) Information evaluating the policy</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>c) Information describing the policy process</td>
<td>19</td>
</tr>
<tr>
<td>3) Policy decision/ adoption stage</td>
<td>a) Board decisions</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>b) Legislative decisions</td>
<td>6</td>
</tr>
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The following propositions are suggested by Fisher and Soemarsono (2008). Some tend to bear out what is already known about media impact on policy making. As a case study the propositions can't be generalized to all situations, but add to the knowledge base about mass media and political decision making.

1. The media have little impact on the policy decisions, other than to inform.
2. The media draw from traditional administrative sources (i.e., university executives) as their primary sources.
3. Non-traditional sources are not sought out even though their comments could add controversy, different perspectives, and balance to stories.
4. Sources at larger institutions are primary sources more often than sources from smaller institutions, even though in this case the story had greater impact on the smaller institution.

5. Coverage is greater in the initial stages of the policy making process (i.e., announcement stage) and less media interest exists as the policy making process draws out.

6. Despite its lack of consistency, media coverage provides a record of the key events of the policy process.

These propositions can have impact on how policy makers use the media and how public relations practitioners advise decision makers.

Reporting Science

Reporting of science is problematic. Science draws from many sources with multiple versions of knowledge and is often tentative and inconclusive. On-the-other-hand, journalists seek to clarify and provide certainty. Journalists transform “provisional findings into certain findings,” often exaggerating the scientific claims and downplaying the qualifiers and caveats from the original journal articles. The result is a story that may appear more certain to the public than the data do to scientists (Stocking, 1999).

Journalistic practices of trying to achieve objectivity by drawing from two opposing points of view may actually add to the uncertainty. Zehr (2000) claims reporters may actually look for controversy in a story, thus adding to the uncertainty of science. By drawing opinions from all sides, reporters give equal weight to majority scientists and fringe scientists and to scientists and non-scientists. Drawing information from opposite viewpoints also meets demands for novelty and significance. Journalists seek out stories that defy conventional scientific wisdom knowing that “contrarian stories are novel and therefore newsworthy” (Stocking, 1999).

Ross Gelbspan (1998, pp. 57-58) has asserted, “The professional canon of journalistic fairness requires reporters who write about a controversy to present competing points of view. When the issue is of a political or social nature, fairness – presenting the most compelling arguments of both sides with equal weight – is a fundamental check on biased reporting. But this canon causes problems when it is applied to issue of science. It seems to demand that journalists present competing points of views on a scientific question as though they had equal scientific weight, when actually they do not.” Striving for objectivity and balance may contribute to uncertainty.

Nisbet and Huge (2006) reviewed how attention cycles and frames influence a scientific debate. By controlling media attention and framing an issue in favorable terms interest groups have a potential for influencing policy making. News coverage follows the “issue attention cycle” proposed by Downs (1972). An issue rests in a pre-problem stage until a traumatic event “catapults” it to the public attention. The rise in attention then leads to pressure on the political system to solve the problem. It remains in the policy domain even after the initial attention diminishes. As long as changes occur incrementally, little attention is paid to the issue, but when something dramatic occurs press coverage increases and public pressure is applied on policy makers.

Corbett and Durfee (2004) claim that the level of uncertainty about global warming coverage has increased as politicians and interest groups have replaced scientists as the primary sources for information. The nature of scientific enquiries suggests nothing is for certain. “Research must differentiate between the practice of identifying scientific uncertainties … where they exist, and making them dominant and salient features of articles, perhaps to the exclusion of other scientific news” Zehr (2000, p. 99). The best way of assuring certainty is to put the story in its context, rather than reporting controversy. The various accounts “make it appear to readers that scientists are much more uncertain than they actually are about whether global warming is occurring” (Zehr, 1999, pp. 10-11).
Media Coverage of Climate Change

An online headline reads: “Why scientists are (almost) certain that climate change is man-made.” The article by J.P. says “ON NOVEMBER 2ND (sic) the Intergovernmental Panel on Climate Change (IPCC), which represents mainstream scientific opinion, said that it was extremely likely that climate change is the product of human activity.” The Economist, an advocate of the consensus view on human-caused climate change, shows a picture of a polar bear climbing onto an ice flow (Economist, 2014).

In the anti-climate change Forbes magazine, a headline screams: “Your Move, Global Warming Alarmists. Science Has Exposed Your Unwarranted Hysteria.” The article by Peter Ferrara (2013) is in support of a document called “Climate Change Reconsidered II, authored by the Nongovernmental International Panel on Climate Change (NIPCC),” and authored by 50 scientists who claim we are not being told the truth about climate change by the United Nation’s International Panel on Climate Change (IPCC). “NIPCC seeks to objectively analyze and interpret data and facts without conforming to any specific agenda. This organizational structure and purpose stand in contrast to those of the United Nations’ Intergovernmental Panel on Climate Change (IPCC), which is government-sponsored, politically motivated, and predisposed to believing that climate change is a problem in need of a U.N. solution.”

So who are we to believe?

In the midst of the Paris climate change conference, Michael Lynch (2015) wrote in Forbes about his concerns about the lack of balance in covering climate change. The debate over climate change is like the “joke about putting a humidifier and a dehumidifier in the same room and letting them fight it out.” The reality, he writes, is that both “sides in the current debate should be ashamed, not just for their tactics, but their denunciation of said tactics when employed by their opponents.”

Further, Lynch wrote: “In the realm of climatology, there are an enormous number of publications, good and bad, and the idea that any given one is going to drive the debate or mislead the public significantly is nonsense. Although some climate researchers have become advocates as much as scientists, the vast majority are engaged in serious research and should not be subject to attacks by outsiders. Rather, their work should be openly discussed, analyzed, criticized and praised (but not photocopied without permission!”

Boykoff and Boykoff (2004) examined coverage of global warming from 1988 to 2002 in the New York Times, the Washington Post, the Los Angeles Times, and the Wall Street Journal. They found that the norm of balanced reporting provided a biased view of global warming. Because journalists provided both sides of global warming story, the authors suggested that the newspapers kept alive the impression that the reality of global warming was still in question. “Journalists need to acknowledge that their long-cherished norm of balance has become a form of informational bias” (Boykoff, 2005, p. 87).

Boykoff (2011) elaborated on his viewpoint in his book entitled: Who will speak for climate change? He wrote “the road from information acquisition via mass media to various forms of engagement and action is far from straight forward, and is filled with turns, potholes and intersections. This is a complex arena: mass media portrayals simply do not translate truths or truth claims, nor do they fill knowledge gaps for citizens and policy actors to make ‘the right choices’” (p.180).

Dispensa and Brulle (2003) found that coverage for the year 2000 in the Washington Post and New York Times showed a higher percentage of stories against or giving both sides than did papers in Finland and New Zealand. The New York Times carried 37 stories on global warming: 16 supporting, 6 against, and 15 both; the Washington Post carried 34 stories, 13 supporting, 5 against, and 16 both; Finland’s Helsingin Sanomat carried 7 stories, all supporting the global warming; and the New Zealand Herald carried 45 stories, 40 supporting the theory, one against and 4 with both sides. The reason they postulated was that the U.S. has a fossil fuel driven economy; New Zealand and Finland do not. In a replication of the study by Dispensa and Brulle (2003), Fisher (2007) compared coverage in Canada’s Globe and Mail with the New York Times in the United States. Canada, which has about 1/10
the population of the United States, was chosen because of its geographic location close to the U.S. Both have similar economies, industries, environmental issues and media coverage. Both have major fossil fuel industries.

Fisher’s 2007 study followed the Dispensa and Brulle approach in using the key words, “global warming,” to search web sites for the New York Times and for the Toronto Globe and Mail. The search identified 146 stories containing the words “global warming” in the New York Times and 533 articles in the Globe and Mail during a year beginning from the fall 2005 to fall 2006. An overwhelming majority of the articles from the New York Times (94%) and the Globe and Mail (96%) were identified as supporting global warming. No articles were found to be against and only a small proportion, often industry-based, reported both viewpoints. The number of articles about global warming in the New York Times was almost four times greater in 2006 than in 2000. The number of articles in the Globe and Mail during 2006 was almost four times (actually 3.6 times) greater than in the New York Times during the same year. With such a large number of stories supporting manmade global warming, it appears that journalists at these newspapers had adopted an anthropogenic view of the causes of climate change.

By 2006 it appears that journalists (at least those writing about global warming for the New York Times and Globe and Mail) had adopted a position supporting anthropogenic climate change. Diffusion of innovation was almost complete. The problem is that when an idea reaches diffusion levels, journalists lose all sense of objectivity and balance. They no longer examine both sides of a story. Reporters adopt the view that, like the dangers of smoking, global warming is a reality caused by human consumption requiring something be done. Alternative viewpoints were no longer sought nor listened to. They have accepted the viewpoint that a direct correlation exists between human-caused carbon emissions and global warming similar to the relationship between smoking and cancer and HIV and AIDS.

Table 3 below shows the number of articles in the 2006 New York Times and Toronto Globe and Mail and compares these with New York Times coverage from 2000 as reported by Dispensa and Brulle (2003). An overwhelming majority of the articles from the New York Times (94%) and the Globe and Mail (96%) were identified as supporting global warming. No articles were found to be against and only a small proportion, often industry-based, reported both. The number of articles about global warming in the New York Times was almost four times greater in 2006 than in 2000. The number of articles in the Globe and Mail during 2006 was almost four times (actually 3.6 times) greater than in the New York Times during the same year.

<table>
<thead>
<tr>
<th></th>
<th>Support</th>
<th>Against</th>
<th>Both</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 New York</td>
<td>137</td>
<td>0</td>
<td>9</td>
<td>146</td>
</tr>
<tr>
<td>Times</td>
<td>% of total</td>
<td>94%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>2000 New York</td>
<td>16</td>
<td>6</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td>Times</td>
<td>% of total</td>
<td>43%</td>
<td>16%</td>
<td>41%</td>
</tr>
<tr>
<td>2006 Globe and</td>
<td>512</td>
<td>0</td>
<td>21</td>
<td>533</td>
</tr>
<tr>
<td>Mail</td>
<td>% of total</td>
<td>96%</td>
<td>0%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Whereas Dispensa and Brulle (2003) found that a high number of reports were either against global warming or reported both sides, this study suggests that current coverage is almost entirely supportive with few attempts to cover both sides. The media is reporting a clear message of certainty that global warming is a reality and is caused by manmade emissions of CO2. It appears that both hypotheses are supported by the findings from the study.

First, since the majority of coverage supports global warming, it may be possible to claim that the news media have
adopted this idea and diffusion has occurred. Content analysis appears to be a good tool in determining the degree of diffusion of innovation. This study, however, is limited by the fact that it examined only two newspapers, both elite papers serving national and large urban populations. To be more definite in making this claim a more comprehensive examination of media from a variety of markets would be necessary, particularly those serving industrial and oil producing communities. Further, it would be helpful to survey and interview journalists as to their views.

The second hypothesis is also supported. It would appear that when diffusion of innovation is achieved the rules of balance and impartiality are no longer followed by journalists. This study would be enhanced by looking more in-depth at the stories about global warming. In an earlier study I distinguished between news and opinion pieces and examined their impact on the policy making process (Fisher, 1991). These tools could be used in studying this issue in regards to diffusion of innovation.

The fact that Canadian coverage was almost four times greater than that in the United States perhaps reflects the greater importance Canadians may give to the global warming issue. Also, environmental issues have been a more important part of the political agenda over a longer period in Canada. Although not demonstrated in the kind of coverage, it also may result from a continuing strong viewpoint against man-made global warming in the United States. The U.S. findings after six years are now much more in line with those in Finland and New Zealand, where coverage in 2000 was mainly supporting global warming.

This study was limited to only two publications during one year. Generalization is not possible to other media organizations or the journalism profession as a whole. However, if this examination of the New York Times and Globe and Mail is any indication of the larger trend within the media, journalists seemed to have accepted global warming as a reality. No longer were journalists seeking balance or alternative viewpoints in their reporting. Articles are supportive of the global warming phenomenon and ignore other perspectives. From Boykoff and Boykoff’s (2004) point of view this would mean reporting is less biased, because it no longer gives credence to minority viewpoints. Newspapers no longer are keeping alive the impression that the reality of global warming is still in question.

Alternative Viewpoints on Climate Change

The following section describes two U.S. sources of information about climate change. While the Center for Science and Technology Policy Research at the University of Colorado appears to provide objective information about news coverage of climate change, it supports the consensus view that climate change is created from anthropogenic sources. On the hand, the Media Research Center stands firmly in the camp that, while climate change is a reality, it may be caused by any number of reasons. It’s interesting to examine their reports on media coverage, because an examination of alternative viewpoints fosters critical thinking and greater media literacy. No position should be accepted without thorough study and applied reasoning.

Center for Science and Technology Policy Research

The Center for Science and Technology Policy Research (McAllister et al., 2016) monitors fifty sources across twenty-five countries in seven different regions around the world. They assemble the data by accessing archives through the Lexis Nexis, Proquest and Factiva databases via the University of Colorado libraries. These fifty sources are selected through a decision processes involving weighting of three main factors:

- geographical diversity (favoring a greater geographical range)
- circulation (favoring higher circulating publications)
- reliable access to archives over time (favoring those accessible consistently for longer periods of time)

The following chart and subsequent table (Table 4) correlate media coverage with disasters and policy events. The chart is from the Center for Science and Technology Policy Research (McAllister et al, 2016) with my notations added showing events that may have caused the spikes in media coverage.
Calling it “a decade of disasters,” The Guardian (2011) listed the following main impacts for disasters from 2001 to 2011.

- Earthquakes killed the most people over the period from 2000 to 2008 – an average of 50,184 people a year.
- Floods, meanwhile, have affected the largest number of people – an average of 99 million people a year.
- The most costly urban disaster of the last decade was the Bam earthquake in Iran, in 2003, which left damages totaling US$500m
- The deadliest disaster was the South Asian tsunami in 2004, which affected 7 countries and killed 226,408

In the table below, I have added newspaper coverage from the Center for Science and Technology Policy Research to the data from The Guardian. I took the highest data from the months following the event. It appears that news coverage doesn’t closely correlate with major disaster events. News coverage is much more closely tied to climate change events such as the International Panel on Climate Change Assessment Reports (IPCC AR 3, 4, and 5), Gore’s movie, *An Inconvenient Truth*, Climategate in 2009, the 2015 United Nations Climate Change Conference in Paris (which was attended by President Obama and many other leaders). The one exception might be Hurricane Sandy in 2012.
Table 4. Correlation of Coverage with Disasters and Policy Events

<table>
<thead>
<tr>
<th>Popular name</th>
<th>Main countries affected</th>
<th>Date of event</th>
<th>Type of hazard</th>
<th>Total number of deaths</th>
<th>Total number of affected</th>
<th>Total damages US$</th>
<th>World News</th>
<th>5 U.S. Newspapers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan earthquake</td>
<td>Japan</td>
<td>11 March 2011.</td>
<td>Earthquake and tsunami</td>
<td>5178 (As of 17.03.2011)</td>
<td>Not yet known</td>
<td>3,400,000</td>
<td>N/A</td>
<td>234</td>
</tr>
<tr>
<td>Haiti earthquake</td>
<td>Haiti</td>
<td>12 January 2010.</td>
<td>Earthquake</td>
<td>222,570</td>
<td>3,400,000</td>
<td>N/A</td>
<td>306</td>
<td>258</td>
</tr>
<tr>
<td>Sichuan earthquake</td>
<td>China</td>
<td>12 May 2008.</td>
<td>Earthquake</td>
<td>87,476</td>
<td>45,976,596</td>
<td>$85 billion</td>
<td>463</td>
<td>312</td>
</tr>
<tr>
<td>Cyclone Nargis</td>
<td>Myanmar</td>
<td>2 May 2008.</td>
<td>Tropical cyclone</td>
<td>138,366</td>
<td>2,420,000</td>
<td>$4 billion</td>
<td>463</td>
<td>312</td>
</tr>
<tr>
<td>Java earthquake</td>
<td>Indonesia</td>
<td>27 May 2006.</td>
<td>Earthquake</td>
<td>5,778</td>
<td>3,177,923</td>
<td>$3.1 billion</td>
<td>190</td>
<td>262</td>
</tr>
<tr>
<td>Kashmir earthquake</td>
<td>Pakistan</td>
<td>8 October 2005.</td>
<td>Earthquake</td>
<td>73,338</td>
<td>5,128,000</td>
<td>$5.2 billion</td>
<td>164</td>
<td>171</td>
</tr>
<tr>
<td>Hurricane Katrina</td>
<td>United States</td>
<td>29 August 2005.</td>
<td>Tropical cyclone</td>
<td>1,833</td>
<td>500,000</td>
<td>$125 billion</td>
<td>140</td>
<td>170</td>
</tr>
<tr>
<td>Mumbai floods</td>
<td>India</td>
<td>26 July 2005.</td>
<td>Flood</td>
<td>1,200</td>
<td>20,000,055</td>
<td>$3.3 billion</td>
<td>177</td>
<td>172</td>
</tr>
<tr>
<td>South Asian tsunami</td>
<td>14 countries</td>
<td>26 December 2004.</td>
<td>Earthquake and tsunami</td>
<td>226,408</td>
<td>2,321,700</td>
<td>$9.2 billion</td>
<td>136</td>
<td>130</td>
</tr>
<tr>
<td>Bam earthquake</td>
<td>Iran</td>
<td>26 December 2003.</td>
<td>Earthquake</td>
<td>26,796</td>
<td>267,628</td>
<td>$500 million</td>
<td>N/A</td>
<td>80</td>
</tr>
<tr>
<td>European heatwave</td>
<td>6 countries</td>
<td>Summer 2003</td>
<td>Extreme heat</td>
<td>72,210</td>
<td>Not reported</td>
<td>Not reported</td>
<td>N/A</td>
<td>77</td>
</tr>
<tr>
<td>Dresden floods</td>
<td>Germany</td>
<td>11 August 2002.</td>
<td>Flood</td>
<td>27</td>
<td>330,108</td>
<td>$11.6 billion</td>
<td>N/A</td>
<td>114</td>
</tr>
<tr>
<td>Gujurat earthquake</td>
<td>India</td>
<td>26 January 2001.</td>
<td>Earthquake</td>
<td>20,005</td>
<td>6,321,812</td>
<td>$2.6 billion</td>
<td>N/A</td>
<td>71</td>
</tr>
</tbody>
</table>

The Media Research Center

In early 2015, the conservative Media Research Center started a project examining all stories on the ABC, CBS and NBC evening newscasts, categorizing each item by its topic and total airtime. The Center claims that the analysis shows “the agenda and bias of the Big Three networks.” It shows what they covered, and what they failed to cover, in 2015. Below is the Center’s report on weather coverage by the networks.
Weather: Even the most casual news observer has likely noted that the evening newscasts have ramped up their coverage of weather in recent years, so it may be surprising that this topic accounted for only 11 percent of the networks’ 2015 news agenda, with 32 hours, 52 minutes of coverage.

More than two hours of this coverage (133 minutes) was spent on the summer wildfires in several western states, while the related California drought received 67 minutes of coverage. The other top weather stories of 2015 included May’s extensive flooding in Texas (88 minutes); Hurricane Joaquin, which affected the Caribbean in late September and October (60 minutes); and the subsequent flooding in North and South Carolina later that month (58 minutes).

As these dramatic weather stories unfolded, the networks often put them in the context of “climate change.” Talking about the flooding in Texas, NBC correspondent Miguel Almaguer fretted back on May 28: “In just three weeks, much of the state has gone from extreme drought to crippling flood....Scientists say climate change is exacerbating the wild swings.” Overall, the networks spent 97 minutes of airtime in 2015 opining about climate change, including 17 minutes for the much-ballyhooed climate summit in Paris in December (Ciandella and Noyes, 2016).

Reports from the Center for Science and Technology Policy Research and the Media Research Center appear to be one-sided and selective in their coverage. The Center for Science and Technology Policy Research covers only five U.S. newspapers, all supporters of the consensus view of human-caused global warming. The weather report of the Media Research Center only covers three U.S. networks. The problem with this kind of research is that one can only get a partial picture of media coverage of climate change.

Media Impact on Disaster Policy

The following case study analysis provides a study of the problems related to reporting as well as some of the effects of press coverage of Hurricane Katrina on the policy-making process. Case studies can be defined as "a story of a problem," dealing with actual events, organizations, and decision makers (Hoag, Brickley, & Cawley, 2001, p. 50). Problem solving "can be measurably improved by the case study method" (p. 49). Quantitative research approaches have been unsuccessful in measuring mass media influence on public policymaking. The case study approach may have greater success in establishing a situation-by-situation analysis of how the mass media impacts the policymaking process.

Media coverage of Hurricane Katrina

In the early days following Katrina, the media reported a city overwhelmed by the devastation of nature, human misery, and crime. A multitude of reporters besieged the city. Each media report re-emphasized a city suffering from a catastrophe. These reports first demonstrated government incompetence and then later showed government response to the problems.

The report of atrocities in New Orleans shocked the nation and the world. Audiences heard and read about a city in anarchy and subhuman conditions in the Dome and Convention Center. However, many of the reports of violence were false and could not be verified. Reports were based on rumors several times removed from the source.

For example, on September 5, 2005, the Financial Times of London attributed the following report to unnamed refugees: "Girls and boys were raped in the dark and had their throats cut and bodies were stuffed in the kitchens while looters and madmen exchanged fire with weapons they had looted." The report claimed that "several hundred corpses are reported to have been gathered by locals in one school alone" in St. Bernard Parish, the badly-flooded community just east of the city. A similar report indicated that up to 300 bodies were piled in Marion Abramson High School in Eastern New Orleans. Reporters from the Times-Picayune canoed to the school, went inside, and found no bodies.
"Stone-age storytelling got amplified by space-age technology;" according to Thevenot (2005). Rumors of bodies in the Dome were retold several times and finally reached the media. When "the media arrived, with satellite phones and modems, BlackBerrys, television trucks with the ability- to broadcast worldwide and the technology to post -on the Internet in an instant," most of them did not realize that "normal rules of sourcing no longer ensured accuracy." The stories went global as officials, hurricane victims, and rescue and security personnel confirmed nightmarish scenarios, sincerely believing what they were saying and wanting desperately to get the word out so that help would come. The media also believed the stories they were telling, repeating without verification the stories being told by the officials. When it was discovered that the stories were false, the media were criticized. However, it was the media who revealed the falsehood of the stories. The only way that the public knew about the bad reporting was that the journalists told them.

While media accounts of Hurricane Katrina "riveted, angered, and depressed" Americans, the images of devastated individuals and communities from Katrina did not result in public policy to fight poverty and economic inequality. Deborah Belle (2006) points to research that suggests that social policy decisions in the U.S. favor the wealthy at the expense of the poor and middle class. The wealthy control the policy-making process. Those most likely to downplay the problems of economic and racial inequality are most likely to have political power. While the media may impact middle America, they seem to have little influence on the decision makers.

News coverage of Katrina may have, in fact, may have lessened people's support for public policy. In his comparison of "episodic" versus "thematic" news stories, Iyengar (1990) found that people viewing "thematic" news stories about poverty were likely to blame the condition on societal factors. On the other hand, when people view "episodic" news stories showing images of people in poverty, they tend to hold the poor responsible for their own poverty. In a six-year period, television showed twice as many "episodic" as "thematic" stories. This tendency to blame the poor for their poverty may have lessened the impact of news coverage of Katrina.

In Hurricane Katrina, a natural disaster led to a human catastrophe. Most of the victims were black, aged, and poor. Media coverage reported that the poor government response was because of incompetence. On the other hand, some media reports suggested an element of racism in the response efforts. In a study (Kaiser, Eccleton, & Hagiwara, 2008) following Katrina, white and black students were shown videos supporting both points of view. When confronted with claims of racism, white students used "system justification" as a way of rationalizing the mistakes rather than blaming "in-group" racism.

Language is important in portraying how the media, and therefore the public, view victims of a disaster. Sommers, Apfelbaum, Dukes, Toosi, and Wang (2006) discuss the race factor in describing victims of Hurricane Katrina. The media use of the word "refugees" was seen as having overtones of racism. In an analysis of news stories, "refugee" was associated with "poor" or "black." The media used the word "refugee" for displaced survivors throughout the coverage of Katrina, but more frequently in the early period. Within a week of the hurricane, President Bush complained about use of the term, and many news organizations shifted to the more traditional "evacuees," "survivors," or "victims."

Another factor that may support the notion of racism in coverage is story angle or framing. The media reported sniper shots, murders, and roving gangs committing rapes. At one point the media reported sniper fire preventing rescue efforts by a helicopter. When investigated further, there were no sniper shots, and the rescue efforts were not halted. One story reported forty dead bodies murdered at the Superdome. In fact, there were four dead bodies, and only was suspected of having been murdered. The number of rapes was also over-exaggerated. Only one rape was actually reported. While it is not possible to say that the misreporting was racist, it may be that race was a contributing factor, claimed Sommers et al (2006).

Following 9/11, the media seemed to have lost their direction. They seemed weak and impotent. And as Rieder (2005) wrote, "Much of the media seemed cowed, afraid to press too hard, as if questioning the Bush administration's pronouncements about terrorism was somehow unpatriotic." Then Hurricane Katrina brought disaster to the Gulf Coast. Suddenly, the media were rejuvenated and even virile in their condemnation of incompetent government bureaucrats. In Katrina, "the chasm between the platitudes of the clueless government spokesmen and the ugly reality of New Orleans--the devastation, the misery, the Third World-style chaos--was
overwhelming." While television's powerful images allowed the public to see the horrors of New Orleans, newspapers provided "incisive and comprehensive coverage" and local radio served as "a lifeline" for people in the devastated region.

National Disaster Policy

One of the immediate results of news coverage of Katrina was the firing of Michael Brown, the director of Federal Emergency Management Agency (FEMA), in the midst of government response to the hurricane. While the reorganization of the leadership of FEMA was a direct outcome of news coverage, more long-term and significant changes occurred in the change of focus of the Department of Homeland Security. Following Katrina, Congressional Hearings applauded the unselfish service of over 60,000 volunteers. At the same time the federal government response was highly criticized (A Failure of Initiative, 2006).

Following 9/11, the National Strategy for Homeland Security (2002) focused on terrorism as the main concern of the new Department of Homeland Security. The strategic objectives of Homeland Security in order of priority were to (a) prevent terrorist attacks within the United States, (b) reduce America's vulnerability to terrorism, and (c) minimize the damage and recover from attacks that do occur.

As a result of Hurricane Katrina and the Congressional Hearings, Homeland Security changed its focus to consider other forms of disasters in addition to terrorism attacks (National Strategy for Homeland Security, 2007).

In 2010 in the Quadrennial Homeland Security Review, new missions were established for Homeland Security that included an all-hazards approach to dealing with disasters. The missions were listed as (a) preventing terrorism and enhancing security, (b) securing and managing our borders, (c) enforcing and administering our immigration laws, (d) safeguarding and securing cyberspace, and (e) ensuring resilience to disasters. At the same time, Homeland Security has established measures to be more prepared for natural disasters. Among these preparations was a greater focus on training and preparation. This included expanding the use of the National Incident Management System (NIMS) and the Emergency Management Assistance Compact (EMAC).

In 2015 FEMA further refined its mission by identifying a preparedness goal with five mission areas of prevention, protection, mitigation, response and recovery (FEMA, 2015). The agency has developed and published strategic plans for the years 2011 to 2014 and is now in its second iteration of strategic plans for 2014 to 2018.

NIMS is the first-ever standardized approach to incident management and response. Developed by the Department of Homeland Security and released in March 2004, it establishes a uniform set of processes and procedures that emergency responders at all levels of government will use to conduct response operations.

The Emergency Management Assistance Compact (EMAC), established in 1996, was praised during the Congressional Hearing. When federal response failed during Katrina, the states and local communities using EMAC were able to provide desperately needed assistance. The EMAC mutual aid agreement and partnership between member states exists to deal with disasters from hurricanes to earthquakes, wildfires to toxic waste spills, and terrorist attacks. EMAC is the first national disaster-relief compact since the Civil Defense and Disaster Compact of 1950 to be ratified by Congress. Since its ratification and signing into law in 1996 (EMAC, 1996), 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands have enacted legislation to become EMAC members.

Previous studies (Fisher, 1991; Fisher and Soemarsono, 2008) suggest that the media may generally have little impact on public policy. In the case of Katrina the media played a significant role in bringing about immediate and later change to the way the federal government responds to disasters. The media did not act alone in bringing about these changes, but rather in concert with pressure from the public, and local and state politicians (Fisher, 2014).

Downs (1972) proposed an "issue-attention cycle," suggesting that a traumatic event is required to "catapult" an issue to the attention of the public and to policy makers. In this case, the horrendous effect of Katrina kept natural
disasters in the forefront of American consciousness. Nevertheless, not all aspects of the tragedy have been dealt with, including the need for public policy to deal with poverty as it is impacted by disasters.

Generally, while the media bring public attention and the attention of politicians to an issue, they are unable to sustain the kind of coverage that is required to see public policy through. Thus, the media usually play a minor role in the adoption of public policy.

While it is difficult to separate out the role of any one party in the Katrina disaster, it is evident that the media played a significant part in bringing about change in how government handles disasters. They brought the issue to the attention of the public and to politicians who acted upon the information.

Over time the interest of the media in an issue wanes. Haiti's tragic earthquake and the aftermath is an example. The international communities reacted quickly to support the victims, brought on in large part by media coverage. However, little has changed for the victims in Haiti. Many remain homeless. Media attention has faded ("Haiti's Neglected Crisis," 2011).

To truly have impact on public policy, the media must provide consistent and continual coverage to follow-up on issues. The press must go beyond simply bringing issues to the public's attention and thoroughly examine the problems and suggest solutions. However, this will only happen if the public also shares an interest in finding solutions to the public-policy problems.

**Media Impact on Climate Change Policy**

Downs' (1972) "issue-attention cycle" suggests that a traumatic event is required to "catapult" an issue to the attention of the public and of policy makers. Superstorm Sandy in 2012 has led to numerous studies on the impact of climate change on disasters (Thompson and Kahn, 2014), but it does appear to have had sustaining effect on the public and politicians. While the media played a significant role in reporting the hurricane and its impact on the population of the eastern United States ($19 billion of damage was done to the New York City area alone), they appear to have done little to follow-up and push forward a policymaking agenda.

From Sandy came a wealth of data that is available to scientists and decision makers. This data point to the failures in responding to the storm and to the opportunities which followed the storm (Thompson and Kahn, 2014). The data come in the form of information from weather buoys, cell phones, security cameras, population surveys and social media. None of this seemed to effect the regular news cycle with the traditional media seeming to quickly lose interest in Sandy.

One media impact from Sandy is in heightened awareness and use of social media. While traditional media still played an important role in covering Sandy, more and more people went directly to the source through social media to keep informed and to protect themselves.

When Hurricane Katrina hit the shores of Louisiana and Mississippi in 2005, Facebook was just getting started and Twitter didn't exist. Now, FEMA has a Twitter account with nearly 400,000 followers in 2015 and FEMA director Craig Fugate has his own page, @CraigFEMA, with over 50,000 followers. The U.S. Department of Homeland Security (HSD) indicated in the 2013 National Preparedness report that during and immediately following Hurricane Sandy, "users sent more than 20 million Sandy-related Twitter posts, or 'tweets,' despite the loss of cell phone service during the peak of the storm." New Jersey's largest utility company, PSE&G, reported that during Sandy they used Twitter to notify the public of the daily locations of their giant tents and generators.

Inherent risks exist in using social media. One is misinformation. Sutton (as cited in Maron, 2013) claims that "all the fast-paced information available via social media does pose inherent risks when navigating emergency situations." Although false information eventually gets corrected by the "Wikipedia effect," Sutton notes that inaccuracies can also go viral. Rumor Control, run by FEMA, relies on local emergency personnel to correct misinformation. Another risk is fraud. The American Red Cross used cell phone technology to raise more than $5 million in the 48 hours following the Haiti earthquake in 2010, but at the same time cell phone texting and webpages
were used by criminals who appealed to emotion to steal cash (Maron, 2013). After the Newtown, Connecticut, school shooting, the FBI arrested a woman who claimed to be the relative of a dead victim and solicited money via Facebook and other sources.

Since 2010, the Federal Emergency Management Agency (FEMA) has used Twitter during all stages of a disaster, including before the event strikes, during the actual event, and after (Modern Business Associates, 2011). Prior to a disaster, FEMA monitors local weather reports (and tweets) and advises the public. As an example, in the case of floods, FEMA's posts on Twitter outline the parts of the U.S. experiencing flooding, share information about flood preparedness, and give advice to people about what they can do. The agency relies on official information, including forecasts from the National Weather Service and links from official emergency management agencies. FEMA typically re-tweets information from other government agencies. They use a tool to shorten .gov web addresses and can track how many hits each individual link draws.

The agency also uses social media to try to predict what a state might need to do to prepare for a potential disaster. For example, in its first attempts to use social media in September 2010 as Hurricane Earl moved up the East Coast, by monitoring Twitter, FEMA could see that tourists on the Outer Banks in North Carolina were evacuating, but many residents were not. That gave FEMA and state agencies the information they needed to make search and rescue plans for those residents.

Emergency agencies determine what people are saying by tracking hashtags. In the snow and ice storms in February 2011, the most commonly used hashtag was #snomg. During those storms, FEMA monitored what was happening by using HootSuite, a Twitter-adaptable program that displays all tweets using a given hash tag. During that storm, FEMA could tell Oklahoma was getting hit by ice and Chicago residents thought the storm had missed them—that was until they started tweeting as the storm got worse.

Twitter serves also as a news service, not only a social network. This is particularly true where tweeters are victims of the disaster. As eye-witnesses of the harm from the disaster, they become first line reporters of what is happening. A study of the 2009 flooding of the Red River in North Dakota (Starbird, Palen, Hughes, & Vieweg, 2010) showed that 10 percent of tweets were new information. However, much of the valuable information resulted from copying or adapting information from others (derivative information) and combining information (synthesis). The researchers found that fully 80 percent of the information was generated by people living the disaster, with the remainder being generated by the local and national media (Starbird, Palen, Hughes, & Vieweg, 2010). And the majority of information that was retweeted was news because it didn't exist elsewhere or on the Internet.

Another factor that made Twitter unique was that Twitter didn't only serve as a means of broadcasting news, but also as a platform for informational interaction. This provided a way for people to navigate through the enormous amounts of information, placing "virtual signposts" which they could follow. People retweeted information they felt was important, adding to the amount of information out there, but also signaling to their followers that this was information they needed to pay attention to. Tweeters use retweeting, copying or adapting information and combining information, as a way of organizing information and making sense of the many messages.

Twitter may also be a valuable source of information for policymaker decision-making as well, although there is some doubt as to whether policymakers can synthesize the enormous amount of information in time to arrive at a consensus about what the information is really saying. Nevertheless, public officials and policymakers can get feedback from their followers on Twitter.

Social media are changing the way people communicate about science and policy. In 2009 the Pew Research Center's Project for Excellence in began distinguishing traditional media coverage from social media reports. Global warming appears as one of the five major stories in social media whereas it doesn't figure nearly as importantly in the traditional print and broadcast media (Boykoff, 2011, p. 169).

While the big players still dominate social media, social media do more to equalize the playing floor so that the average person has a greater opportunity to receive and relay information. A farmer in India can check social media for weather reports and also report on his crop yields. Both global warming enthusiasts and deniers can put forth their viewpoints and more easily contact policymakers about their positions. Social media has challenged the
boundaries between "authorized speakers" for or against man-made global warming in the mass media and opened up a whole new area of discussion and broadening the discussion and bringing in new allowing people most affected by climate change and policy to comment on its impact (Boykoff, 2011, p.169).

The use of social media has changed the way the public is informed about disasters and how to recover from them. While the traditional media continue to play a key role, social media have given citizens a means to inform and protect each other as well as to alter public policy and the official approach to dealing with emergencies. The Haiti earthquake was a watershed moment that changed how social media are used in disasters. While social media were independently evolving in the years leading up to 2010, the use of social media in the Haiti disaster made public officials aware of their potential in disaster response. Since then, social media have played an important part in informing and keeping the public safe at both the local and national levels.

Conclusions

This chapter has examined the theoretical basis for media communication, describing journalists and the principles they use to write and report news. It describes the nature of objectivity and points out how difficult it is to achieve. Some authors support that notion that balance when faced with a truth, no longer is necessary. Studies are described which show the media impact on public policymaking as well has how the media functions in the public policymaking realm. The chapter describes the challenges of reporting science and applies these to coverage of global warming and climate change. Alternative viewpoints on climate change coverage are exposed. While media impact on disaster policymaking has been researched and defined, very little has been written about the connection among the media, climate change policy, and disasters. More research is needed here. Social media in disaster coverage are described in terms of their use and potential.

While few studies exist of mass media saturation using the diffusion of innovation model, research by Dispensa and Brulle (2003) and Fisher (2007) explored methodologies that could show the diffusion of ideas among the press. Their studies suggested that the press by-in-large had adopted the consensus view that climate change is human-caused. A need exists to examine current coverage comparing it with past coverage. Such a study would show the current state of global warming ideas among the media and further explore the methodology as a means of examining diffusion of innovation in the media.

Case Studies in Media Coverage of Climate Change

Use media coverage to research one of the following cases. Write a report that summarizes the media coverage. Consider all or some of the following questions: What issues are put forward? How is the issue framed? Is a context provided for the coverage and how is that done? What viewpoint does the reporting support and how does it do that? Does the reporting provide multiple viewpoints and how is that done? Does the reporting support a safe public and support public interest? Does the reporting further the public agenda and encourage action by policymakers?

Channel 4’s response to Al Gore’s *An Inconvenient Truth*

In 2007 documentary *The Great Global Warming Swindle* was shown on the Channel 4 in the United Kingdom as a response to Al Gore’s *An Inconvenient Truth*. It was watched by 2.5 million viewers and brought nearly 250 complaints to the UK Office of Communications, most of which were thrown out. U.S. public television chose not to broadcast the film. Because the claims were denied, Boykoff (2011) says further doubt and misunderstanding was introduced about the impact of human-caused climate change (p.59).

Mann’s Hockey Stick and IPCC 2001 report

In 1998, Michael Mann and two colleagues published a paper using mathematical modeling to reconstruct the earth’s past temperatures going back half a millennium and showing the recent northern hemisphere temperatures
had been "warmer than any other year since (at least) AD 1400." A graph showing this result looked much like a hockey stick. Mann and a colleague lengthened the shaft of the hockey stick back to the year 1000 AD--and then, in 2001, the UN's Intergovernmental Panel on Climate Change prominently featured the hockey stick in its Third Assessment Report. Based on this evidence, the IPCC proclaimed that "the increase in temperature in the 20th century is likely to have been the largest of any century during the past 1,000 years."

Then Canadian scientists Stephen McIntyre and Ross McKitrick uncovered a fundamental mathematical flaw in the computer program that was used to produce the hockey stick. Mann’s work was discredited, but Mann has come back defending his model with a book published in 2012 called *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines* (Mooney, 2013).

**Climategate**

In November 2009 computers at East Anglia University were hacked revealing emails that pointed to scientist fraud in manipulating data and lying about climate change findings. Again, in 2011 Climategate 2.0 revealed another 250 emails that put in doubt the quality of research by some climate change scientists (Watts, 2012). (Incidentally, this information is not available on Wikipedia. Wikipedia has a website administrator who changes negative information about the consensus position on climate change (Delingpole, 2009)).

**REFERENCES**


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