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The Framing of Climate Change in New Zealand newspapers

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Abstract

Climate change is the major global environmental challenge of our time. The urgency and ambition with which world leaders come to respond to this challenge will be determined in part by public perceptions of the issue, and the extent of their support for strong measures to tackle it. Despite a firm consensus within the scientific community regarding the threat posed by climate change however, the public appear to hold ambivalent beliefs and attitudes regarding the priority of the problem, and the evidence for its anthropogenic causes. Given the influential role the news media is understood to play in shaping public perceptions of and attitudes towards climate change, understanding this disparity (and eventually attempting to address it) necessitates a consideration of how the problem has been framed in news discourse. This thesis investigates how climate change has been framed across recent coverage in New Zealand’s three most widely read daily newspapers with the aim of building upon and contributing to the current literature.

The study was carried out through the use of a quantitative content analysis of articles published in the New Zealand Herald, The Press and The Dominion Post between June 2009 and June 2010. The study sample of 540 articles was collected through the electronic news database Factiva using the search terms “climate change” OR “global warming”. Frames were analysed deductively according to an experimental frame typology, and coding was carried out by the author. Using a coding scheme developed by McComas and Shanahan (1999) frames were coded as either “absent”, “dominant”, or “present”. Sources appearing in articles were coded similarly as either “absent” or “present”, and basic descriptive data recorded.
The results of the content analysis showed that Politics (26%), Social Progress (21%) and Economic Competitiveness (16%) frames were the most prominent in coverage, whilst frames emphasising potential Consequences (12%), Scientific Controversy (6%) and Moral (5%) considerations were the least common. Political actors (33%) and Academics (20%) appeared most commonly as sources whilst “Sceptics” represented just three percent of the total identified.

Building upon the current literature, these results suggest that New Zealand newspapers have framed climate change in terms largely in accordance with the scientific consensus position. Furthermore, this study has shown that rather than focus on the problem itself, the New Zealand Herald, The Press and The Dominion Post have framed climate change in terms emphasising potential political, behavioural and technological responses to the challenge of climate change, and the potential costs and benefits of these potential “solutions” to individuals, economies and society more generally.

Further research into how the issue has been framed in different media such as TV, popular magazines and websites is called for. This thesis presents a foundation of knowledge from which further studies may build.
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List of Abbreviations

ACC: Anthropogenic Climate Change

**Copenhagen Summit**: The United Nations Climate Change Conference in Copenhagen Denmark

ETS: Emissions Trading Scheme

GHG: Greenhouse gas (atmospheric gasses such as methane, carbon dioxide which contribute to the “greenhouse” effect)

IPCC: Intergovernmental Panel on Climate Change

NGO: Non-governmental Organisation

PPM: Parts per million (unit)

UNFCCC: The United Nations Framework Convention on Climate Change

NIWA: National Institute Water and Atmospheric Research
Chapter 1: Introduction

1.1. Climate Change

Anthropogenic climate change (ACC) represents a major environmental issue of our time. The 1992 United Nations Framework Convention on Climate Change (UNFCCC) treaty defines climate change as “a change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. This widely cited definition rests upon an ever-strengthening international consensus amongst the findings of climate scientists, that “most of the observed increase in global average temperatures since the mid-20th Century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations” (IPCC, 2007a; Oreskes, 2004).

Given the charge of assessing and compiling the current “state of knowledge” regarding scientific, technical and socio-economic research in climate change, the Intergovernmental Panel on Climate Change (IPCC) suggests that the warming effects of climate change are likely to have significant impacts upon physical and biological systems during the 21st Century and beyond (IPCC, 2007a, 2007b). Whilst the precise implications of particular impacts remain subject to academic debate, many of the predicted changes present significant health and security risks for human populations. These include rising sea levels, changes in the incidence and severity of extreme weather events, shifts in fresh water availability, changes in crop and livestock viability in tropical regions, growing ranges of certain disease vectors,
and risks associated with population displacements (Campbell-Lendrum, Corvalán, & Neira, 2007; Costello, Abbas, Allen, Ball, & Bell, 2009; IPCC, 2007b).

According to the IPCC’s Fourth Assessment Report, slowing the rate of climate change and attenuating potential impacts will require significant reductions in the emission of greenhouse gasses (GHG’s) in order to slow the increase of atmospheric concentrations (IPCC, 2007a). Stabilizing atmospheric GHG concentrations below 450ppmCO\textsubscript{2}e (parts per million CO\textsubscript{2} equivalent) presents the best chance of preventing severe climate change by limiting global temperature rises to less than 2°C above preindustrial levels (IPCC, 2007a; Solomon, Plattner, Knutti, & Friedlingstein, 2009). Achieving this goal will necessitate both behavioural changes on the behalf of individuals and international policy-based adaptive and mitigative initiatives (IPCC, 2007a; Leiserowitz, 2007; O’Neill & Nicholson-Cole, 2009). Studies such as the Stern Report suggest that the difficulty and costs associated with meeting these goals will continue to grow with time, meriting the employment of “precautionary principle” and thus early, decisive policy action (Haas, 2008; IPCC, 2007a; W. D. Nordhaus, 2007).

1.2. “Hopenhagen”

The United Nations Climate Change Conference in Copenhagen, Denmark (the Copenhagen Summit) held from 7-18 December 2009, presented a potential step towards international policy measures on emissions reductions. Proposed to produce a framework for a successor to the Kyoto Protocol\textsuperscript{1}, one of the key objectives

\footnote{The Kyoto Protocol is an international agreement adopted in 1997 which commits the 191 states which have signed and ratified it (including New Zealand) to reducing greenhouse gas emissions by...}
of the conference was to negotiate a legally-binding agreement amongst the 192 signatory nations that would see them commit to ambitious emissions reductions post-2012 (Bodansky, 2010; Falkner, Stephan, & Vogler, 2010). In order to facilitate negotiations, nations were asked to submit voluntary emissions target “pledges” which they would be willing to commit to, should a binding agreement be reached. However, such an agreement proved to be elusive. Despite high levels of optimism, negotiations broke down following disagreements over differences in the level of commitments expected of certain developed and emerging economies, and as a result, the conference was unsuccessful in producing a binding agreement. In its stead the Copenhagen Accord, a document drafted by USA and other major emitters, was “taken note of” by delegates of the Summit (see Bodansky, 2010 for review of the Copenhagen Summit). Whilst presenting some important steps towards future negotiations, including voluntary emissions pledges, the Accord is not legally binding and provides no incentive for nations to commit to more than the lower ends of their pledges (see Falkner et al., 2010).

Whilst with the signing of the Copenhagen Accord in 2009 the international community has officially “acknowledged” a 2°C “limit”, the continued absence of a binding policy commitment that includes the world’s biggest polluters means that thus far, there is little chance that it will not be breached (Copenhagen Accord, 2009; see Dellink et al., 2010 for review). Indeed, recent studies suggest that even under optimistic scenarios, current voluntary emissions targets are likely to lead to warming exceeding 3 degrees by 2100 (Rogelj et al., 2010; Solomon et al., 2009). This

a percentage below 1990 levels by the end of the first commitment period in 2012 (United Nations Framework Convention on Climate Change, n.d.).
essentially means that, as of the current state of international climate policy negotiations, we are not on track to meet the extent of reductions deemed necessary by the scientific community to avoid severe, and potentially irreversible climatic changes (Solomon et al., 2009).

1.3. **New Zealand**

According to the New Zealand Ministry for the Environment, the general impacts of climate change in New Zealand over the next 30 to 40 years are likely to include rising sea levels, higher temperatures, more extreme weather events such as droughts and floods, and changes in rainfall patterns (Ministry for the Environment, 2009a). As much of the country’s infrastructure and urban development is located in coastal areas, rising sea levels and resulting increases in coastal erosion, inundation and in storm surge levels pose a particular threat to New Zealand. More significant perhaps is the threat of rising seas facing low lying island nations that neighbour New Zealand in the South Pacific, such as Tuvalu and Kiribati (Australian Bureau of Meteorology & CSIRO, 2011). This issue presents New Zealand with not only a moral concern for its neighbours, but also the possibility of having to take in large numbers of “climate refugees” as the islands are lost to the sea and their people are left without countries (A. Bell, 1994a; McKinnon, 2009).

Increasing temperatures are likely to have both positive and negative impacts in New Zealand (Ministry for the Environment, 2009a). Whilst bringing increased risk of drought, floods and the spread of pests and diseases, warmer temperatures are likely to lead to an increase in agricultural productivity and export profits on which the economy depends. Indeed, agricultural products such as meat and dairy
products make up over half of the country’s exports and a significant portion of its
gross domestic product (New Zealand Ministry of Foreign Affairs & Trade, 2011).
New Zealand’s agricultural and tourism industries benefit from the country’s “clean
green” trading brand – a cultural “place myth” cultivated by industry in the 1980’s,
which has since come to be a part of the national self-identity (Coyle & Fairweather,
2005; Dew, 1999). Coyle and Fairweather (2005) describe the place myth as a
conglomeration of “various discrete meanings associated with real places or regions
regardless of their character in reality”, arguing that the place myth of “clean green
New Zealand”, and indeed the country’s success as an agricultural exporter, is
bolstered by images of the country as an Arcadia, ‘100% PURE’, the pastoral idyll, a
tourist paradise, nuclear free and a desirable place to live (pp. 149-150. See also Dew,
1999; C.Bell, 2008).
In spite of the brand upon which the country trades however, New Zealand’s output
of GHG’s ranks as the 11th highest per-capita in the world, and is due in large part to
the agricultural industry which makes up nearly half of its total emissions (Ministry
for the Environment, 2009b). The economic reliance on agriculture, combined with
the country’s comparatively low reliance on fossil fuels in energy generation, means
that New Zealand faces some unique challenges in seeking to reduce its emissions
output.
Whilst recognising the need to reduce emissions, the 2010 National Government
made it clear that it intends to be a “fast-follower” rather than a leader on climate
change policy, and seeks to achieve a balance between “the environmental risks of
climate change [and] the economic impacts on New Zealand of reducing
emissions” (Ministry for the Environment, 2009b). Nonetheless, falling far short of the cuts recommended by the IPCC, the highly conditional emissions reductions target of between 10 – 20 percent below 1990 levels taken by the Government to negotiations at the Copenhagen Summit was met with strong criticism both domestically and internationally. Dr. Rajendra Pachauri, Chairman of the IPCC, for example openly stated a need for “a much higher level of ambition” and that a “stronger commitment was required from New Zealand if the world was to have any chance of averting runaway climate change” (“UN head of climate change slams NZ emission target,” 2009). The 2010 National Government’s Emissions Trading Scheme has been criticised on similar grounds for being un-ambitious and “watered down” to the point that it offers only “weak incentives for subsidised industries to change…while generating few environmental gains” (Hood, 2010; Williams, 2010)

1.4. The Public

Amongst other factors, scholars argue that the current state of national and international climate policy has been underscored by a lack of public pressure in domestic environments (Haas, 2008; Nisbet, 2009). Studies of public perceptions pertaining to climate change in the United States, the United Kingdom and New Zealand indicate that whilst the majority of people think that climate change is a serious problem, it ranks relatively low overall in terms of concern and priority. (Leiserowitz, 2005; Leiserowitz, Maibach, & Roser-Renouf, 2010; Moser & Dilling, 2004; Nisbet & Kotcher, 2009; Ockwell, Whitmarsh, & O’Neill, 2009; ShapeNZ, 2009; Spence, Poortinga, Butler, & Pidgeon, 2011). Furthermore, despite the clear scientific consensus, recent studies have indicated confusion amongst the public regarding the
certainty and causes of climate change (Borick, Lachapelle, & Rabe, 2011; Leiserowitz et al., 2010; a. Spence et al., 2011). A recent UMR report for example indicated a growing perception amongst the New Zealand public that climate change is due to natural rather than anthropogenic causes; and found that over two thirds of respondents believed that the evidence for climate change was a matter of significant disagreement amongst scientists (UMR Research, 2010).

Reflected in similar studies in the US, these trends contrast markedly with the reality within the scientific discourse (Oreskes, 2004). What is more, studies show that perceptions of uncertainty, and inaccurate knowledge of the causes of climate change are likely to undermine effective action amongst the public in efforts to address the problem (A. Bell, 1994a; Bord, O’Connor, & Fisher, 2000; Corbett & Durfee, 2004; Morton, Rabinovich, Marshall, & Bretschneider, 2010). The ambivalence in public perceptions of climate change made evident in these trends is therefore telling perhaps of the limited pressure on policymakers and leaders to commit to urgent and ambitious policy measures in reducing emissions. Indeed, Whitmarsh and Lorenzoni (2010) argue that public support for and enactment of climate policy is a key concern of political organisations and world leaders, and is thus important to “effective and democratic climate governance” (p. 158; Sundblad, Biel, & Garling, 2008). As determinants of support and engagement, public attitudes towards, and understanding of climate change in turn play a key role in driving policy process, as well as in motivating behavioural change at the individual level (M. Boykoff, 2007a; Doulton & Brown, 2009; Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007; Nisbet,
1.5. The Media

As a primary source of public information on science and technology, the news media is understood to play an important role in shaping public understanding of, and attitudes towards complex and/or abstract scientific issues (A. Bell, 1994b; Nelkin, 1995; Wilson, 1995). Indeed, Dorothy Nelkin (1995) has argued that the public understands science “less through direct experience or past education than through the filter of journalistic language and imagery” (p. 2). Science, just as any other dimension of reality is of course not merely reflected in the media - but reconstructed according to a complex interaction of choices, norms and pressures determining “whether an issue will make the news, the highlight it will be given, and who is going to speak for it” (Carvalho, 2007, p. 223). The particular “filter” or frame through which audiences come to perceive issues can be seen to be the outcome of a process of selection, emphasis and presentation in the construction of news texts by which certain perspectives and considerations pertaining to a given issue come to be privileged over others (Entman, 1993). Frames thus work implicitly to suggest to the reader “what is relevant about an issue and what should be disregarded”, what the issue is “essentially” about (Gamson & Modigliani, 1989; Ho, Brossard, & Scheufele, 2008; Scheufele, 1999). Given that most people are unlikely to have relevant first-hand experience with issues such as medical and agricultural biotechnology, nanotechnology or climate change, scholars suggest that how they come to be framed in media representations can play a significant role in shaping public understanding
and attitudes towards them (Ball-Rokeach & DeFleur, 1976; Corbett & Durfee, 2005; Dirikx & Gelders, 2009). Indeed, Max Boykoff holds that the mass media have played a central role in shaping “the variegated and politicized terrain within which people perceive, understand and engage with climate science and policy” (2007, p. 479).

1.6. Summary & Aims

As a global environmental problem, climate change presents the international community with some significant risks and challenges. The urgency and ambition with which individual nations and world leaders come to respond to the threat of climate change will be determined in part by the extent of public support for strong measures to tackle the problem (A. Bell, 1994a). Despite the strong consensus amongst the scientific community regarding the need to reduce emissions however, recent studies indicate a certain ambivalence towards the problem amongst the New Zealand public. Given the influential role the news media is understood to play in shaping public understanding and attitudes towards climate change, attempting to better comprehend this disparity involves critical consideration of how the problem has been framed in news discourse.

Previous research has looked extensively at how climate change has been framed in US and UK broadsheet newspapers (e.g., M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004; M. Boykoff & Mansfield, 2008; Carvalho, 2007; Carvalho & Burgess, 2005; Dirikx & Gelders, 2009). More recently, burgeoning interest in the area has seen a growth in analyses of media coverage in a range of countries including France (Brossard, Shanahan, & McComas, 2004), Sweden (Olausson, 2009), Germany
(Grundmann, 2007), Portugal (Carvalho & Pereira, 2009), Peru (Takahashi, 2010),
Mexico (Gordon, Deines, & Havice, 2010), India (Billett, 2009), and New Zealand.

Whilst providing valuable insight, previous studies of New Zealand newspapers
have yet to analyse coverage in the country’s second most widely read newspaper
The Dominion Post. This represents a significant gap in the current literature,
considering that the circulation of The Dominion Post serves the lower half of the
North Island, and includes the Wellington Region – which as well as holding the
country’s political centre and capital of Wellington, is the third most populous region
in New Zealand (Statistics New Zealand, 2011). Furthermore, as of the time of
writing, there is a general dearth of research across the literature on coverage
published since 2008.

The current study aims to address these gaps, and build upon the literature by
investigating how climate change was framed in recent coverage across New
Zealand’s three most widely read broadsheet newspapers the New Zealand Herald,
The Dominion Post, and The Press.

The broader aims of the study include reinforcing and expanding upon the body of
knowledge on how climate change has been framed in New Zealand news discourse,
and situating these findings within the context of wider international research on
media representations of climate change. The focus of this study is to monitor the
presence of established frames in news discourse. Whilst efforts are taken to provide
adequate context on the matter of frame effects in laying the study’s theoretical
foundations, it should be made clear that this study does not seek to examine the
effects of these frames upon news audiences, nor to explain per se if and how media
representations have shaped public attitudes and understanding pertaining to climate change in New Zealand.

1.7. Thesis Overview

This thesis is composed of six chapters. Chapter 2 presents an overview of framing theory as the theoretical foundation of the study. This chapter introduces the concept of “frames” and “framing” before going on to discuss the processes of “frame building” by which certain frames come to be prominent in news discourse. Framing is further situated within wider processes in the social construction of issues and events in the media. This is followed by a discussion of current research regarding the psychological processes by which frames are thought to shape attitude and opinion formation, factors moderating the influence of frames, and the role frames are understood to play in attitude formation towards science issues in particular.

Chapter 3 presents a review of the current literature on representations of climate change in news media. The chapter begins with a brief history of the issue’s development through the lens of the news media and includes a discussion of key events, media attention and shifts in the prominence of different sources and actors over time. This is followed by an outline of previous research on how climate change has been framed in news discourse in New Zealand and other countries, and the various contextual factors which have shaped the framing of the issue in different ways. Research questions are presented at the end of this chapter.

In Chapter 4 I discuss the research design, and the rationale behind the deductive quantitative method adopted for the content analysis. The experimental frame
typology and coding scheme employed in the study are also discussed, followed by an outline of the methods, and the potential limitations of the study.

The results of the content analysis are presented and discussed in Chapter 5, revealing a prominence of frames emphasizing political dimensions of climate change and the responsibility of political leaders, and frames emphasising actions to mitigate GHG emissions as a matter of social progress. Frames emphasizing scientific controversy, the potential consequences of climate change and its moral implications were found to be the least prominent in coverage, highlighting some key differences from news discourse in the US, and in Germany and the UK. Political actors and academics were found to be the most prominent sources in coverage, whilst sceptics made up just 3% of sources identified.

Finally, Chapter 6 presents the conclusions of the study, and includes suggestions for potential directions in future research.
Chapter 2: Theoretical Foundations

This chapter presents a review of the theoretical foundations of framing theory as it is approached in the current study. First defining the concept of frames and framing, the chapter goes on to discuss the respective processes of “frame building” by which frames are produced and promulgated in news discourse; and “frame setting” by which they work to shape public attitudes, perceptions and opinions.

2.1. Frames and Framing

As it is conceptualised in the communications tradition, framing theory is based upon the premise that an issue or event can be understood from “a variety of perspectives, and be construed as having implications for multiple values or considerations” (Chong & Druckman, 2007a, p. 104). Framing refers to the processes by which particular perspectives and considerations come to be privileged over others in a communicating text, and the ostensible impact of this upon how audience’s come to interpret or perceive that issue or event (Entman, 1993; Goffman, 1974). This premise unites an otherwise multidisciplinary and theoretically diverse set of approaches under the umbrella of “framing studies” which scholars have described as more of a “bridging model” or “program of research” than a unified research paradigm (Entman, 1993; Reese, 2010). Indeed, despite its ubiquitous employment across the social sciences and humanities, framing theory is characterised by a lack of coherence and conceptual clarity with regard to a general understanding of precisely what frames are and how they are manifested in a text (Entman, 1991).
In attempting to describe media frames, scholars have offered varying definitions. Reese (2010) for example describes frames as “organising principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world” (p. 11). Gitlin (1980) suggested that frames are “persistent patterns of cognition, interpretation, and presentation, of selection, emphasis, and exclusion, by which symbol-handlers routinely organize discourse” (as cited in Kenix, 2008). Similarly, Ferree et al. (2002) describe media frames as “thought organizers”, or devices for packaging complex issues in ways where certain aspects of an issue are given more weight over others, “highlighting what is relevant about an issue and what should be disregarded” (as cited in Ho, Brossard, & Scheufele, 2008, p. 176). Whilst they differ to some degree, these definitions of framing similarly suggest that frames play an organising role in communicating texts by highlighting certain aspects of an issue over others as “essential” to an understanding or evaluation of that issue. Indeed, in what is the most widely cited definition of framing, and one that perhaps best encapsulates the frame concept as it is approached in the current study, Robert Entman suggests that:

To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described. (1993, p.52)

As manifested in communicating texts then, frames represent patterns of selection, emphasis and presentation which work to privilege certain considerations or perspectives pertaining to an issue or event over others. Frames thus define
problems – determine what a causal agent is doing with what costs and benefits; diagnose causes—identify the forces creating the problem; make moral judgments—evaluate causal agents and their effects; and suggest remedies—offer and justify treatments for the problem and predict their likely effects (Entman, 1993, p. 52). In this way, frames suggest to audiences how they might think about the prescribed issue, or at least present the terms upon which audiences might evaluate or interpret it. In framing the appropriateness of government funding for stem cell research for example, texts may emphasise considerations of either economic costs vs. benefits, or considerations of morality and ethics of funding the research, therefore offering different definitions of the “problem” and justifying potentially different courses of action in addressing it.

Whilst some frames may inherently favour a certain position on an issue, it should be made clear that frames are not specific issue positions for or against, but rather can encapsulate a range of positions on an issue hinging upon a shared central consideration. Following from the previous example, frames emphasising considerations of morality and ethics may feature in articles either opposing or supporting stem cell research. Indeed in studies of US news discourse around this subject, scholars found that opponents of stem cell research argued that it was morally wrong to destroy human embryos, whilst supporters argued that it was morally wrong to hold-back on research that could lead to new treatments for Parkinson’s disease, diabetes and stroke (Ho et al., 2008; Nisbet, 2010a; Nisbet et al., 2003).
2.1.1. **Framing Devices**

In their organising function, news frames are revealed in patterns of selection and emphasis evident in the text. Gamson and Modigliani (1989) describe these “patterns” as being articulated in texts as “interpretive packages” or clusters of symbolic devices which “give meaning to an issue” (p. 3). These symbolic devices are described as “framing devices”, and include structural, visual and lexical elements of presentation such as metaphors, visual images, headlines, catchphrases, particular details, word choices, use of quotations and exemplars, sources referred to and “sentences that provide thematically reinforcing clusters of facts or judgments” (Entman, 1993, p. 52; Gamson & Modigliani, 1989; Pan & Kosicki, 1993).

As framing devices, scholars suggest that words and metaphors function as “triggers” that help individuals negotiate meaning through the lens of existing cultural beliefs and worldviews and thus guide the reading of the informational content of the text in a particular way (Goffman, 1974; Nisbet, 2010a). The use of the term “frankenfoods” in referring to genetically modified food products for example plays to culturally-embedded tropes of “out-of-control science” and “scientists going too far”, thus eliciting negative connotations towards the practice (Coleman & Ritchie, 2011). Similarly, framing may involve choices between terms such as “freedom fighter” vs. “terrorist”, “death tax” vs. “estate tax”, each triggering different interpretive schema in the reader (Coleman & Ritchie, 2011; Goffman, 1974). Frames then can be thought of as particular “packages” of triggers which a prioritise certain aspects of a “perceived reality” and promote particular evaluations and interpretations by activating different interpretive schema (Van Gorp, 2007). In sum, framing devices shape how a text is read by providing a contextual treatment to the
The informational content of the article. As “the way stories are written” thus, frames can be considered to be ontologically distinct from the topic of the article (D’Angelo, 2002; Paletz & Entman, 1981; Pan & Kosicki, 1993).

To summarise, the current study approaches framing as a process of selection, emphasis and presentation in the construction of news texts whereby certain considerations or perspectives pertaining to an issue or event come to be privileged over others. Manifested in texts through the emphasis and exclusion of particular facts, and choices in the use of symbolic “framing devices”, frames work implicitly to suggest why an issue might be a problem, who or what might be responsible, and what should be done about it (Entman, 1993; Groffman et al., 2010). In their capacity to shape how issues are understood and perceived by individuals, frames in news discourse play a role in shaping how the public and political actors eventually come to approach them. Therefore, it is important to look more closely at the deeper processes that influence how issues are framed in news discourse (Scheufele, 1999).

2.2. Frame Building

Gurevitch & Levy (1985) hold that the news represents a site of public discourse upon which “various social groups, institutions and ideologies struggle over the definition and construction of social reality” (p. 19). Social reality is thus defined to some extent by the perspectives and ideologies favoured in the media, and the issues or events to which it lends prominence. In this role, the media plays a part in shaping the public and political agenda – what citizens and policymakers prioritise in
discussion – and in the construction and representation of “the social world that surrounds the people, events and places that we call reality” (Stein, 1972 as cited in Kenix, 2008, p. 119). In its capacity to shape how issues and events are presented to citizens, framing plays a key role in this process of social construction and furthermore in the production and reproduction of dominant ideologies and relationships of power (Chong & Druckman, 2007a). Considering this role, it becomes pertinent to look at processes of “frame building” – how and why particular frames emerge in media discourse, and who or what influences the shaping of these frames (Scheufele, 1999). Pioneers Gitlin (1980) and Tuchman (1979) laid the foundations for research in this area investigating the context in which frames are produced, and linking framing to wider issues of social and cultural power and “broader structural and ideological processes involving journalists, their news organizations, and their sources” (Carragee & Roefs, 2004, p. 216).

2.2.1. **Journalists**

Journalists and editors play a direct role in organising and presenting news discourse through the employment of frames (Van Gorp, 2007). Their interpretations and evaluations of issues and events, and the manner in which they subsequently come to frame them, are informed to an extent by personal norms and professional autonomy (Dispensa & Brulle, 2003). In the role of constructing the news and organising information for news audiences, journalists have been described at times as straddling the line between producers and consumers of meaning (Carragee & Roefs, 2004, p. 215). Indeed, journalists are often familiar with, or party to, elite forums and discourses – such as the political, scientific or economic - but draw also from a cultural lexicon shared with the public in evaluating and framing issues,
positioning them within the wider context of experience to outline their significance for news audiences (Carragee & Roefs, 2004; Gamson & Modigliani, 1989). Journalists and editors thus act as gatekeepers and mediators between elites and the public, employing frames to organise information and crystallise social meaning within public discourse (Dispensa & Brulle, 2003; Gamson & Modigliani, 1989; Scheufele, 1999). Framing in this sense, “is situated within the broader democratic process that links politicians and other opinion leaders to the public, primarily through the mass media” (Chong & Druckman, 2007, p. 104).

Whilst journalists are certainly privileged a degree of autonomy in framing, some scholars argue that this autonomy is limited and even exaggerated (Carragee & Roefs, 2004; Van Gorp, 2007). They argue that how journalists come to frame issues is importantly shaped by news organisational norms and pressures, as well as by distributions of social and cultural power. Gitlin (1980) for example suggests that journalists frame issues or events according to “principles of selection, emphasis and presentation composed of little tacit theories about what exists, what happens and what matters” (as cited in Vliegenthart & van Zoonen, 2011, p. 103). These “theories” represent the journalists’ own understanding and evaluation of issues, tempered by professional norms and routines determining the publication’s editorial line, perceptions of “news value” and “relevance”, and the potential for “drama” and familiar narratives in creating news stories (Anderson, 2009; Wilkins, 1993). In the context of the New Zealand mediascape, Hasan (2007) argues that commercial directives to sell more papers and compete for advertising revenue has resulted in tendency of journalists to frame environmental issues in terms of either “conflict” or
“human interest” in order to make them more “exciting” or “relevant”. Tight deadlines and shrinking news rooms further mean that journalists are more likely to stick to familiar storylines and frames when reporting on environmental issues (Hasan, 2007; Sessions, 2003).

2.2.2. Sources

News sources play a similarly influential role in news production and the framing of issues in the media (Chong & Druckman, 2007a; Crawley, 2007; Trumbo, 1996). This influence is due in-part to the professional demands of journalism which necessitate a relationship between journalists and sources in producing news stories (Berkowitz, 1992). Indeed, journalists are described as having a shared culture with their sources which guides their interactions in the production of news, and sees a significant proportion of new stories as “source-generated” (Nisbet et al., 2003). In covering issues which they might not be familiar with for example, journalists rely upon the expertise and authority of news sources such as scientists and politicians either in providing useful material or stories, or simply in bringing a sense of “legitimacy” to a story (Hasan, 2007; Sessions, 2003; Trumbo, 1996). Given this shared culture, and an understanding of journalists’ preferences for news value and familiar narratives in presenting news, sources often work to formulate their messages to suit these preferences (Nisbet et al., 2003). In doing so sources and the interests behind them can be seen to (unwittingly or otherwise) “promote” their own frames pertaining to the prescribed issue (Entman, 1993; Nisbet & Lewenstein, 2002). Sources then play a key role in the process of “frame building” by acting as “sponsors” of particular frames in media discourse around particular issues (Carragee & Roefs, 2004; Scheufele, 1999; Van Gorp, 2010).
Returning to Gurevitch and Levy’s (1985) statement, news sources can be seen to represent key actors in the “struggle over the definition and construction of social reality” (p. 19). Given that frames in media discourse play a role in shaping how issues or events come to be defined or “socially constructed”, it is understood that various social actors and stakeholders work to influence journalist’ framing in favourable ways by strategically defining problems, making judgements, and suggesting remedies in their role as sources (Van Gorp, 2007). As a multiplicity of frames may be presented in discourse around an issue, news sources can be seen to “compete” to define and delimit the terms of discussion - to frame it in a manner sympathetic to their interests or agendas (Antilla, 2005; Berkowitz, 1992; Entman, 2007; Gamson & Modigliani, 1989; Nisbet et al., 2003). With the news media as a stage in other words, sources are engaged in “framing contests” over how issues and events come to be defined, and thus potentially perceived and approached by the public and policymakers.

Considering the range of frames that might feature in discourse around a particular issue, and their potential to influence the public and policy makers, it becomes prudent to question their varying prominence e.g., which perspectives are heard, and which if any, are dominant (Chong & Druckman, 2007). Carragee and Roefs stress the importance of considerations of social and political power here, maintaining that the ability of a particular frame to “enter news discourse and…dominate it” is tied to the cultural and economic resources available to its sponsors (2004, p. 219). These considerations of resources are important as they determine to an extent the privilege and access social actors and stakeholders are accorded as news sources, and thus the
influence they may exercise over how issues are differently defined and discussed in news discourse (Carragee & Roefs, 2004).

Indeed, uneven distributions of cultural and economic resources mean that certain interests representing Government, Science, and Industry are accorded greater credibility as sources, and are thus more likely to be influential in controlling the framing of issues than others - in acting as “primary definers” (Chong & Druckman, 2007a; Hall, Critcher, Jefferson, Clarke, & Roberts, 1978; Nisbet & Lewenstein, 2002). Similarly, routine news practices such as placing reporters at major political institutions, or granting greater credibility to official sources over challengers reaffirms distributions of power, and contributes to the ability of elites to influence how journalists come to frame issues (Ryan, 1991; Gitlin, 1980; Tuchman, 1978). Industry interests also offer journalists means to meet professional demands through the provision of information subsidies, well-crafted websites and materials produced by public relations professionals through which they may influence framing (Nisbet & Lewenstein, 2002; Berkowitz, 1992). Given their greater resources to shape how issues are framed by journalists then, the mass media construct a social and political reality in which the interests and ideologies of officials and elites regularly exercise influence over public discourse and shape policy process (Carragee & Roefs, 2004).

Whilst this relationship of influence over public discourse is asymmetrical however, Entman (2007) argues that it is not necessarily one-way. Rather, he suggests that the diffusion of frames into public discourse is complex, with public opinion playing a crucial role in determining whether elites succeed in framing issues in their preferred
manner, and how issues are ultimately broached through policy responses (Entman, 2007).

Entman argues that, at least on foreign policy issues, frames originating from the administration shape the frames used by other elites…, media outlets and the public. However the public’s reaction to the initial frame feeds back to the media and other elites who then influence the administration’s (revised) view. (Chong & Druckman, 2007, p. 117)

Thus as the target audience of frames in news discourse, the preferences and opinions of the public themselves play a role in determining which frames come to be prominent in discourse around issues, under scoring the complexity of frame building processes.

To summarise, the frames that come to be prominent in public discourse around a given issue do not only reflect the work of journalists to “organise” information for their audiences, but are the result of broader structural and ideological processes in the social construction of issues in the media. How issues come to be framed in news discourse, and ultimately defined and addressed is thus importantly shaped by a combination of factors including the personal, professional and organisational norms and pressures under which journalists work to “organise” information; the cultural and economic resources available to interests acting as news sources; and to some extent, the opinions and preferences of the public.
2.3. Frame Setting

Pan & Kosicki (1993) hold that framing can be studied as a strategy both of constructing and processing news discourse. This section serves to round off the overview of framing studies by presenting a brief discussion of the cognitive processes by which frames are understood to shape attitudes and opinions of individuals; and the factors which are believed to limit their effects in doing so.

2.3.1. How frames shape opinions

Current understandings of frame setting processes are at an early stage of development and as such remain subject to a certain amount of scholarly debate regarding the importance of various factors affecting opinion and attitude formation (see Chong & Druckman, 2007a; Druckman, 2008; Scheufele & Tewksbury, 2007). Nonetheless, recent efforts to integrate current insights suggest that frames can shape frames through a combination of applicability and accessibility effects, and by affecting the importance attributed to certain considerations over others.

Offering a summary of the psychological mechanisms by which frames affect opinion formation on a particular issue, Chong & Druckman (2007) state that:

...people draw their opinions from a set of available beliefs stored in memory. Only some beliefs become accessible at a given moment. Out of the set of accessible beliefs only some are strong enough to be judged relevant...to the subject at hand. (p. 111)

Framing is understood to work at each of these levels:

Firstly, frames serve as cognitive constructs or schemas in that they suggest a connection between two concepts (Price & Tewksbury, 1997; Scheufele & Tewksbury,
In offering issue definitions and through processes of selection and emphasis, frames suggest what the issue is essentially about, and what broader considerations are relevant or *applicable* to the issue at hand (Gamson & Modigliani, 1989). For example, a news message might suggest that climate change is related to issues of public health, either highlighting an existing belief, or introducing a new consideration (Chong & Wolinsky-Nahmias, 2005 as cited in Chong & Druckman, 2007). Framing climate change in terms of public health suggests that considerations of public health are applicable to questions about action on climate change (Maibach, Roser-Renouf, & Leiserowitz, 2008). Exposure to such a frame sees the audience aware of a connection between the two concepts, and as such it becomes “available” in opinion formation.

Secondly, it is understood that people form attitudes or opinions based on the considerations or beliefs that are most salient or *accessible* in memory at a given time (Scheufele, 1999; Scheufele & Tewksbury, 2007). A particular frame might highlight or make accessible a particular consideration or existing schema in the individual, increasing the likelihood that they evaluate the issue using that schema (Chong & Druckman, 2007a; Scheufele & Tewksbury, 2007). The argument follows that the more often audiences are exposed to a particular frame, the more salient or accessible the associated considerations become when thinking about the issue (Chong & Druckman, 2007a; Iyengar & Kinder, 1987). Price & Tewksbury (1997) suggest that an *applicable* construct is far more likely to be activated when it is *accessible*. Likewise, research shows that an inapplicable construct is highly unlikely to be used in a given situation no matter how accessible it is (Scheufele & Tewksbury, 2007, see also...
Nelson et al., 1997, 1999 for findings challenging the role of accessibility in frame effect.)

In addition to accessibility and applicability effects, frames are understood to shape opinion by affecting the importance attached to certain issue-related beliefs (Druckman, 2008; Nelson, Clawson, & Oxley, 1997; Nelson & Oxley, 1999). A provocative study of framing effects upon tolerance of a Ku Klux Klan rally by T.E. Nelson et al., (1997) found evidence for this effect. In this study, the authors found that participants presented with an article employing a “free speech” frame were more likely to consider free speech as an “important” consideration and were more likely to tolerate the rally than participants presented with a frame emphasising the potential for threat to “public order”. A similar study by T.E. Nelson and Oxley (1999) provided further evidence that framing affected belief importance, finding that in considering an article about the development of a piece of property, participants exposed to an “environmental impact” frame were significantly more likely to rank considerations of environmental concern as important compared to those exposed to an “economic benefit” frame. These studies suggest that individuals might hold multiple beliefs and considerations about an issue, however the relative weight or importance given to those considerations in opinion formation significantly influences the outcome. By emphasising certain considerations over others, frames can affect the relative weight or importance attached to those considerations by the reader, and therefore potentially shape their opinions towards, or perceptions of the issue in a particular way (Chong & Druckman, 2007a; Druckman, 2008).
In sum, current research suggests that frames can work to shape opinions by establishing new beliefs as applicable to a given issue, by making certain beliefs accessible in memory, and by affecting the relative importance attached to particular beliefs or considerations (Chong & Druckman, 2007a; Druckman, 2008; Nelson & Oxley, 1999; Scheufele & Tewksbury, 2007).

2.3.2. **Moderators of frame effects**

A general approach in the social sciences holds that public preferences are somewhat arbitrary, and that high-quality opinions described as “stable, consistent, informed and connected to abstract principles and values” are rare amongst the public (Chong & Druckman, 2007a, p. 103). Framing effects have often therefore been addressed in the literature as evidence of elites’ ability to almost unilaterally manipulate the opinions of citizens (Druckman, 2008; Entman, 1993). Certainly, such a perspective is unsurprising considering that whilst many studies have found evidence that elite frames can produce effects, very few studies have investigated the limits of these effects (Druckman, 2001). In reality, audiences may be exposed to a variety of competing frames offering alternative interpretations on a given issue or event, their effects not always predictable (Chong & Druckman, 2007a, 2007b; Entman, 2007; Reese, 2007). More nuanced perspectives therefore point towards the more complicated conclusion that “some frames matter some of the time” (Brewer & Gross, 2010, p. 181).

Indeed, far from a hypodermic model of media effects, audiences are understood to be engaged in a negotiation of meaning in reading texts and the frames presented therein (Entman, 1993; Gamson & Modigliani, 1989; Takahashi, 2008). News frames
suggest to the reader connections between concepts or issues, however whether they “accept, ignore or reinterpret” those connections depends on various moderating factors (Neuman, Just and Crigler, 1992 as cited in D’Angelo, 2002). Amongst these moderating factors influencing frame effects, studies have highlighted perceived source credibility, individuals’ value dispositions and prior knowledge (Druckman, 2008; Nelson & Oxley, 1999; Nisbet et al., 2003; Scheufele & Tewksbury, 2007; See Druckman, 2001, pp. 241-245 for a useful summary of research on factors moderating frame effects).

*Source credibility* was identified as strong moderator of framing effects by Druckman (2008) who found evidence suggesting that the ability of a frame to alter belief importance or overall opinion in citizens is limited by the perceived credibility of its source. Framing effects, he argues, “may occur not because elites seek to manipulate citizens, but rather because citizens’ delegate to credible elites for guidance” (Druckman, 2008, p. 1045). This is particularly intriguing in light of findings by Schuefele and Lewenstein (2005) that in forming opinions on complex scientific issues, citizens rely strongly on cognitive “shortcuts” or heuristics. This suggests that citizens delegate to the frames posed by credible elites because it requires a lower investment than actively seeking out information themselves (Fiske & Taylor, 1991). The cultural authority bestowed upon scientists and government sources as “credible elites” thus might see the frames they propagate as more likely to influence opinions amongst the public.

*Value predispositions* have been identified as possibly the strongest limits on framing effects (Chong & Druckman, 2007a). Price & Tewksbury (1997) hold that only when a
frame resonates with “a specific existing interpretive schema acquired through socialisation processes or other types of social learning”, will it be considered effective or accepted by an individual (as cited in Nisbet, 2010b, p. 47). In other words, the extent of a frame’s potential to trigger a “frame effect” is contingent on its resonance with an individuals’ own set of strongly held cultural beliefs, values and ideologies (Druckman, 2001; Leiserowitz, 2006; Nisbet, Hixon, Moore, & Nelson, 2010). Brewer (2001) for example, found that prior opinions about gay rights fundamentally shaped individuals’ reactions to and evaluations of alternative gay rights frames (as cited in Chong & Druckman, 2007a). Moreover, when faced with competing frames or complex issues, research shows that that individuals will tend to rely more upon existing value dispositions in evaluating frames and forming opinions (Ho et al., 2008; Scheufele & Lewenstein, 2005).

Research into the role of issue-specific prior knowledge in moderating framing effects has produced conflicting findings. Work by Kinder & Sanders (1990) and Sniderman & Theriault (1999) for example found that framing effects were stronger in less informed individuals than in those who were better informed on specific issues (as cited in Druckman, 2008). By contrast, evidence from studies by Nelson & Oxley (1999) and Nelson et al., (1997) suggested stronger framing effects in individuals with greater familiarity with a given issue or argument. More recent research has shown that whilst issue-specific knowledge plays some role in moderating frame effects, its influence upon attitude formation is heavily moderated by the value predispositions of individuals (Ho et al., 2008; Liu & Priest, 2009; Scheufele & Lewenstein, 2005). This suggests, in other words, that the same knowledge may
moderate frame effects very differently amongst individuals with different sets of strongly held values and beliefs (Ho et al., 2008; Scheufele & Lewenstein, 2005). This finding is pertinent to the field of science communication in that it complicates the assumption of the "transmission model"² that positive attitudes and support for science and research are contingent upon scientific knowledge or literacy (Miller, 1998, 2004).

2.4. Chapter Summary

This chapter has provided a basic overview of some of the key concepts underpinning framing studies. Framing is established as the process of selection, emphasis and presentation in the construction of news stories by which certain considerations or perspectives pertaining to an issue or event come to be privileged over others. Manifested in texts through the emphasis and exclusion of certain facts, and choices in the use of symbolic “framing devices”, frames work to promote and justify particular problem definitions, causal interpretations, moral evaluations and/or particular treatment recommendations (Entman, 1993). Journalists employ frames to organise and “package” information for efficient relay to audiences, however the frames that come to dominate in discourse around a particular issue reflect also the professional and news organisational norms and pressures under which they operate (Carragee & Roefs, 2004; Van Gorp, 2007). In providing journalists with quotes, comment and information for stories, news sources also play

² The “Transmission” or “Scientific Literacy” model of science communication assumes a public informational deficit, suggesting that support for scientific research, and the prospect of citizens making informed, knowledgeable judgements about science-related issues are linked to higher rates of scientific literacy (e.g., Miller, 1998, 2004). In other words, the Scientific Literacy model suggests that scientific knowledge is a key predictor of positive attitudes towards scientific research and emerging technology (Ho et al., 2008; Miller, 2004)
a key role in shaping how issues come to be framed— the extent of their influence determined importantly by the cultural and economic resources at their disposal (Chong & Druckman, 2007a). Given the potential to shape how issues come to be defined and ultimately addressed by the public and policymakers, framing is situated within broader structural and ideological processes in the social construction of issues in the media.

Research into the psychological mechanisms by which framing can work to shape attitudes and opinions towards issues remains in its infancy and is subject to some significant scholarly disagreement. Nonetheless, current understandings hold that frames shape opinions by affecting the importance or weight attached to certain considerations pertaining to an issue, and through affecting the applicability and accessibility of various beliefs and considerations in the minds of readers (Druckman, 2008; Nelson & Oxley, 1999; Scheufele & Tewksbury, 2007). A general area of agreement in the current literature is that frame effects are moderated heavily by the value predispositions of individuals. Recent research has suggested that values also play a role in shaping the manner in which individuals’ knowledge about a given issue comes to inform their opinions on it (Ho et al., 2008; Scheufele & Tewksbury, 2007). This has some significant implications for the field of science communication in that it challenges the assumption that scientific literacy is a key determinant of positive attitudes and support for science issues. Whilst this recent work has not dismissed the importance of scientific knowledge in opinion and attitude formation, it suggests that strong awareness of the beliefs and values of
target audiences will be essential to effective communication strategies around issues such as climate change.

Overall, considering the current trends in public attitudes and perceptions towards climate change, research in framing studies underscores the need to understand how the issue has been presented in news discourse, and the actors that have been prominent as sources.
Chapter 3: Climate Change and the Media

The news media plays a fundamental role in the social construction of scientific and environmental issues. Indeed, as a primary source of information on such matters for the public, and playing a key role in the formation of public attitudes, how news media portray science-based issues has the potential to shape how they are defined, symbolized and ultimately how public and policymakers alike come to comprehend, evaluate and eventually respond to them (Antilla, 2010; A. Bell, 1994a; Corbett & Durfee, 2004; Nisbet et al., 2003; Wilson, 1995). Given this pivotal role in “mediating” how complex or abstract scientific issues are perceived and approached by society, a growing thread of research in science and political communication has focused upon media portrayals of “controversial” and emerging science-based issues including medical and agricultural biotechnology (e.g. Marks, Kalaitzandonakes, Wilkins, & Zakharova, 2010; Nisbet & Lewenstein, 2002; Stewart, Dickerson, & Hotchkiss, 2008), nanotechnology (Lee, 2005; Nisbet et al., 2003; Scheufele & Lewenstein, 2005), and of particular relevance to the current study, climate change.

Studies analysing media representations of climate change have burgeoned significantly over the past two decades, and have for the most part focused upon coverage in newspapers. Studies have looked at a broad range of aspects of climate change coverage including the presence of issue-attention cycles (Brossard et al., 2004; McComas & Shanahan, 1999; Trumbo, 1996), the scientific accuracy of reporting (A. Bell, 1994b; Nissani, 1999), sources of reporter knowledge (Wilson, 2000), and the framing of the issue in news discourse. Whilst early studies have focused particularly
on the US news media (e.g McComas & J. Shanahan, 1999; Trumbo, 1996), more recently there has been a significant growth in studies analysing coverage in media around the world including the UK (e.g. Carvalho, 2007; Ereaut & Segnit, 2006), France (Brossard et al., 2004), Germany (Weingart, Engels, & Pansegrau, 2000), Sweden (Olausson, 2009), Finland (Dispensa & Brulle, 2003), Holland (Dirikx & Gelders, 2010), Peru (Takahashi, 2010), Portugal (Carvalho & Pereira, 2009), India (Billett, 2009), Australia (Howard-Williams, 2009) and New Zealand (Kenix, 2008). Among these more recent studies have been an increasing number of comparative studies which have contributed to the body of knowledge on how various factors internal and external to news organisational practices work to shape the frames which come to be most prominent in news discourse (M. Boykoff, 2007a; Brossard et al., 2004; Dirikx & Gelders, 2010; Grundmann, 2007; Grundmann & Krishnamurthy, 2010; Howard-Williams, 2009).

This chapter provides an overview of how climate change has been presented in newspapers coverage. Included is a brief overview of how media coverage has varied in relation to key events in the development of the issue, how climate change has been differently framed in news media around the world, and how the framing of climate change has been shaped by, and reflects differing political, economic, cultural contexts, and journalistic and news organisational norms.
3.1. Climate Change and the Media: an Abridged History

The following section presents a general overview of the development of climate change as a socially defined problem through the lens of the newspaper coverage. The overview highlights key events and “critical discourse moments”, the actors that have been prominent in coverage, and how media attention has varied over the recent history of the issue.

Some of the earliest accounts of climate science in the news media have been traced to the early to mid-1900’s, with observations of changes in the earth’s climate addressed by newspapers as far back as 1932. By the 1950’s, the possibility of a human contribution to these changes appeared in headlines, with some articles exhibiting a remarkable awareness of the potential problem by linking the actions of individuals in driving their cars, for example, to the emission of carbon dioxide gas which “acts like the glass in a greenhouse” (Cowen, 1957 as cited in M. T. Boykoff & Roberts, 2007, p. 4). Although such articles present an early, rather lucid awareness and understanding of anthropogenic contributions to the “greenhouse” effect, they represent rare instances of what was otherwise sparse media coverage up to the 1980’s as the issue remained largely within science and “administrative” domains. Early stages of the issues’ development appear to be characterised by low levels of media attention, a focus upon technical and science framings, and a dominance of scientists featuring as primary sources and claims-makers (Anderson, 2011; Nisbet & Huge, 2006; Trumbo, 1996).
3.1.1. The late 1980’s

In a period characterised by growing media power, the latter part of the 1980’s witnessed a “perfect storm” of concatenating political, environmental and scientific moments which would see climate change rise to the top of news agendas - and quickly - public and political agendas (McChesney, 1999 as cited in M. T. Boykoff & Roberts, 2007). Amidst growing concern from climate scientists and bodies such as the United Nations Environment Program (UNEP) and the World Meteorological Organisation (WMO), international and domestic climate policy had begun to take shape in the mid-1980’s, culminating in the establishment of the IPCC in 1988, and a burgeoning of media and political interest in climate change (Boykoff & Roberts, 2007). A warning from German scientists to avoid the coming “climate catastrophe” in 1986 for example was met with a media frenzy, followed by a direct response by politicians which saw commissioning of a report to establish a scientific and economic consensus on the problem and its potential solutions (Grundmann, 2007, p. 425; Weingart, Engels, & Pansegrau, 2000, p. 269).

In June of 1988, in what is often noted as the “tipping point” at which climate change was pushed into mainstream politics and into the public consciousness (at least in the developed world), NASA scientist Dr James Hansen testified to the US Congress that he was “99% certain” that anthropogenic climate change was real and underway (Anderson, 2011; Shabecoff, 1988 as cited in M. T. Boykoff, 2008, p. 12; Grundmann, 2007; Trumbo, 1996). Given the orientation of environmental news towards “sudden, visually dramatic disasters rather than long term processes of gradual environmental deterioration”, the setting of Hansen’s testimony against the milieu of a severe drought, heat-waves and major fires in North America perhaps
provided the spark necessary to ignite widespread media attention to climate change (Anderson, 2011, p. 2; Trumbo, 1996).

In wake of the events of 1988, media coverage of climate change jumped sharply in the UK, Germany and the US, and continued to increase globally into the end of the decade (M. Boykoff & Boykoff, 2004; M. T. Boykoff & Roberts, 2007; Carvalho & Burgess, 2005; Weingart et al., 2000). This widespread attention was reflected in a sharp increase in public concerns over the “greenhouse effect”, the introduction of two US Senate bills to combat global warming and a certain optimism over potential solutions – with the nuclear industry in particular being quick to offer up potential ways to reduce GHG emissions (M. Boykoff & Boykoff, 2004; M. T. Boykoff & Roberts, 2007; Trumbo, 1996). In October of 1998 UK Prime Minister Margaret Thatcher drew attention to the threat of climate change in an address to the Royal Society of London, stating that “we may have unwittingly begun a massive experiment with the system of the planet itself”, initiating a narrative in the UK press which for the first time defined climate change as major risk to human security (as quoted in Carvalho & Burgess, 2005, p. 1462). In New Zealand, where the media profile of climate change had steadily increased over the late 1980’s, 1988 saw similarly high levels of coverage in major-centre newspapers, as well as the initiation of political, research and communication initiatives towards addressing the issue (Bell, 1994, pp. 35-36).

Political interests had begun to appear more frequently as news sources towards the end of the ‘80’s, however coverage appears to have reflected primarily the perspectives of climate scientists and advocates, and remained framed in terms of
potential consequences of climate change, defining the problem and diagnosing its causes (Trumbo, 1996; Wilkins, 1993)

3.1.2. The 1990’s
In 1990, the publishing of the IPCC’s First Assessment Report for the first time expounded the scientific consensus on anthropogenic climate change. This was reiterated in the “Scientists’ Declaration” which followed the World Climate Conference in Geneva that year stating that “A clear scientific consensus has emerged on estimates of the range of global warming that can be expected during the 21st century...Countries are urged to take immediate actions to control the risks of climate change” (as quoted in M. T. Boykoff & J. M. Boykoff, 2004, p. 131).

International efforts to combat climate were soon set in motion at the Rio Earth Summit in 1992 with the establishment of the UN Framework Convention on Climate Change (UNFCCC), signed by 160 countries including New Zealand (Bell, 1994, p. 36). This was followed by the signing of the first binding international agreement towards emissions reduction, the Kyoto Protocol in 1997. Whilst editorial fatigue and “issue competition” from the onset of the Gulf War saw a dip in US coverage between 1992 and 1996, global trends show continuing growth in media attention to climate change over the decade. Peaks in coverage are variously associated with the Rio Earth Summit, deliberations over the Kyoto Protocol, the release of successive IPCC Assessment Reports and the breaking of Larson B ice shelf in Antarctica (Anderson, 2011; Boykoff Roberts, 2007).

Whilst a “clear consensus” had emerged in the early 1990’s, a realisation perhaps of the risks presented by climate change, and the economic costs and policy measures
associated with mitigative actions meant that climate change was becoming an increasingly complex and politicised issue. The “scope of participation” or range of voices competing to define and delimit discourse around the issue broadened significantly in the early 1990’s as industry, political elites and environmental interests began to appear more frequently in coverage (A. Bell, 1994a; McComas & Shanahan, 1999; Nisbet & Huge, 2006; Trumbo, 1996). In the US, sceptics buoyed by conservative political and fossil fuel interests also became more visible over this period. In 1997 – the year of the Kyoto negotiations – sceptics were referenced in an equal number of articles as the IPCC and advocates such as James Hansen (Grundmann, 2007; McCright & Dunlap, 2003, p. 365). This was reflected in a shift in US coverage from frames emphasising potential causes and consequences to an emphasis on controversy, politics and economic costs and impacts potential measures to stem emissions. Interestingly, Reiner Grundmann (2007) showed that whilst sceptics featured prominently in US coverage, they were virtually absent from German news coverage over the 1990’s and the issue continued to be framed in terms emphasising the scientific consensus on causes, and potential consequences (pp. 419-420). This divergence appears to have represented a more general one that occurred between US coverage, and coverage of the issue in Europe and New Zealand where sceptics have overall featured comparatively rarely in coverage.

Overall, studies of coverage in the UK (Carvalho & Burgess, 2005), Germany (Weingart et al., 2000), New Zealand (A. Bell, 1994a; Howard-Williams, 2009; Kenix, 2008; Williams, 2010), Peru (Takahashi, 2010) as well as the US (M. T. Boykoff & Roberts, 2007; Trumbo, 1996) show that in general, scientists lost the definitional
control of climate change they had held on the issue early in its development, as government and political sources have been found to feature as the most prominent in climate change coverage since the early 1990’s (Wilkins, 1993). These interrelated shifts in framing and participating sources represent aspects of media coverage which both catalysed and reflected a change in the social construction of climate change as a “technical” or “scientific” issue, into a social problem encompassing social, political and economic dimensions. Furthermore, the differences which begin to emerge in the presentation of the issue between US and German media serves to underscore the influence of sources and interests within national contexts upon its framing – something that will be discussed in greater detail later in the chapter.

3.1.3. The 2000’s
Recent studies show an unprecedented rise in media attention towards climate change in much of the world over the past decade (Boykoff, 2010, p. 18; Boykoff & Mansfield, 2011; Boykoff & Roberts, 2007; Anderson, 2011). Grundmann and Krishnamurthy (2010) found that across a twenty year sample, nearly 40% of all French, and more than 50% of all German articles on climate change were published during 2007. Similarly, an ongoing project by Boykoff and Mansfield (2011) tracking rates of coverage in fifty influential newspapers around the world recorded a five-fold increase in the volume of coverage between 2000 and the end of 2009 (see Figure 3.1) (M. T. Boykoff, 2010; see M. T. Boykoff & Mansfield, 2011).

As shown in Figure 3.1, peaks in attention are evident in 2007 and 2009, particularly so in “Western” nations. Interestingly, Boykoff and Mansfield’s (2011) tracking project has revealed a clear discrepancy in the levels of climate change coverage
between regions representing Europe, North America and Oceania, and those representing Asia and the Middle East, and South America/Africa.

**Figure 3.1.** Graph of World Newspaper Coverage of climate change or global warming in fifty newspapers in Oceania (NZ, Australia, Fiji), Europe (United Kingdom, Ireland, Czech Republic, Moscow) and North America (Canada, United States) Africa & South America (Argentina, South Africa), Asia & Middle East (India, Japan, Israel, South Korea, Pakistan, Malaysia, China, Singapore) (M. Boykoff & Mansfield, 2011).

In considering that seven out of the eight developing nations distributed across the study sample are located within the latter regions, we might assume that this disparity – marked by significantly lower coverage in Asia/Middle East and Africa/South America – is one characterised in part along developmental lines. Such an interpretation is merited by the suggestion of scholars that the capacity of journalists
in developing countries to cover the issue has been constrained by limited access to “clear, timely and understandable climate-related resources and images” (M. Boykoff, 2010, p. 17) and a lack of training to cover the intricacies of climate science and policy (Takahashi, 2010). Furthermore, as suggested by Billet’s finding that issues such as poverty reduction and economic growth were often referred to in Indian newspaper articles as taking precedence over the problem of climate change, the lower rates of coverage observed in the Global South are likely a reflection of a departure between the immediate priorities of developed and developing nations (Billet, 2009; Boykoff 2010).

Scholars have suggested that the rapid growth which lead to the 2007 peak in coverage in much of the developed world is linked to the occurrence of certain major cultural, weather and policy “events” associated with climate change (Boykoff, 2010, p. 18; Boykoff & Mansfield, 2011; Boykoff & Roberts, 2007; Anderson, 2011). This included reporting around a succession of events beginning in 2005 with the Group of Eight (G8) Summit in Gleneagles, Scotland, and the destruction wrought by Hurricane Katrina in New Orleans, USA (Anderson, 2011; M. T. Boykoff & Roberts, 2007; Grundmann & Krishnamurthy, 2010). In 2006, the release of the hugely successful documentary film “An Inconvenient Truth” which featured former U.S. Vice President Al Gore discussing the evidence for climate change, is argued to have played a significant role in its’ permeation into an array of political, economic, social and celebrity issues – effectively boosting the range and volume of articles in which the issue was discussed, and pushing it into the mainstream public consciousness (M. T. Boykoff & Roberts, 2007, p. 7). The publishing of the “Stern Review” on the
economic costs of climate change mitigation, adaption and impacts; and the Twelfth Conference of the Parties (COP12) in Kenya later that year saw media attention continue to intensify until it peaked in 2007 with the release of the IPCC’s Fourth Assessment Report (Anderson, 2011; M. Boykoff, 2010; Grundmann & Krishnamurthy, 2010). These findings are broadly consistent with those of a recent small-scale study of New Zealand newspaper coverage by Kenix (2008), who suggests that attention in the New Zealand Herald and Scoop.co.nz between 2006 and 2007 featured a focus on “An Inconvenient Truth” and statements by the IPCC. This study furthermore found that political actors featured most prominently in coverage as quoted sources in New Zealand newspapers over this time period, whilst academics and scientists followed close behind (Kenix, 2008). Similarly, a study comparing climate change coverage in New Zealand (New Zealand Herald and The Press) and Australia (Sydney Morning Herald and the Courier Mail) in July 2007 found that newspapers in both countries gave particular attention to government as well as industry sources.

3.1.4. 2009
Following a brief loss in momentum with the onset of the 2008 global financial crisis, scholars suggest that the major peak in coverage seen in 2009 (see Figure 3.1) is associated with two “key discursive moments” in the recent development of climate change as an issue – the “climategate” saga in November, and the Copenhagen Summit in December that year (Anderson, 2011; M. Boykoff, 2010). Whilst analyses of news discourse (beyond the tracking of articles published) over this recent period remain absent, a brief account of the major events is presented below.
In late November 2009, private email accounts of researchers at the University of East Anglia Climate Research Unit were hacked, and their contents leaked online to various sceptical blog sites (Anderson, 2011; Hasselmann, 2010). The majority of the messages involved personal correspondences; however particular excerpts appearing online appeared to show that some of the world’s foremost climate scientists had conspired to exaggerate warming trends, suppress the publication of conflicting research and to systematically delete evidence that conflicted with established models (Greenberg, Knight, & Westersund, 2011). Whilst they were eventually cleared of misconduct following multiple independent reviews, some of the email exchanges nonetheless revealed unprofessional and antagonistic behaviour amongst leading climate scientists which plainly cast them in an unflattering light (Adam, 2010; Hasselmann, 2010). Scholars have suggested that the “climategate” saga, as it was dubbed, dealt a significant blow to “the credibility of the climate science establishment” (Greenberg, Knight, & Westersund, 2011, p. 66).

Proposed to produce a framework for a successor to the Kyoto Protocol post-2012, the UN Climate Change Conference in Copenhagen (COP15), held between the 7th and 18th of December 2009 was arguably the most important climate policy event of the past decade, and rose to the top of political, public and media agendas in the latter part of the year. A key objective of the conference was to negotiate a legally-binding agreement amongst the 192 signatory nations to the UNFCCC that would see them commit to ambitious emissions reductions (Falkner et al., 2010; Bodansky, 2010). Despite high levels of optimism however, negotiations broke down following disagreements over differences in the commitments expected of certain developed
and emerging economies. As a result, the conference was unsuccessful in producing a binding agreement, and in its stead the Copenhagen Accord was “taken note of” by delegates of the COP 15 Summit (see Bodansky, 2010 for review of the Copenhagen Summit).

3.1.5. Summary
From James Hansen’s testimony to Congress in 1988, to the Kyoto Convention in 1997, and more recently the 2009 Copenhagen Summit, the foregoing section has shown that media attention to climate change over the past three decades has tended to be closely associated with the political agenda and is linked to policy developments (Anderson, 2011; M. Boykoff & Boykoff, 2007; Carvalho & Burgess, 2005). Moreover, coverage of climate change has shown to be strongly driven by “events” rather than by any “natural cycle” of issue attention pertaining to developments in climate science (M. Boykoff & Boykoff, 2007; Ungar, 1992). Indeed, scholars argue that because of a discrepancy between the time-scales upon which science (as an ongoing process) and the news agenda (which tends to follow a 24-hour cycle) operate, science and environmental issues must “piggyback” on dramatic real-world events in order to gain significant media coverage (A. Bell, 1994b; M. Boykoff & Boykoff, 2007; Howard-Williams, 2009; Ungar, 1992).

It has also been demonstrated that as climate change has developed from a “scientific” issue, into a socially-defined problem, the range of actors appearing as sources in news discourse has broadened significantly from the initial focus on scientists and academics. Whilst political and governmental figures over-took scientists in terms of their prominence as sources in the late 1980’s to early 1990s,
studies have shown that both have continued to dominate as “primary definers” on the issue in newspapers around the world (Kenix, 2008; Takahashi, 2010; Trumbo, 1996). This tendency to give preference to “authoritative” sources is consistent with the argument that the access of sources to news media is closely associated with the cultural and economic capital they possess (Carragee & Roefs, 2004). Furthermore, studies suggest that journalists have tended to rely upon political sources in particular for the reason that they tend to be easily available for comment within short time-frames and to bring legitimacy to stories (Hasan, 2007; Sessions, 2003). Nonetheless, as highlighted in the rise of sceptics in the US media, the sources appearing in coverage also reflect other influential factors. In the case of the US, this has included the country’s powerful fossil fuel and conservative political interests. The discrepancy between rates of coverage in the developed and developing world further highlights that media coverage of climate change is shaped within a complex web of contextual factors – something that will be further elucidated later in this chapter.

Finally, this section has shown that whilst recent studies have asserted general links between recent events and the worldwide peak in coverage in late 2009, an absence of analyses of coverage either in New Zealand or elsewhere over this period present at the time of writing, a clear gap in the current literature which needs to be addressed (Anderson, 2011; M. Boykoff, 2010).

3.2. The Framing of Climate Change in Newspapers

Whilst the preceding section dealt with more general trends in the development of climate change as an issue in the news media, this section presents a summary of
how climate change has been differently framed in newspaper coverage around the world. One area of considerable crossover within the current literature has been the analysis of how the state of scientific consensus over the reality and causes of climate change has been differently framed. As such, the manner in which the consensus position has been presented offers a useful way to structure a discussion of the current literature on how climate change has been differently framed.

3.2.1. Climate Change as “Uncertain”
The preoccupation with uncertainty in the literature is perhaps partly attributable to much of the foundational research in the field being based on US media coverage, which scholars suggest had by the 1990’s begun to cast doubt upon the perspective that climate change was real and man-made (M. Boykoff & Boykoff, 2004, 2007; Corbett & Durfee, 2004; Trumbo, 1996; Zehr, 2000). In a study of coverage in the US popular press between 1986 and 1995 for example, Zehr (2000) found that climate change was regularly framed in terms emphasising controversy and disagreement, and that uncertainty was “a highly salient theme”. A seminal study by Boykoff and Boykoff (2004) of coverage in the New York Times, the Washington Post, the Los Angeles Times, and the Wall Street Journal between 1988 and 2002 showed similar findings, demonstrating that whilst overt scepticism or denial regarding the anthropogenic causes of climate change was rare, the majority (53%) of articles in the sample placed roughly equal emphasis on perspectives supporting the scientific consensus, and those expressing dissenting claims, effectively framing the issue as one upon which scientists remained deeply divided. Reflected in numerous studies of US press coverage, these implications of disagreement and uncertainty over the evidence for climate change however contrast starkly with the reality evident in the discourse of
climate science (Antilla, 2005; M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004, 2007; Corbett & Durfee, 2004; Oreskes, 2004; Zehr, 2000). In an effort to gauge the accuracy of media framings of uncertainty and dissent apparently rife in the scientific community over ACC, Naomi Oreskes (2004) carried out a content analysis of abstracts published in refereed scientific journals between 1993 and 2003 on the subject. She found that out of the 928 articles in the sample “remarkably, none…disagreed with the consensus position” maintained by the IPCC and other scientific bodies, that anthropogenic GHG emissions were contributing to a rise in global temperatures (IPCC, 2007a; Oreskes, 2004, p. 1686). Dispelling the rift in the scientific community conjured by the media, Oreskes’ study instead brings in to focus the divide between media representations and actual levels of uncertainty in climate science pertaining to this specific (and critical) claim in the US (Antilla, 2010).

Whilst a recent study by Boykoff and Boykoff (2007) suggests this focus on uncertainty is no longer dominant in the US press, Antilla (2010) argues that it continues to pervade due the fact that after almost two decades, some “members of the US press may have boxed themselves inside a package of (phony) debate” (p. 251). Max Boykoff (2008b) similarly suggested that whilst US coverage appears to be improving with regard to the accurate attribution of climate change to human activity, an overall trend of inadequate reporting by the mass media persists (M. Boykoff).

3.2.2. “Real, non-linear and urgent”
A growing body of comparative studies show that whilst this emphasis on “uncertainty” is by no means limited to US coverage, it remains largely centred there
Indeed, in comparison to the US, studies of newspaper coverage in Germany (Grundmann, 2007), Sweden (Olausson, 2009), France (Brossard et al., 2004; Grundmann & Krishnamurthy, 2010), Holland (Dirikx & Gelders, 2010), New Zealand (Howard-Williams, 2009; Kenix, 2008), Peru (Takahashi, 2010), Portugal (Carvalho & Pereira, 2009) and India (Billett, 2009) have shown a generally strong alignment with the consensus that anthropogenic climate change is “real, non-linear and urgent” (Antilla, 2010, p. 251).

Whilst rates of coverage appear to be lower in developing nations, studies suggest that when climate change is reported on, it is most often referred to as a scientific reality (Billett, 2009; Gordon et al., 2010; Takahashi, 2010). Studies by Takahashi (2010) and Gordon et al. (2010) for example respectively found that scientific controversy and conflict were either absent or deemphasised in coverage in Peruvian and Mexican newspapers. In India, a major player in international climate policy as the 5th largest emitter of GHGs (“India’s greenhouse gas emissions rise by 58%,” 2010), Billet (2009) found that 98% of articles in a sample of English-language newspapers between 2002 and 2007 accurately attributed climate change to anthropogenic causes. Interestingly, Billet argues that Indian newspapers have framed the issue along a “risk-responsibility” divide as a problem caused by developed nations in the “Global North” and impacting developing nations in the “Global South”, stating that “climate change is divided between the threat faced by India and the Northern responsibility for this threat: cause outside, effect inside” (Billett, 2009, p. 8).
Politics
Olausson (2009) discusses a similar “us vs. them” distinction in Swedish newspaper coverage which emphasises conflict between nations in the European Union and the United States over the latter’s efforts to stall the development of international climate policy. Indeed this tendency to frame climate change in a manner emphasising political dimensions appears to represent a more international trend in newspaper coverage. Brossard et al. (2004) for example found a theme of “International relations” to be dominant in coverage in the French broadsheet Le Monde between 1987 and 1997, whilst “controversy” was the least prominent. Carvalho and Pereira (2009) found that Portuguese media similarly framed climate change “as a matter of international politics” between 1990 and 2007 (p. 151). Furthermore, studies show an emphasis in Dutch, French and Swedish coverage upon the responsibility and/or ability of government actors to solve the problem of climate change (Dirikx & Gelders, 2010; Olausson, 2009).

Previous studies of New Zealand coverage show a similar tendency to frame climate change in a manner aligned with the scientific consensus, and emphasising considerations of politics (Howard-Williams, 2009; Kenix, 2008; Williams, 2010). In an analysis of coverage in the New Zealand Herald and “independent news” site Scoop.co.nz between 2006 and 2007, Kenix (2008) found that articles suggesting that the causes of climate change remained unclear made up just 9 percent of all content in the study sample, whilst an international politics frame was identified in just under half. In a qualitative frame analysis of 135 articles published over the month of July 2007 in the New Zealand Herald, The Press and Australian newspapers The Sydney Morning Herald and The Courier-Mail, Howard-Williams (2009) similarly
found that the majority of articles reflected the consensus position on climate change and that few associated the issue with any controversy. Moreover, both he and Kenix (2008) found that when sceptical viewpoints regarding the evidence for climate change were raised, they were largely dismissed or played down in New Zealand publications (Howard-Williams, 2009).

A potential limitation of Kenix’ findings however, is her definition of Scoop.co.nz as an “independent news website”. Indeed, Scoop.co.nz is in fact better described as an aggregator of press releases which features very little filtering or editing. As such, the framing of issues in its content cannot be considered directly comparable to that in a news publication such as the New Zealand Herald – in which journalists and editors play an active role in shaping and framing stories for their audience. Nonetheless, given the overall dearth of work examining the framing of climate change in New Zealand media, Kenix’ study provides useful context and insight upon which further studies can build.

“Solutions”
Rather than emphasise disagreement over the science, Howard-Williams (2009) found that around three quarters of the articles in his study sample made some reference to technological and market-based “solutions” to the problem and resultant economic benefits arising from reduced costs and green marketing opportunities. Williams (2010) similarly suggests that front page climate change coverage in The Press featured an emphasis on “economic” considerations such as benefits to the Canterbury region in terms of “gross domestic product or jobs” of various proposals to tackle climate change. An emphasis on “solutions” was found to be relatively
prominent in Peruvian and Canadian media coverage (Takahashi, 2008, 2010), whilst Ereaut and Segnit (2006) highlight the prominence of a “small actions” frame in the UK which suggests that citizens can help to stem the problem by doing “small things” such as buying energy efficient light-bulbs. This frame included also a focus on corporate “small actions” which suggested that “tackling climate change is good for business and the planet” (Ereaut & Segnit, 2006, pp. 20-21).

3.2.3. The “Climate Catastrophe”
European media share a strong propensity towards framing climate change in terms which reflect the scientific consensus. Studies suggest however, that “in the process of constructing global warming as a ‘real’ and significant issue worthy of collective action”, media in Germany, Sweden and the UK have gone further in minimizing or even omitting scientific uncertainties that remain within the scientific discourse regarding the “extent, and current effects of climate change” (Olausson, 2009, p. 431). Scholars argue that this tendency towards “certainty” has manifested in the proliferation of “scare stories” and “alarmism” around the potential impacts of climate change (M. Boykoff & Rajan, 2007; Doulton & Brown, 2009; M Hulme, 2007; Ladle, Jepson, & Whittaker, 2005; Risbey, 2008; Weingart et al., 2000).

Germany
In Germany, Weingart et al. found that from as early as 1986, a discourse of “Klimakatastrophe” or, “climate catastrophe”, based on “sensationalism, negativity and unequivocal clearness” had emerged in the national press (2000, p. 275). In contrast to the US, the German press consistently emphasised a scientific consensus on the issue, however their perceptions of certainty also spilled over into predictions over decidedly uncertain, often apocalyptic scenarios and projections of impending
(and seemingly inevitable) “doom and gloom” (Weingart et al., 2000). Krauss and von Storch (2005) argue that the perception of the coming “klimakatastrophe” became a central point of reference in German coverage of climate change, and was reflected further in the tendency to interpret past and present extreme weather events, such as the severe flooding of the Elbe River in 2002, or that in New Orleans in 2005, as harbingers or even early effects of the coming “catastrophe”.

**Sweden**

Olausson found that on the rare occasion that the Swedish press did report on scientists’ hesitation to attribute current extreme weather to climate change, scientific uncertainty was minimized through the juxtaposition of the lack of evidence for the connection between the two, with the plausibility of such a connection e.g., “…Nevertheless Markku Rummukainen can very well imagine that the raging storm of last week is a sign of the escalating greenhouse effect” (as quoted in Olausson, 2009, p. 431). Olausson (2009) argues that this was representative of a broader “reluctance to display any kind of scientific uncertainty that would undermine the demand for collective action”, which she found to permeate coverage in Swedish newspapers between 2004 and 2005 (p. 421). This was realised further in a tendency to employ “dramatic, negative and sensational” presentation in the discursive construction of “scare stories” around climate change (Olausson, 2009, p. 431).

**The United Kingdom**

The use of an “inflated or extreme lexicon” in climate change discourse has also been found to be prominent in the UK. Ereaut and Segnit (2006) for example found that alongside the “small actions” frame discussed earlier, a construction of climate change “as awesome, terrible, immense, beyond human control…” was dominant
across a range of media in the UK between 2005 and 2006 (p. 7). Through a discourse analysis of climate change coverage in the UK “quality” press between 1997 and 2007, Doulton and Brown (2009) found similarly that discourses “concerned with likely severe impacts” dominated between 2006 and 2007, and have done so in *The Guardian* and *The Independent* since 1997 (p. 191). A small-scale study comparing climate change headlines in UK and US press similarly suggested that UK coverage following the release of the 2007 Fourth Assessment Report was characterised by an “alarming tone” (Hulme, 2007). Hulme (2007) found that whilst US headlines were generally neutral in tone, those in the UK conveyed a message of “rising anxiety” through the employment of phrases such as “Final warning” and “Worse than we thought”, and adjectives including “catastrophic” and “devastating” - terms and evaluations which he argues were not qualified from content of the report itself.

Interestingly, in a comparative analysis of media and scientific climate science discourse Risbey (2008) challenges Hulme’s assertion, finding that the view of climate change discourse in the UK as “alarming” is in fact not inconsistent with the science. Indeed, Risbey (2008) raises an important distinction between what are “alarmist” and “alarming” discourses, arguing that it ultimately falls upon a division amongst climatologists themselves - some of whom think the shift in discourse towards more grave assessments of the problem are concordant with the evidence, and some who think that the shift is rhetorical and inconsistent with the science (pp. 34-35). Nonetheless, the findings above point to a difference in the construction of climate change in the UK, Sweden and Germany both with the US, and with the
majority of other countries – New Zealand included - which have been studied thus far.

3.3. **Potential Effects**

Whilst these approaches to constructing scientific uncertainty are fundamentally different, research suggests that they may be similarly problematic with regard to their effects on how audiences come to engage with, and potentially respond to climate change. In a particularly interesting study, Corbett & Durfee (2004) found for example that the presence of controversy in news stories about climate change had a significantly negative influence on the reader’s perception of its certainty, whilst the inclusion of context - regarding the wider body of research - had the opposite effect of increasing their perceptions of certainty. Indeed, Morton et al. (2010) argue that as people are generally understood to be averse to uncertainty and vagueness, perceptions of uncertainty in climate change are much more likely to undermine effective action amongst audiences than to stimulate it.

Similarly O’Neill and Nicholson-Cole (2009) found that whilst the kind of “fear-inducing” and “alarming” messages which have characterised coverage in the UK, Sweden and Germany have the potential to draw attention to climate change, fear was generally an ineffective tool for motivating genuine personal engagement with the issue. Rather, these kinds of messages are likely to induce anxiety amongst certain people, leading potentially to “saturation” and outright denial of the problem (Moser & Dilling, 2004). Moreover, by presenting particular projections and hypotheses as “certainties”, news media effectively create a situation for such claims
to “backfire” if and when those scenarios fail to materialise - something which has apparently begun to occur in Germany (Ladle et al., 2005; Weingart et al., 2000).

3.3.1. Reframing climate change

Acknowledging the problematic nature of these common framings of climate change, scholars have proposed a number of solutions as to how the issue might be “reframed” in order to better engage public support and action. Writing in a report for the International Institute for Environment and Development, Mike Shanahan for example has stated that a key challenge for communicators in improving media coverage of climate change is “reporting on ways to address climate change that bring additional benefits” (2007, p. 1). This contention has been supported by the recent work of Spence and Pidgeon (2010) which suggests that information framed in terms of potential “gains” was more effective than that framed in terms of “loss” in promoting positive attitudes to climate change mitigation (pp. 662-663). Maibach et al. (2010) similarly found evidence to suggest that the framing of mitigation-related policy actions in terms of potential benefits to human health had a positive impact upon audience engagement with the problem.

Taking into consideration that individuals’ values are understood play a major role in determining and moderating the effects of frames, some scholars have argued that a broader array of frames be used so as to engage a wider array of publics. Nisbet (2009) has suggested that framing climate change in terms of “morality” or in religious terms, could prove effective for example in engaging different audiences. Reflecting calls for “positive” framing, Shellenberger & Nordhaus (2004) have argued for a shift from what they call the “pollution paradigm” in climate change
discourse, which emphasizes the familiar storyline of “dire environmental consequences” if we fail to reduce emissions. They propose instead an emphasis on the challenge of climate change as a potential for “economic development”, framing climate change as an opportunity to grow economies by taking strong action to develop sustainable technologies. Indeed, such a communication strategy could be particularly effective in engaging new audiences with perhaps more conservative political ideologies.

Overall, the translation and practical application of insights from framing studies in climate change communications strategies remains at a very early stage. Continuing research into how climate change is currently framed in news discourse and by various stakeholders will be important in building a foundation of knowledge upon which such applications can draw.

3.4. Factors Shaping the Framing of Climate Change

As discussed in Chapter 2, the frames that come to be prominent in discourse around a given issue are shaped through a complex interaction of factors including journalistic norms and pressures, as well as broader social processes and relationships of power and influence. This section teases apart some of the more salient factors that have been explored in the recent literature as shaping the framing of climate change coverage.

3.4.1. Journalistic Norms

Amongst the myriad factors shaping the reconstruction of climate science in media discourse, perhaps the most direct are the professional norms and values which
guide how journalists and news editors variously select, interpret and frame issues (M. Boykoff & Boykoff, 2004).

**The Balance Norm**

Studies suggest that the journalistic norm of “balanced reporting” has played a significant role in the framing of anthropogenic climate change as “uncertain” in US news media (M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004, 2007). Generally considered a vital tool in the practice of “objective” reporting, “balance” ensures that both sides in any significant dispute are provided with roughly equal attention (Entman, 1989 as cited in M. Boykoff & J. Boykoff, 2004). As Ross Gelbspan (1998) maintains, “When the issue is of a political or social nature…presenting the most compelling arguments of both sides with equal weight is a fundamental check on biased reporting” (pp. 57-58). In the case of science coverage, the balanced treatment of sources also presents an easy “surrogate” for validity checks and a façade of objectivity for journalists with “neither the time nor the scientific understanding to verify the legitimacy of competing claims about any given issue” (M. Boykoff, 2007, p. 470) (Dunwoody & Peters, 1992, p. 210; Gamson & Modigliani, 1989). Whilst the balance norm may usually aid in preventing bias, when applied to scientific issues “it seems to demand that journalists present competing points of views on a scientific question as though they had equal scientific weight” when in fact they likely do not - effectively imposing rather than preventing a form of informational bias (Gelbspan, 1998, pp. 57-58).

In the case of climate change, where the evidence overwhelming suggests that it has been driven primarily by anthropogenic causes, presenting a “balanced” perspective
involves essentially amplifying claims which are not widely supported within the scientific discourse - specifically those holding that climate change is due exclusively to natural fluctuations. Such a phenomenon was noted in a seminal study by Boykoff and Boykoff (2004) which analysed the employment of the “balance” norm in US prestige press between 1988 and 2002. In a content analysis of the New York Times, the Washington Post, the Los Angeles Times and the Wall Street Journal, the researchers found that over half of the articles sampled featured “balanced” accounts which gave roughly equal attention to the respective hypotheses maintaining anthropogenic, and purely natural causes of climate change. The authors argue that presenting “both sides” equally, and without qualification suggests that there exists a significant degree of disagreement within mainstream climate science over the causes of climate change (and thus the need to reduce GHG emissions) when indeed there is an overwhelming consensus with regard to anthropogenic causes amongst the scientific community (M. Boykoff & Boykoff, 2004; Oreskes, 2004).

By augmenting the views of a small group of dissenting sceptics, whilst minimizing those of the wider scientific community, the ubiquitous application of the “ritual” of balance in US climate change press coverage until as recently as 2005 is understood to have created a systematic informational bias which has distorted unfolding scientific and policy discourse (M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004, 2007). Moreover, combined with the framing of continued debate and uncertainty that it catalyses, Boykoff and Boykoff (2007) argue that this informational bias “has helped to create space for the US government to defray responsibility and delay action regarding climate change” (p. 1201). This has been an important factor in the
continuing discrepancy between US political discourse, and international scientific discourse that has seen the US maintain the label of “foot-dragger” in international climate policy (M. Boykoff & Boykoff, 2007).

**The Journalistic Preference for “Drama”**

The primary interest of the media is (and has to be) to capture the attention of targeted publics. When reporting on science, the media are aware that the vagaries and uncertainty of scholarly hypotheses do not lend themselves to interesting ‘news’. (Weingart et al., 2000, p. 274)

Newsmakers’ preference for drama is integrally linked to the attention given to, and the framing of particular issues (Nisbet et al., 2003, p. 43). As a core news value, considerations of drama are central to the translation of issues or events into newsworthy or “exciting” stories; and are no doubt increasingly pivotal given the commercial imperatives of mainstream news media to maximise profits (Brossard et al., 2004; McComas & Shanahan, 1999; Rosenberg, 2008). Given that climate change - with regard to its abstract and “creeping” nature - is not in itself an inherently “dramatic” issue however, McComas and Shanahan (1999) have argued that the media have actively constructed narratives about the issue which are driven by dramatic considerations (Moser & Dilling, 2004). Moreover, in constructing climate change as “exciting”, news media have variously reconfigured and reconstructed the state of scientific knowledge around climate change in ways that have seen a focus on controversy and disagreement develop in the US, and a discourse of catastrophe
and alarmism emerge in Germany and the UK (M. Boykoff & Boykoff, 2004; Carvalho, 2007; Grundmann, 2007; Weingart et al., 2000; Zehr, 2000).

In a study of climate change coverage in the US popular press, Zehr (2000) argued that the construction of uncertainty around the causes and reality of the issue was driven in-part by a pervading focus on controversy and disagreement amongst scientists. Scholars suggest that this preoccupation of the US news media is the outcome of a need for drama, met with the concomitant balancing norm which characterises US journalism (M. Boykoff & Boykoff, 2007; Brossard et al., 2004; Corbett & Durfee, 2004; McCright & Dunlap, 2003; Zehr, 2000). As Zehr puts it:

Controversies tend to make dramatic reading and often are important to public concerns. On occasion, journalists may develop controversy where none previously existed, or sustain it by soliciting opposing arguments by expert scientists. This practice has been interpreted as a means to construct journalistic objectivity and for creating drama in one’s account. (2000, p. 86)

Drama was in this way constructed either through presenting climate change as a divisive matter between scientists in general, or through the spectacle of “duelling experts” pitted against each other over the evidence for the problem. Although the emphasis on conflict and controversy over the science of climate change is not limited to US coverage, its prominence there is likely reinforced by the fact that many of the most vocal climate sceptics are based in the US, and have exploited journalistic preferences for drama and objectivity in order to amplify their often deeply invested perspectives (McCright & Dunlap, 2003). Through adherence to norms prioritising objectivity and drama then, US media have presented climate change through a lens...
of controversy and disagreement which exaggerates the level of scientific uncertainty in the scientific discourse, whilst effectively deemphasizing the mainstream consensus.

In contrast to the US, news discourse around climate change in the UK and Germany appears to have been driven less by controversy and more by a sensationalistic fixation on potentially devastating impact scenarios (Ereaut & Segnit, 2006; Grundmann, 2007; Mike Hulme, 2008; Weingart et al., 2000). German press constructed drama and a sense of urgency through a discourse of “climate catastrophe” shaped by the use of dramatic language and by playing down uncertainties around particular projections and interpretive claims regarding impacts on familiar landmarks and geographies e.g., “Hamburg will disappear, so will Berlin and Cologne, Frankfurt will become a lake city, but Munich will be spared.” (FAZ, 1982 as quoted in Weingart et al., 2000) (Grundmann, 2007; Krauss & von Storch, 2005; Weingart et al., 2000).

Studies of the UK press reveal a similar, morbid indulgence in disaster scenarios which is accompanied by a characterisation of climate change as a “catastrophic and uncontrollable threat” (Dirikx & Gelders, 2009, p. 102). By focusing on graphic disaster scenarios and employing a language of sensationalism and alarm, Ereaut and Segnit (2006) argue that media in the UK and Germany have indulged in what is essentially a kind of “secretly thrilling climate porn” (2006, p. 14). In constructing climate change as “newsworthy”, news media in these countries have transformed the abstract issue of climate change into a crisis by drawing what are uncertain, and temporally distant projections into the present. In doing so they have attributed the
problem with a strong sense of urgency, and thus also of dramatic appeal e.g.,
“...The danger is that the glacier would melt rapidly, forming lakes in the process of withdrawal, lakes which could rush down over the village” [emphasis added] (Der Spiegel, 1995 as quoted in Weingart et al., 2000).

In the different approaches taken by press in the US, UK and Germany, we see how dramatic considerations have played a role within the broader web of factors shaping the framing of climate change. US news media found drama in the “debate” over the evidence for climate change - a focus which has contributed to a framing of climate science as deeply uncertain; whilst the emphasis on “catastrophe” and “alarmism” in the German and UK press has developed in part from a tendency to minimize the uncertainties inherent in projections around the potential effects of climate change in constructing the issue as “urgent” or otherwise “exciting”.

**Journalistic-Cultural Norms**

“While there may be culturally universal facets and features of journalistic practice, it is also reasonable to suspect that journalistic practices differ to some extent on a country-by-country basis.” (Brossard et al., 2004, p. 363)

Part of the variation we see in how media have sculpted the framing of climate change in different countries arises from the fact that journalistic norms are to an extent, culturally embedded. The ubiquity of the balance norm in US new coverage for example sits in contrast with the findings of comparative studies of European news discourse which show little or no evidence for its employment in reporting on
climate change (M. Boykoff, 2007a; Brossard et al., 2004; Grundmann, 2007; Grundmann & Krishnamurthy, 2010).

Indeed, scholars suggest that the prevalence of “balance” in US accounts of climate change stems from the fact that principles of objectivity, non-partisanship and “investigative journalism” based on the “unveiling of the facts” are deeply embedded in American journalism (Brossard et al., 2004). Antilla (2010) suggests that this is reflected in trepidation amongst US journalists over being perceived as having a political or environmental agenda. This has in turn stoked the “ritual of objectivity” which has contributed to a disproportionate amount of attention being given to a small group of sceptics, and a focus on frames emphasising scientific controversy and uncertainty (Brossard et al., 2004; Grundmann & Krishnamurthy, 2010). By comparison, European newspapers - which give little room to sceptics - are expected to have “an explicitly partisan view that is understood by their readers”, with the French for example practicing what is described as a “journalism of opinion” rather than “information” (Kuhn, 1995 as cited in Brossard et al., 2004; Grundmann, 2007; Grundmann & Krishnamurthy, 2010).

Whilst the pursuit of drama may be more of a “culturally universal” facet of journalistic practice, how it is realised in the construction of “interesting” or “exciting” news may also vary between cultural contexts (Brossard et al., 2004). In comparing climate change coverage in the US New York Times and the French Le Monde, Brossard et al. for example suggested that differences in how French and American journalists approached story construction may account in part for the variation they observed in how the issue was framed in each country. In contrast to
the US focus on scientific controversy, the authors argue that the prominence of an “international politics” frame in French coverage be explained as lending more easily to the kind of opinionated argument favoured within the French journalistic culture which features an indirect style; a greater degree of deference to political elites; a paternalistic tone and a preference for opinion over information (Brossard et al., 2004).

Interestingly, whilst the style of journalism practiced in New Zealand belongs to the wider Anglo-American style, Sessions found that in covering science issues, New Zealand journalists appear to hold an “intermediate conception of objectivity between the American and European definitions” (2003, p. 235). Whilst journalists interviewed in her study strongly believed that they should refrain from expressing their own opinions in news stories, very few thought that objectivity was an achievable goal (Sessions, 2003). Although outside the immediate scope of this study, it would be interesting nonetheless to observe how this “intermediate” approach differently shapes the framing of climate change, and indeed other “controversial” scientific issues in the New Zealand media.

3.5. National Contexts

Whilst norms internal to news organisational practices play a significant role in how issues come to be framed by journalists, the framing process does not occur within a political or cultural vacuum (Benford & Snow, 2000; Olausson, 2009). Indeed, the framing of a given issue in news discourse is shaped also “by the frames sponsored by multiple social actors including politicians, organisations and social movements” (Carragee & Roefs, 2004, p. 216) seeking to define and delimit relevant considerations.
surrounding the issue in public discourse in ways that marshal support for their positions (Benford & Snow, 2000; Nisbet et al., 2003). Given that the economic and cultural resources available to sponsors of a frame are central to its success in entering and dominating public discourse, prevailing frames routinely come to reflect the interests or perspectives of “official” sources and elites (Carragee & Roefs, 2004; Chong & Druckman, 2007a). Recent research has thus suggested that the framing of climate change in the US, and in Germany, Sweden and the UK can be seen to reflect the varying political contexts, and the interests and influence of industry in these nations (Dunlap & McCright, 2008; Grundmann, 2007; McCright & Dunlap, 2000, 2003)

**Political Contexts**

Reiner Grundmann (2007) suggests that the very different framings of climate change which characterise the respective discourses of US and German news coverage are largely in line with “government policies and the broader political climate prevalent in both countries” (p. 427). In the US, the prevalence of frames emphasising scientific controversy and uncertainty in media coverage is broadly in line with the “wait and see” approach to climate policy adopted by the government (Grundmann, 2007). As an “imprint of power”, these frames furthermore reflect the role that the politically influential US conservative movement has played in shaping both political and public discourse around climate change, and in delaying the development of effective climate policy on both a national and international level (Entman, 1993; McCright & Dunlap, 2003). Together with sceptical scientists and fossil fuel industry interests, this “counter-movement” mobilized in the mid-to-late ‘90’s as growing public and political endorsement for the Kyoto Protocol emerged as a direct threat to
their interests in “sustained economic growth, the free market, national sovereignty and the continued abolition of government regulations” (McCright & Dunlap, 2003, p. 353).

In its commitment to protecting the “industrial capitalist order” thus, the conservative countermovement launched a strategic attack on the evidentiary basis for climate change in what McCright & Dunlap (2003) argue was an attempt to construct the issue as “non-problematic”, and delegitimize calls for US commitment to binding emissions cuts (pp. 353-354). Given shared interests and ideologies, the Republican takeover of Congress in 1994 saw a leap in the prominence of these counter-claims within political and public discourse as conservative and industry interests were afforded greater opportunities to present their “concerns” in congressional testimonies (McCright & Dunlap, 2000, 2003). The success of the movements’ efforts were further demonstrated in (Republican) George W. Bush’s announcement upon entering office in 2001, that the U.S. had no intention of abiding by the Kyoto Protocol, citing amongst concerns over economic competitiveness, “the incomplete state of scientific knowledge of the causes of, and solutions to, global climate change” (as quoted in Grundmann, 2007, p. 422). Bush’s refusal to ratify the Kyoto Protocol and dismissal of the IPCC consensus serve to underscore the conservative movement’s influence upon US climate policy. Indeed, as media framing often reinforces the perspectives of the state, this influence, coupled with the direct results of well organised media campaigns and PR strategies, has in turn been evidenced in the prevalence of frames emphasising “uncertainty” and “controversy” in US news discourse (McCright & Dunlap, 2003; Grundmann, 2007).
In contrast to the US, Germany and Sweden have seen no strong internal opposition to emissions policy. Grundmann argues that in Germany, which was one of the first “to move EU climate policy and to adopt more stringent emissions targets”, a broader political and institutional climate in which environmental issues are taken very seriously and are pushed high on the mainstream political agenda presented a particularly conducive environment for such policy making (Grundmann, 2007, p. 425). Furthermore, strong public and media interest in the issue meant that climate change had become a strategic political issue nationally. The virtual absence of sceptics and frames emphasising uncertainty or controversy in German news discourse is thus very much in line with the certainty and urgency with which the government has approached climate change. Olausson (2009) highlighted similarly that the construction of climate change in the Swedish press “takes place in a largely uncontested discursive setting” in which there is no “framing contest” between stakeholders (p. 432).

Scholars suggest that the framing of climate change in news discourse in Germany, Sweden and France has generally reflected the European Union’s ambitions in taking leadership on the issue (Brossard et al., 2004; Grundmann, 2007; Olausson, 2009). Indeed, European nations early developed steps towards effective climate policy, and are understood as having a “self-declared” leadership role in the area - something that scholars argue has been reflected in the tendency to frame the problem in terms of “certainty” and urgency (Falkner, Stephan, & Vogler, 2010, p. 257; Grundmann, 2007). Scholars have suggested that this proactive approach evolved not only from concerns about the environmental impacts of climate change,
but also as an attempt to capitalise upon a leadership vacuum on the issue (which had emerged in the absence of strong US and Japanese policy), as a strategic “stepping stone” for the EU to assert itself as a unified world power (Brossard et al., 2004; Grundmann, 2007). Brossard et al. (2004) argue that this has been reflected in the French media, who see climate change “as a tool to help strengthen the political identity of the European Community” (p. 354). Olausson (2009) argues further that similarities in the tendency to emphasise “certainty” in the framing of climate change in French, German and Swedish media point to “the growing relevance of the transnational political realm of Europe for the construction of news frames on global climate change in European national media” (p. 421).

**Industry**

Given often vast economic and cultural resources, the interests of major industries in an area are often reflected in media discourse (Gilens & Hertzman, 2000 as cited in Dispensa & Brulle, 2003, p. 98). Scholars argue that the prominence of frames emphasising uncertainty and controversy in the US media reflects the interests and efforts of the extremely powerful fossil fuel industry based in the country (Dispensa & Brulle, 2003; Grundmann, 2007; McCright & Dunlap, 2003).

Faced with the threat of strong emissions policies to a status quo literally driven by fossil fuels, major US-based petro-chemical corporations such as Exxon Mobil and Koch Industries have quietly moved to protect their interests through funding of organisations such as American Enterprise Institute (Adam, 2009; Greenpeace, 2011; McCright & Dunlap, 2003; Vidal, 2010, 2011). The conservative think-tank in 2007 was found to have offered scientists and economists $10000 each as payment for
articles designed to undermine the release of the IPCC Fourth Assessment Report (Sample, 2007). Similarly, a 2011 Greenpeace-led report found that alongside lobbying and strategic “political contributions”, petrochemical giant Koch Industries had spent $55.2 million between 1997 and 2009 funding organisations which “continue to deny the scientific consensus on global warming while attempting to slow or block policies”, including think-tanks at the forefront of the conservative “counter-movement” (Greenpeace, 2011). These tactics represent examples of what Ross Gelbspan (2000) has called “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 uncertainty.” (as cited in Dispensa & Brulle, 2003, p. 73).

Industry funding of sceptics and groups working to spread “inaccurate and misleading information” (Adam, 2009) about the science of, and potential solutions to climate change have thus played a significant role in the fuelling of the false “debate” over the issue in both political and media discourse in the US (Greenpeace, 2011; McCright & Dunlap, 2003; Vidal, 2010). The propagation of frames emphasising uncertainty and conflict in US news discourse can be seen to reflect the interests of the powerful fossil fuel industry in defraying responsibility and delaying action on climate change.

In contrast, large European fossil fuel corporations such as BP and Shell had largely given up their opposition to the development of climate policy and regulation by 1996 (Grundmann, 2007). The dominance of frames emphasising scientific certainty, consensus and urgency in Germany then, are broadly in line with the agenda of industry, which along with the government, scientists and non-governmental
organisations (NGOs), is in agreement that climate change is “real, anthropogenic and requires action” (Grundmann, 2007, p. 426). As suggested by Dispensa and Brulle (2003) the media tends to reflect the interests of dominant industry within an area, and this can be seen in case of both the US and Germany.

In a comparative study of coverage in the US, New Zealand and Finland in 2000, Dispensa and Brulle (2003) found that whilst over half of articles in both the New York Times and the Washington Post implied uncertainty over climate change, such a frame was found in less than 9 percent of articles in the New Zealand Herald, and in none in the Finnish Helsingin Sanomat. The authors suggest that this discrepancy underscores the influence of the major fossil fuel industry in the US. They argue that because proposed emissions reductions would entail a shift away from the US’ reliance on petroleum and coal as its major energy source, “there is a vested interest on the part of the petrochemical industries to extend the debate and to sow uncertainty regarding the overwhelming scientific consensus regarding global warming”. Moreover, they argue that in the absence of such a vested interest “New Zealand and Finland have a media that generally follows scientific consensus on this matter” (Dispensa & Brulle, 2003, p. 98).

Whilst provocative, Dispensa and Brulle’s (2003) study fails to acknowledge that New Zealand’s emissions per capita are the 11th highest globally, and that the agricultural export industry upon which the economy depends contributes to almost half of the country’s total GHG emissions (New Zealand’s 2020 Emissions Target, 2009; The New Zealand Institute, 2010). Indeed, facing the prospect of higher production and distribution costs, New Zealand’s meat and dairy industry has staunchly
opposed the instatement of an emissions trading scheme, and through the efforts of the Greenhouse Policy Coalition lobby group has actively lobbied against it in the media (e.g. Beard, 2009, 2010). Whilst of course the relative power and influence held by industry interests in the US far exceed that of industry in New Zealand, these considerations nonetheless point to a more complex explanation than that proposed by Dispensa and Brulle (2003).

Another potential influence on the presentation of climate change in news discourse has been the news media industry itself. Indeed, scholars have highlighted issues of self-censorship arising as the result of corporatization, ownership concentration and a dependence upon advertising revenue in media organisations which has led to an unwillingness to challenge more systemic patterns of behaviour which underlie the problem of climate change (see Anderson, 2009; Carvalho, 2007). In New Zealand, the deregulation of the media industry in the 1980’s has led to an intensely commercial and competitive mediascape (Hasan, 2007; Rosenberg, 2008). Given further the small size of the New Zealand market, scholars suggest that major news publications have become homogenised in terms of their individual “voices” as they compete for both audiences and advertising opportunities (Rosenberg, 2008). Indeed studies have shown few differences in the framing of climate change as well as other science-based issues between newspapers, suggesting further that patterns of ownership have not in themselves had a significant influence on framing (Howard-Williams, 2009; Kenix, 2008; Rosenberg, 2008; Rupar, 2010; Williams, 2010).
3.6. Chapter Summary

This chapter has presented an overview of current research on representations of climate change in news discourse. Research has shown that media attention to climate change has historically been linked with major policy “events” in the development of the issue, and has followed an overall trend of growth over the past decade. An historic peak in media attention was detected in newspapers around the world in 2009, and whilst studies have linked it to the Copenhagen Summit held in December that year there has yet to be any substantial analyses of coverage over this period.

Studies on the framing of climate change have highlighted some differences in the emphasis of newspaper coverage between countries. Analyses of the US press have revealed a tendency to frame climate change in terms emphasising scientific controversy and disagreement, whilst newspapers in the UK, Germany and Sweden have framed the issue in terms emphasizing potentially catastrophic consequences, at times through omitting or underplaying uncertainties surrounding particular claims and projections (Antilla, 2005; M. Boykoff & Boykoff, 2004; Ereaut & Segnit, 2006; M Hulme, 2007; Olausson, 2009; Weingart et al., 2000; Zehr, 2000). Whilst climate “sceptics” and sceptical organisations have featured fairly prominently as sources in US climate change coverage, they have been largely absent in the German press (Grundmann, 2007). These differences argued to reflect the varying political, economic and cultural contexts in which news has been produced in these countries, as well as variations in the realization of journalistic norms around “objectivity” and the pursuit of drama in constructing “exciting” stories.
Previous analyses of coverage in New Zealand newspapers suggest that climate change has been framed in terms largely consistent with the scientific consensus, and that sceptics have been accorded little space in news discourse as sources (Kenix, 2008; Dispensa & Brulle, 2003; Howard-Williams, 2009). With the exception of the US, these findings appear to reflect a more general trend that major newspapers in countries around the world have moved past questioning the scientific basis for climate change (e.g. Billett, 2009; Carvalho, 2007; Carvalho & Pereira, 2009; Doulton & Brown, 2009; Olausson, 2009; Takahashi, 2010). Further reflecting international trends, academics and political actors represent the most prominent sources in New Zealand climate change coverage, and frames emphasizing considerations of morality have been found to be rarely used (Dirikx & Gelders, 2010; Howard-Williams, 2009; Kenix, 2008; Olausson, 2009; Trumbo, 1996; Williams, 2010). Recent studies of the *New Zealand Herald* and *The Press* have moreover indicated the prominence of frames emphasizing considerations of international and domestic politics (Kenix, 2008), potential “technological and governmental” “solutions” to climate change (Howard-Williams, 2009), and a focus in coverage upon the potential benefits and costs of efforts to reduce emissions (Williams, 2010).

Whilst these previous New Zealand studies have provided useful insight, they are also characterised by some limitations reflected in the current understandings of how climate change has been framed in the country’s broadsheet newspapers. Howard-Williams’ (2009) study for example was based on a sample drawn from a single month of coverage in 2007, and was skewed towards Australian coverage in that just 40 of the 135 articles analysed were drawn from the *New Zealand Herald* and *The
Press. Though certainly more robust, and drawing also from the New Zealand Herald, the generalisability of Kenix’ (2008) findings is potentially limited by the fact that, as an aggregator of raw press releases, the content of Scoop.co.nz is not wholly comparable to news stories produced by journalists and editors in broadsheet newspapers. Furthermore, Williams’ (2010) study of front-page articles in The Press need to tempered with the fact that his was an analysis of story topics driving reporting, and not an analysis of framing per se. Taking into account these considerations, current understandings on the framing of climate change in New Zealand newspapers are limited by a dearth of relevant and comparable data. Moreover, the current body of work analysing frames, sources and tracking volumes of coverage as the issue has evolved is based almost entirely on coverage in the New Zealand Herald and The Press published prior to 2008 (Dispensa & Brulle, 2003; Howard-Williams, 2009; Kenix, 2008; Williams, 2010). As noted earlier in the chapter, as of the time of writing, this dearth of analyses of coverage beyond 2008 generally extends to the international literature.

3.7. Research Questions
Taking into account the limitations in the current local and international literature outlined in this chapter, and the general aim of the study to analyse how climate change has been framed in recent coverage across New Zealand’s major newspapers, the following research questions are posed:
1. What frames were most/least prominent in coverage of climate change across The Dominion Post, the New Zealand Herald and The Press over the period between June 2009 and June 2010?

2. Where there any differences in the prominence of frames between The Press, the New Zealand Herald and The Dominion Post over the study period?

3. What sources appeared most prominently in climate change coverage in the New Zealand Herald, The Press and The Dominion Post over the period between June 2009 and June 2010?

4. How did the volume of climate change coverage in the New Zealand Herald, The Press and The Dominion Post vary over the period between June 2009 and June 2010?
Chapter 4: Research Design

4.1. The Content Analysis of Frames

According to a widely accepted understanding in the literature, framing refers to the process of selection, emphasis and presentation in the construction of news texts by which certain considerations or perspectives pertaining to a given issue come to be privileged over others (Entman, 1993). As they are manifested in texts, frames can be conceptualised as “interpretive packages”, as underlying meaning structures which work to organise information in such a way that suggest to the reader what an issue is “essentially” about, who or what might be responsible, and what should be done about it (Entman, 1993; Gamson & Modigliani, 1989; Nisbet, 2010a). Advancing from the structuralist perspective that these latent meaning structures can be observed independently of the interpreting subject, a content analysis may be employed to “excavate” frames embedded in a communicating text, and measure their prevalence in discourse surrounding a given issue (Van Gorp, 2010, p. 90).

The multidisciplinary and methodologically diverse nature of framing research has been reflected in its application in analyses of news discourse around climate change. This means that the current literature is characterised by a broad range of methodological approaches to the content analysis of frames in climate change coverage. Nonetheless, common methodologies can be broadly divided between inductive and deductive approaches (Dirikx & Gelders, 2010; Matthes & Kohring, 2008; Semetko & Valkenburg, 2000; Van Gorp, 2010). In inductive content analyses news stories are analysed “with an open view to attempt to reveal the array of
possible frames” which are applied to an issue (Semetko & Valkenburg, 2000, p. 94). Frames in inductive studies are in essence “reconstructed” from the sample of texts, often through the employment qualitative methodologies such as critical discourse analysis (e.g., Carvalho, 2007; Olausson, 2009) designed to identify and assess particular elements of meaning construction and their arrangement in recurring patterns of selection and emphasis. Inductive content analyses in this way allow for the discovery of “new” frames, which may be very specific to a particular event/issue, context and point in time, however by the same token, the inherent subjectivity of the approach means that it is often difficult to tell precisely how particular frames were extracted from the material (Matthes & Kohring, 2008; Van Gorp, 2010). As well as being difficult to replicate, these studies tend to be time and labour-intensive and as such are often based upon small samples (e.g., Howard-Williams, 2009; Kenix, 2008) (De Vreese, 2005; Dirikx & Gelders, 2010; Semetko & Valkenburg, 2000).

According to Semetko and Valkenburg (2000), a deductive approach to content analysis “involves predefining certain frames as variables to verify the extent to which they occur in the news” (p. 94). In other words, rather than being generated from the study sample, frames in a deductive study are derived and defined theoretically or from earlier studies as variables which can be identified and measured in the text according to set of specified criteria (De Vreese, 2005; Kenix, 2008; Matthes & Kohring, 2008). Whilst deductive approaches might not be able to detect “new” frames, they hold a distinct advantage in that they can manage large samples, are easily repeatable, and - often paired with quantitative methodologies -
allow for comparisons in prevalence and prominence of particular frames at the level of the article, the level of wider discourse around a particular issue, across studies and between different media (e.g. TV versus Newspaper) (Dirikx & Gelders, 2010; Matthes & Kohring, 2008; Semetko & Valkenburg, 2000). Deductive methodologies have thus been used regularly in studies analysing the framing of climate change (e.g. Antilla, 2005; Brossard, Shanahan, & McComas, 2004; Dirikx & Gelders, 2010; Dispensa & Brulle, 2003; Gordon, Deines, & Havice, 2010; Kenix, 2008; McComas & Shanahan, 1999; Takahashi, 2008).

Taking into account the time and resource constraints of this project, a deductive quantitative approach offers the opportunity to analyse a substantial sample of articles, and to measure the relative prominence of various frames in such a way that allows for comparison with previous studies of both New Zealand coverage, and coverage from other countries. This approach was thus deemed to best satisfy the study aim of expanding upon the current literature, and to address the previously outlined research questions.

4.2. Frame Typology

The reliability and validity of a deductive approach to content analysis is reliant in large part upon having a solid idea of the frames likely to occur in coverage of a particular issue, and clear and exclusive criteria for identifying them in the text (Matthes & Kohring, 2008). Frame typologies used in deductive analyses are thus often generated from previous (inductive and deductive) studies of coverage of the same or similar issues. With that said however, there is no agreement within the literature to date as to a “standard set” of frames applicable to studies of climate
change coverage. Reflecting the multidisciplinary nature of framing studies more generally, studies in the framing of climate change have tended to “reinvent the wheel” in terms of the frames identified, labelled and discussed in the literature (Dahinden, 2002; De Vreese, 2005; Nisbet, 2010a). The proliferation of frames has also arisen as a result of studies adopting differing operational definitions of frames and investigating coverage in different national and cultural contexts. Studies have also approached climate change from levels of abstraction varying from the highly specific e.g. “The collective action frame of climate change as a national and local responsibility” (Olausson, 2009), to the more generic e.g. “Human interest” and “conflict” (Dirikx & Gelders, 2010).

Whilst there is often some degree of crossover in studies between more generic news frames (e.g., conflict, economics etc.), the general consequence of this heterogeneity is that it can be difficult to compare the results of certain studies - a problem which some scholars of science communication have lamented as extending to framing studies of science issues more generally (Dahinden, 2002; Nisbet, 2010a). Matthew Nisbet for example has argued that this had led not only to “inconsistencies in understanding the nature of disputes over science, it has also led to major differences in the measurement of media trends and in the observation of framing influence” (2010, p. 43). Arguing for greater consistency between studies of different issues, and across national contexts as a means to cultivate new knowledge and advance the field, Nisbet and other scholars have proposed the use of frame typologies generalisable to media coverage of a broad range of science-based issues (Dahinden, 2002; Nisbet, 2010a).
Whilst acknowledging the merit of this argument and the need for greater cohesion in the field, a generalised frame typology also runs the converse risk of losing “focal power” in the study of a specific issue with its own unique dynamics, such as climate change. This study thus utilized an experimental typology (see Table 1) based on the findings of previous framing studies on climate change discussed in Chapter 3, and structured through the use of a more generalisable typology designed by Nisbet (2009, 2010). As Nisbet’s typology was itself designed from previous studies on science issues including climate change, it provides a useful scaffold for organising the heterogeneous collection of frames defined in the literature from which this study draws. Whilst a certain degree of sensitivity was ostensibly lost as a result of a decision to homogenise and consolidate certain frames sharing similar attributes (e.g. International politics, domestic politics, public accountability were combined), I argue that this typology is representative of the frames most commonly identified across the literature to date, and particularly so with previous studies of New Zealand newspapers. As such, I argue that this satisfies the call for general comparability with studies of other issues, whilst allowing for an appropriate degree of specificity and comparability within studies of climate change.
<table>
<thead>
<tr>
<th>Frame</th>
<th>Defines…</th>
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<tbody>
<tr>
<td>Politics</td>
<td>…climate change as a policy issue, places onus on politicians, governments, diplomacy for solutions e.g., what individual politicians are saying/doing, what they should be doing, solutions lie in hands of politicians/governments. Alternatively – climate change as matter of political strategy/conflict e.g., between politicians/politicians versus NGOs over climate policy, Emissions Trading Scheme, carbon taxes</td>
</tr>
<tr>
<td>Social Progress</td>
<td>…efforts to curb emissions/tech solutions as part of broader steps towards more “green”, sustainable future, energy security e.g., optimism regarding solutions, highlights responsibility &amp; efficacy of the individual, lifestyle decisions, focus on “human interest” themes. Alternatively, discusses adaptation to changing climate e.g., town planning with rising sea levels. Calls to action.</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>…potential solutions to climate change as boon/burden to economic competitiveness e.g., carbon tax/ETS will cripple economy/encourage innovation. NZ potential to be innovation leader/threats to agricultural economy, risks to tourism, clean green brand, action on climate change as directly related to NZ economy in terms of “100% Pure” brand, focus on economics/costs of particular solutions</td>
</tr>
<tr>
<td>Science</td>
<td>…climate change as a scientific/technical issue, a matter of scientific expertise e.g. focus on novel new research, new IPCC methods, research methods, scientific background – recapitulation of “what is known vs. unknown”, emphasis on authority of scientists, experts.</td>
</tr>
<tr>
<td>Consequences</td>
<td>…climate change as an issue with potentially dire/beneficial outcomes e.g., emphasis on potential impacts - environment, public health, food production, population displacement, causal links between current weather anomalies and climate change. Alternatively, climate change as inevitable disaster e.g., use of dramatic/alarming language, pessimistic/ fatalistic tone – solutions will come too late.</td>
</tr>
</tbody>
</table>
Scientific Controversy

...evidence/claims regarding ACC as matter of dispute/controversy between groups or individuals e.g., defines the case for climate change as scientists vs. sceptics, the “climate change debate”. “Duelling scientists” scenario employed.

Morality

...climate change and efforts to curb emissions as moral/ethical issue e.g., emphasis on risk/responsibility divide between developed and developing world, moral responsibility to future generations, to poor nations who will be affected most, “doing our fair share as a country”.

Sources: (Brossard et al., 2004; Dispensa & Brulle, 2003; Howard-Williams, 2009; Kenix, 2008; McComas & Shanahan, 1999; Nisbet, 2010a; Nisbet et al., 2003; Zehr, 2000)

4.3. The Sample

The current study analysed on articles on climate change published in the *New Zealand Herald*, *The Dominion Post* and *The Press* over a 12 month period between 1st June 2009 and 31st May 2010. This time frame was chosen for the purpose of expanding upon the current literature by analysing recent climate change coverage. Climate change was high on public and political agendas over this period both in New Zealand and internationally with intense debate over the merits and costs of the 2010 National Government’s revised Emissions Trading Scheme, the breaking of the 2009 “climate-gate” email hacking incident, and the international climate policy summit in Copenhagen, Denmark where world leaders gathered to negotiate a binding deal to mitigate greenhouse gas emissions beyond 2012. The latter two “events” furthermore appear to be associated with a global historical peak in media attention (see Figure 3.1) underscoring the importance of this period for analysis.

The *New Zealand Herald*, *The Dominion Post* and *The Press* were chosen for analysis as they represent New Zealand’s three largest daily broadsheet newspapers in terms of
readership. As of 2011, the APN News & Media owned *New Zealand Herald* has the highest readership of 17.6 percent, followed by *The Dominion Post* (6.8%) and *The Press* (6.5%) which share ownership, as well as a copy-sharing agreement under Fairfax Media Limited (Nielsen, 2011; Williams, 2010). Whilst studies have analysed climate change coverage in the *New Zealand Herald* (Dispensa & Brulle, 2003; Kenix, 2008) and *The Press* (Howard-Williams, 2009; Williams, 2009a) however, none have to-date analysed the framing of climate change in *The Dominion Post*. Serving the lower North Island, including Wellington – which holds the nation’s capital and political centre, and is the third most populous region in New Zealand – the lack of data on how climate change is being covered by the *Dominion Post* represents a significant gap in the current literature (Statistics New Zealand, 2011). With circulations covering the upper North Island, the lower North Island, and much of the South Island respectively, the New Zealand Herald, Dominion Post and *The Press* together offer a representative cross-section of mainstream press coverage of climate change in New Zealand (APN News & Media, 2011; Fairfax Media Limited, 2011).

The papers were also selected because they can be considered analogous to the “quality” or “prestige” press upon which previous studies have concentrated (e.g. Boykoff, 2007; Carvalho & Burgess, 2005). These high-tier papers are often sampled because they have a reputation for traditionally higher-quality reporting of “hard news”; are argued to set the news agenda for other media and influence media coverage in secondary sources; and tend to be the primary influences on policy discourse and decision-making at national/international levels (M. Boykoff, 2007a; M. Boykoff & Mansfield, 2008; Carvalho & Burgess, 2005). More generally, daily
newspapers remain the second most commonly cited source of information on climate change amongst the New Zealand public (ShapeNZ, 2007). For these reasons analysing coverage in the *New Zealand Herald, The Dominion Post* and *The Press* “provides opportunities to track the dominant news frames associated with anthropogenic climate change” to which New Zealand audiences are likely to be exposed (Boykoff, 2007, p. 471).

The sample was collected by running a search through the electronic news database *Factiva* for articles containing either the term “climate change” or “global warming” in the headline or first paragraph. Considering that the most important information in a news story is typically placed within the leading paragraph and headline (see D’Angelo, 2002; Pan & Kosicki, 1993), limiting the search to these sections aided in reducing the number of articles returned in which climate change, or related issues were peripheral or merely stated in passing (Antilla, 2005; Gordon et al., 2010; Trumbo, 1996). It is acknowledged that this might have excluded some relevant articles, however it also helped in reducing the sample to a manageable size. The search parameters excluded letters to the editor, limiting the sample to “hard news”, features, comment and editorials, and eventually returning a total of 1104 articles published over the study period (Carvalho, 2007). This total population was manually refined through a quick reading to remove duplicates, letters, news briefs

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3 Whilst the terms “climate change” and “global warming” are not technically equivalent, previous studies suggest that they have tended to be used interchangeably in news discourse. These search terms have been used across the majority of similar studies (e.g. Boykoff, 2008; Carvalho, 2007; Dirikx & Gelders, 2010; Takahashi, 2008).
and peripheral stories which “slipped through the cracks” of the Factiva search. The sample was eventually narrowed down to a total of 540 articles consisting of 243 from the New Zealand Herald, 153 from The Dominion Post, and 144 from The Press.

Prior to the onset of data collection, a pilot study of 50 random articles was conducted in order to further refine the frame typology, and to familiarise the coder (the author) and to ensure consistency in the coding process.

4.4. Methods

The examination of each article involved two readings during which data was entered into a Microsoft Excel database. In the first reading the single coder (the author) established familiarity with the story and recorded the newspaper it was published in (H= New Zealand Herald, P = The Press, D = The Dominion Post), the date of publication, the name of the reporter, and a short summary of the key points/issues. In the second reading, frames were identified according to criteria established in the frame typology (Table 1). This was facilitated by the systematic application of a set of basic analytical tools (see below) adapted from Olausson (2009) designed to help deconstruct and highlight elements of meaning construction implicit in the text. Utilizing an instrument designed originally by McComas & Shanahan (1999), and employed since in similar studies by Brossard et al. (2004) and Kenix (2008), frames were coded as either absent (0), present (1), or dominant (2) if it was prominent in the headline and leading sentences or represented the central organising idea for the article as a whole. Whilst multiple frames could be coded as “present” in the text, only one could be coded as “dominant”. Sources - defined as actors quoted or paraphrased in articles - were similarly coded as either absent (0) or
present (1) (as opposed to being counted) according to categories outlined in Table 2. Although the vast majority of sources fitted into a single category, the categories were not mutually exclusive. A climate scientist challenging the consensus position on climate change for example was entered in the categories Academic/Expert and Sceptic.

This instrument was chosen as it offers a systematic, quantitative approach to the coding of articles which is sensitive to fact that there may be multiple frames present in a given text, and that certain frames may be more prominent than others. That it allows for the measurement of the strength of their relative presence is useful also if we consider that more salient frames in news discourse – i.e. those which are employed frequently or are dominant across discourse - are more likely to influence audience evaluations of a given issue or event.

*Analytical tools*

**Thematic and schematic structure**

- Which themes and topics (e.g. statements, discussions, questions and arguments) are granted prominence in the article as a whole and in each paragraph? Special attention is paid to headlines and introductions where the overarching theme of the article is expressed.

  - E.g. “The current Emissions Trading Scheme will be ineffective because it offers little incentive to major polluters to make cuts (suggesting that effective climate policy should give priority to reducing emissions)/ because it will harm the economy” (suggesting that effective climate policy should give priority to the economy)

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4 Adapted from Olausson, 2009, pp. 424-425
• Which “categories” are granted prominence in the article?
  
  o E.g. Is the focus of the article on a policy event, new research, extreme weather event, conflict between two actors or the statement of a particular actor?

Style

• Choice of quotations – who is quoted e.g., sceptic/scientist/politician?
• Choice of words – what words and phrases are chosen in preference to others e.g., catastrophic climate change, disastrous effects, “leaked” vs. “stolen” emails.
• Rhetoric – by what means does the news item try to convince the reader of the credibility of the information given? e.g., the use of authoritative sources, are the credentials of scientists/sceptics made explicit? Are sceptics established as marginal or maverick, or as credible?

Table 4.2. Source Categories

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic/Expert</td>
<td>Individual climate scientists, University research group, Expert opinion, e.g., Jim Salinger, James Renwick, Mike Hulme</td>
</tr>
<tr>
<td>Non-Expert Commentator/Citizen</td>
<td>Citizens, Celebrities, Public figures with no scientific expertise e.g., Sir Paul McCartney, Keisha Castle-Hughes, Lucy Lawless</td>
</tr>
<tr>
<td>Business &amp; Industry</td>
<td>Business &amp; Industry groups, lobby groups, business representatives/figures e.g., The Greenhouse Policy Coalition</td>
</tr>
<tr>
<td>Economist</td>
<td>Economists or economic institutions e.g., Sir Nicholas Stern, Treasurers, Treasury spokesperson, Gareth Morgan</td>
</tr>
<tr>
<td>Independent Research Groups</td>
<td>Unaffiliated/Independent Research Groups e.g., World Meteorological Organisation, Hadley Centre, Cawthron Institute</td>
</tr>
<tr>
<td>Politician</td>
<td>Government, politicians, political elites, government officials e.g., John Key, Nick Smith, Barack Obama</td>
</tr>
</tbody>
</table>
4.5. Statistical Analysis

Basic descriptive statistics were employed to measure and compare the frequency or “prominence” of frames and sources. The overall prominence of each frame was measured as the percentage of articles out of the total (n=540) in which a given frame was coded as either Present (1) or Dominant (2). These frequencies are presented in a bar graph in Figure 5.1 which also shows the relative “strength” of each frame (Dominant to Present). Quotations presented in Chapter 5: Results & Discussion serve as illustrative examples, and can be considered representative of a larger empirical body of material (Olausson, 2009). The prominence of sources appearing in coverage was measured as a percentage of the total number coded as “present”.

Finally, publication frequency or “coverage” was calculated as the total number of articles published per month.

Differences in the prominence of frames between newspapers were measured slightly differently. Borrowing the approach adopted by McComas and Shanahan (1999) and Brossard et al. (2004), the “mean prominence” of each frame was calculated by finding the average of the total scores coded (from the range of 0, 1 or 2) for each newspaper subsample. For example if the Morality frame was coded as 0,
0, 0, 2, 1 across five articles, the “mean prominence” would be calculated as 0.6.

These were calculated for each frame, across the three newspapers. A one-way ANOVA was run using the SPSS software package in order to detect any significant differences in the prominence of frames between each newspaper. Post-hoc comparisons were carried out for significant findings using a combination of the Tukey HSD, Hochberg and Games-Howell tests. Details of the ANOVA and post-hoc tests are included in Appendix 2.

4.6. Potential Limitations

Given the relatively short time frame of the study, and the fact that it includes a period of significantly heightened coverage around the Copenhagen Summit in December 2009 (see Boykoff & Mansfield, 2011), the results cannot in themselves be considered representative of climate change coverage in New Zealand newspapers more generally. Nonetheless, the time frame is appropriate in fulfilling the aim of presenting an analysis of recent coverage, and in expanding upon previous work.

As abstract variables embedded within communicating texts, the content analysis of frames involves an inherent degree of subjectivity (Matthes & Kohring, 2008; Van Gorp, 2007, 2010). A further degree of “researcher bias” however may have been introduced in this analysis given that it was carried out by a single coder (the author) (McComas & Shanahan, 1999). By the same token however, it is worth acknowledging the benefit of internal consistency in the interpretation of frames brought by a single coder – arguably a priority in a study (such as this) which is interested more in the relative prominence of frames than in quantifying their absolute values. The decision to use deductively defined frame categories in the
current analysis nonetheless goes some way in attenuating the impact of this subjectivity upon the reliability of the findings, and allows for adequate comparability between studies (Matthes & Kohring, 2008). Whilst recent computer-assisted approaches show promise in the possibility of further minimising the subjectivity involved in framing analyses (e.g. Matthes & Kohring, 2008), and multiple coders could be used to attenuate coder bias (e.g. Dirikx & Gelders, 2010; Nisbet & Huge, 2006), it should be emphasised that the current research design reflects also the time and resource limitations of a Master’s thesis.
Chapter 5: Results and Discussion

This chapter presents and discusses the findings of the content analysis of climate change coverage in the *New Zealand Herald*, *The Press*, and *The Dominion Post* published between June 2009 and the June 2010. Beginning with a brief summary of results, the chapter goes on to discuss the findings on frames and the differences between papers. This is followed by a discussion of the findings on sources, and how rates of coverage varied over the study period (see Appendix 1 for brief summary of key events and issues over the study period as evidenced in coverage). Conclusions are presented in the following chapter.

5.1. Results at a glance

*What frames were most/least prominent in coverage of climate change across The Dominion Post, the New Zealand Herald and The Press over the period between June 2009 and June 2010?*

The Politics frame was found to be the prominent across coverage, making up 26% of the total frames coded, followed by the Social Progress frame (21%) and the Economic Competitiveness frame (16%). The Science and Consequences frames made up 13% and 12% of frames coded. The Scientific Controversy and Morality frames were the least prominent in the study sample, making up 6% and 5% of the total frames coded.

*Where there any differences in the prominence of frames between The Press, the New Zealand Herald and The Dominion Post over the study period?*
The mean prominence of frames between newspapers was found to be relatively similar (see Figure 5.2). Nonetheless, the results of the one-way ANOVA showed that the Consequences frame was significantly more prominent in both *The Dominion Post* (m = 0.40523, n = 144) and the *New Zealand Herald* (m=0.42387, n = 243) than it was *The Press* (m = 0.208, SD = 0.514) [F (2, 537) = 4.880, p<.05]. The Science frame was found to be significantly more prominent in the *New Zealand Herald* (m=0.461, SD = 0.717) than in *The Press* (m = 0.257, SD = 0.623) [F(2,537) = 4.633, p<.05], and the Economic Competitiveness frame was found be significantly more prominent in *The Dominion Post* (m=0.57516, SD=0.758) than it was in the *New Zealand Herald* (m=0.29630, SD=0.577) [F (2,537) = 8.606, p<.05].

*What sources were most prominent in coverage over the study period?*

Political sources featured most commonly in coverage, representing 33% of all sources identified, followed by Scientists/Academics (20%) and NGOs (13%). Sceptics made up just 3% of sources, ahead of Economists (2%) and Unnamed Experts (< 1%).

*How did the volume of coverage vary over the study period?*

Coverage showed a trend of growth over the first half of the study period, reaching a peak over November (99 articles) and December 2009 (122) coinciding with the breaking of the “climate-gate” email hacking, and the highly anticipated Copenhagen Summit. With the conclusion of a narrative built around the Summit, coverage dropped markedly in January 2010 (23) and remained low into the end of the study period in May 2010.
5.2. Frames

The results of the content analysis of frames show that the Politics frame was the most prominent across coverage, making up 26 percent of the total frames identified, followed by the Social Progress frame which made up 21 percent (see Figure 5.1). Both of these frames were more likely to be Dominant in the articles in which they appeared. The Economic Competitiveness frame was third most prominent frame making up just-under 16 percent of the total, and was much less likely to be Dominant in articles in which it appeared. Science and Consequences frames made up roughly 13 percent and 12 percent of the total respectively. The Scientific Controversy frame was the second least prominent identified, consisting 6 percent of frames identified, followed by the Morality frame which made up 5 percent of the total and was very rarely Dominant in the articles in which it appeared.
Figure 5.1. Bar graph showing overall percentage frequency of each frame, and the proportion of instances in which the frame was Dominant or Present, in coverage of climate change in the *New Zealand Herald*, *The Press* and *The Dominion Post* between June 2009 and June 2010 (n = 1060). Key: Economic Comp. = Economic Competitiveness

5.2.1. The Politics Frame

Articles employing the Politics frame generally emphasised policy-based solutions as the “treatment recommendation” for the problem of climate change, and politicians, world leaders and nation states as the primary actors accountable for the issue, and ultimately possessing the ability to solve the problem (Entman, 2003). Indeed, bearing a strong resemblance to the “responsibility” frame found to be prominent in Dirikx and Gelders (2010) study of Dutch and French newspaper coverage, the Politics frame was perhaps best characterised by an emphasis on political actors as “responsible for and/or capable of alleviating climate change problems” (p. 732).
This emphasis on the ability and responsibility of political leaders was suggested for example in an editorial published by *The Dominion Post* on the first day of the Copenhagen Summit for example calling upon world leaders to: “…bear in mind that the conference is about much more than domestic politics. Reducing carbon emissions will cause financial hardship and expose them to criticism, but failing to do so could irrevocably change the course of human history...The world's leaders must be brave as well as wise” (“More than politics at stake in climate talks,” 2009).

An emphasis on the Politics frame was more commonly manifested in coverage of the actions and comments of world leaders in relation to talks and negotiations at various international policy events:

President Barack Obama cleared the way for what Gordon Brown called an ‘historic agreement’ at the G8 summit in Italy by signing the US up to a firm emissions target for the first time - a complete contrast to the intransigence of his predecessor, George Bush. The G8 move is designed to revitalise United Nations-led talks on a global ‘son of Kyoto’ agreement, which reach a climax in Copenhagen in December. (Grice, 2009)

UN Secretary-General Ban Ki-Moon and Yvo de Boer, head of the UN framework convention on climate change, will attend the biennial [Commonwealth Heads of Government Meeting] in a sign of desperation for a deal on emissions targets and penalties to be signed off. There have been reports that French President Nicolas Sarkozy and Danish Prime Minister Lars Loekke Rasmussen may also attend CHOGM, which is the last major international summit before Copenhagen. (Martin, 2009)
The Politics frame was also importantly characterised by an emphasis on climate policy as a point of significant conflict between political actors on a scale from regions divided along developmental lines to individual nation states.

Associate Climate Minister Tim Groser said draft texts tabled at the conference on Friday would not be acceptable to the developed world. ‘All the onus is now on the major developing-country emitters.’ New Zealand and other developed nations want developing countries to agree to cuts in ‘business as usual’ greenhouse gas emissions of between 15 and 30 per cent on 1990 levels. (“Key to dine in palace as Smith talks,” 2009)

The US says China does not need its money and the fund should go to the poorest countries. This sparked a bristling response from the Chinese. They said rich countries owed a debt for their decades of pouring greenhouse gases into the atmosphere, and called on the US to toughen its domestic target. US climate envoy Todd Stern took umbrage at the ‘debt’ suggestion, saying that for most of the last 200 years industrial countries did not know greenhouse gases caused global warming. (Gibson, 2009c)

The frame was also evident in an emphasis on negotiations and propositions around climate policy as a matter of “strategy” between political actors. This was evident at the level of national policy and political parties, particularly in ongoing speculation over the Government’s manoeuvrings in attempt to win support for its’ amended Emissions Trading Scheme:

The Maori Party either u-turns... Or it risks seeing a gutted emissions trading scheme which makes little impact on emission-cutting targets - the result if National has to turn to Act for support. The Prime
Minister was yesterday making little secret that he intends playing off political friend and foe in such fashion. That modus operandi will be applied to Labour, too. That party is still indicating it is willing to be flexible about changing its own scheme to avoid it being watered down completely. But only up to a point. Its bargaining chip is time - or rather John Key’s lack of it. The nature of the revised emissions trading system is now a simple game of parliamentary numbers.

(“Lack of consensus produces emissions cop-out,” 2009)

The emphasis in coverage on the accountability/ability of political figures to solve the climate change problem is likely to have been driven in part by the fact that as “authority” figures, their actions and comments are generally considered to be newsworthy (Nisbet & Lewenstein, 2002, p. 362). This newsworthiness is likely to have been magnified, and coupled by as sense of drama in the high-stakes nature of the negotiations they were involved in, faced as they were with potentially unpopular decisions that could hamper national economies on one hand, and with the mounting risk of climate change on the other. Furthermore, given that conflict is a staple for journalists in stressing “the points of divergence between opponents” and thus creating “exciting” news stories, the employment of the Politics frame might have been buoyed by the inherent dramatic potential presented by an emphasis on climate policy as point of conflict and strategy between political actors and nation states (Semetko & Valkenburg, 2000). This needs to be tempered however with the fact that whilst conflict was commonly emphasised over climate policy, it was rarely emphasised over the science of climate change. Indeed, this finding is broadly consistent with Dirikx and Gelders (2010) finding that whilst conflict was emphasised between countries in Dutch and French coverage of climate change, it
was not emphasised in reflections of “broader scientific discussion between climate change ‘believers’ and ‘sceptics’” (p. 739).

Overall, the prominence of the Politics frame appears to reflect the fact that the Copenhagen Summit in December 2009 pushed issues and events pertaining to domestic and international climate policy high on the news agenda over the study period. Considering that journalists and editors employ frames to organise and attribute meaning to salient issues and events, the prominence of the Politics frame is likely attributable to climate policy itself being high on policy, public and news agendas over the study period (Kenix, 2008; Reese, 2010; Van Gorp, 2007). This assertion is supported by the finding that the employment of the Politics frame appears to be related to key policy disputes and events that occurred over the study period, for example showing in a steep drop in January 2010 following the failure of the Copenhagen Summit, before beginning to rise again in May around renewed debate around the Emissions Trading Scheme (see Figure 5.2). Olausson (2009) suggested similarly that frames tend to be driven by particular events, finding for example that the use of a frame emphasising “mitigation as a transnational responsibility” in Swedish press was strongly related to international political events (p. 426). Moreover, the overriding prominence of the Politics frame is consistent with the findings of previous studies which have shown that frames emphasising elements of international relations and domestic policy have been particularly salient in climate change coverage over the last decade in New Zealand (Kenix, 2008; Williams, 2010), Sweden (Olausson, 2009), France (Brossard et al., 2004), Holland (Dirikx & Gelders, 2010), Peru, Canada and the US (Takahashi, 2008, 2010).
Figure 5.2. Line graph of Politics frame employment (as percentage of total frames per month) in coverage between June 2009 and June 2010 showing drop in January 2010

5.2.2. The Social Progress Frame

The Social Progress frame was characterised by an emphasis on the accountability and efficacy of individual citizens, local communities and business and industry in efforts to mitigate the effects of climate change – either directly, or indirectly through socio-political action and raising awareness.

Alongside coverage of the celebrity-endorsed Greenpeace “Sign-on” campaign, notable emphasis was accorded to human interest-style reporting on the grassroots efforts of citizens and communities to raise awareness for reduction in emissions as part of the 350.org movement:
Students at Christchurch’s Rangi Ruru Girls’ School made a stand against carbon emissions yesterday, in support of an international climate change campaign. Almost 250 girls gathered in the school’s gymnasium to form a human sculpture representing the number 350. The display showed support for the 350.org campaign that aims to raise awareness and encourage a reduction in carbon emissions. (“Girl power,” 2010)

A Bethlehem mother-of-two is spearheading a climate change awareness event in Tauranga. Melany Clement has always been interested in the environment, but it wasn’t until she became a mother that she really started thinking about the long-term impact we have on the planet. And when she heard about climate change and the 350 movement, she knew she wanted to be a part of it. ‘It's just people getting together, standing up and saying ‘we have to do something about this’. (Irvine, 2009)

Interestingly, Geoffrey Craig (2010) noted a similar a tendency to frame coverage of the 350.org movement as a “softer news story, highlighting the local community celebration…” over a similar time period (p. 16) He argues that the tendency was part of an “emerging trend of framing the environment through the perspective of local community lifestyles”, and through interviews with organisers of the events, suggests that such a framing was part of a deliberate media strategy of avoiding the use of a political frame and aiming to engender public participation in the issue (Craig, 2010, p. 23-24). Taking into consideration also the prominence of NGOs as sources identified in coverage, this finding suggests the need to further explore the strategies and messages of particularly visible “frame sponsors” and their overall
influence on the frames which come to be prominent in public discourse around climate change.

Individual behaviour-based efforts to mitigate emissions were regularly positioned within the context of broader shifts towards “sustainability” and more environmentally-friendly or “greener” lifestyles, and were commonly linked to more diffuse benefits arising from efforts to curb GHG emissions.

In an article in *The Dominion Post* entitled “Green ways to save money and have fun” (2010) for example, vegetarianism is linked to lower GHG emissions and lower grocery bills, and is situated among a list of “ways to gain by being green” which includes turning off appliances and riding a bike to work as well as using natural cleaners, volunteering and using a “babysitting exchange”. An article in *The Press* similarly presenting a “…range of tips on how to reduce your carbon emissions by 10 per cent” suggests that:

> If you follow these steps, by December you should be healthier, your rent or mortgage debt will be smaller, you’ll be exercising more, you’ll have sampled new recipes and made new friends from the car-sharing, swapping, and shopping at the farmer’s market. You’ll also know that you are a small part of the global effort to prevent catastrophic climate change. (R. Taylor, 2010)

At a broader societal level, efforts to reduce emissions were similarly framed not only in terms of avoiding negative outcomes, but also in terms of producing positive outcomes, of improvement through “gain framing” (Spence & Pidgeon, 2010). An article by Malcolm Rands in the *New Zealand Herald* for example suggests that “What’s good for the climate is also good for our health”, linking emissions
reductions to a reduction in asthma-related illness and deaths through an improvement in air quality (2009). Similarly a story entitled “Doctors attack climate change stance”, states that “...mitigating climate change also presents ‘unrivalled opportunities’ to improve public health. ‘Policies to reduce greenhouse gas emissions could also bring about substantial reductions in heart disease, cancer, obesity, diabetes, road deaths and injuries, and air pollution.” (Johnston, 2009)

Whilst the overwhelming focus of the Social Progress frame was on mitigation efforts, a small number of articles did address the issue of adaptation – if indirectly:

...improving the environment and cutting down on pollution are worthwhile goals and would make the planet far nicer. And if we really can't stop climate change, perhaps we can simply create a better built environment, one that copes better with variations in the weather, including extreme weather; one that is more comfortable and kinder to the planet. (Killick, 2009)

Finally, the Social Progress frame was also evoked in an emphasis on technological solutions and innovation to reduce emissions and tackle climate change – often with a focus on advances in energy generation. An article headlined “Absorbing ideas to combat warming” for example outlines potential solutions developed by British engineers that include “artificial” trees which could be “several thousand times more effective at removing carbon dioxide than any natural tree”, and the incorporations of “photobioreactors” into building structures which could work to absorb carbon dioxide whilst producing energy for light and heat generation (Doesburg, 2009).

This was also evident in coverage of innovation towards greater sustainability and efficiency in industry, and was often paired with an economic competiveness frame
An article on the future of the airline industry for example states that:

...fuel efficiency is expected to improve by 25 per cent by 2020, while new flying techniques and better air-traffic control regimes could also produce large cuts in emissions. ...the industry is pinning its hopes on algae-based fuels as a substitute for today’s kerosene-based ones. ...these could eventually be responsible for cutting carbon emissions by up to 80 percent... (“Airline industry promises a greener future – eventually,” 2009)

Innovation in renewable energy generation and shifts away from fossil fuels were often linked to wider benefits to security and economic growth:

...clean tech and software companies...are racing to develop everything from algae biofuel to photovoltaic panels that absorb 10 times more energy from the sun than current models. Such projects mesh with Obama’s belief that renewable energy will wean the US from imported oil, enhance national security, fight climate change and recharge the economy. (“Clean dream,” 2009)

Whilst the current literature offers few direct comparisons to the findings on the Social Progress frame, aspects of the frame reflect emphases on “solutions” highlighted in earlier studies by Williams (2010) and Howard-Williams (2009) as prominent in the New Zealand Herald and The Press. Furthermore, the frame is similar to the “solutions” frame identified by Takashi (2008, 2010) as prominent in the Peru and Canada, and the “small actions” repertoire identified by Ereaut and Segnit (2006) as prominent in UK media discourse. Describing the message of the “small actions” frame as characterised by a language of “ease, convenience and effortless agency”,
the researchers argue that the juxtaposition of the immense scale of climate change with “not leaving your TV on standby” could in fact work to trivialise the issue rather than encourage action. Whilst Ereaut and Segnit’s argument is not supported by any empirical research, it nonetheless raises a salient point regarding the efficacy of the framing of “I’m doing my bit for the planet – and maybe my pocket” evident in the current sample (2006). This raises similar questions regarding the effects of conflating a legitimate goal such as reducing emissions, with more tenuous practices such as using “natural cleaners” or eating organic foods. It is ostensible that this kind of framing could in fact work to further distance certain audience from taking the problem seriously by allowing them to dismiss efforts to reduce emissions as simply another instance of “green-hype”, however exploring these questions will be the province of further research.

Overall, alongside policy-based solutions, newspaper discourse over the 2009-2010 period featured a strong emphasis upon the agency and efficacy of individuals, communities, and wider society in its ability to tackle climate change either indirectly through socio-political action to affect governmental policy, or directly through individual behaviour and technological innovation. This featured furthermore an emphasis on the potential benefits of reducing emissions, and included the rallying of communities, engaging in more “sustainable” or “holistic” lifestyles, saving money, improvements to air quality and public health, innovation, energy security and efficiency. These findings are particularly interesting as they closely reflect some of the recommendations of leading experts in climate change communication into how messages might be better framed in promoting positive attitudes and
engagement towards climate change mitigation (Maibach et al., 2010, 2008; Morton et al., 2010; Nisbet, 2009; Shanahan, 2007). The relative prominence of the Social Progress frame in New Zealand newspaper discourse is thus promising, and suggests that it has largely moved beyond a focus on the problem of climate change, to how the problem will be solved.

Overall, research around the issues emphasised in the Social Progress frame remains at an early stage. In its focus on how individuals and industry will deal with the problem, the prominence of the frame within the New Zealand context is likely to be another reflection of the prevailing perspective amongst the media and across the political spectrum that climate change has already been established as a fact. Furthermore it will be interesting to see how the focus on Politics and Social Progress frames differs with time, given the strong policy focus of coverage over the study period.

5.2.3. The Economic Competitiveness Frame

The Economic Competitiveness frame was overall the third most frequently identified in the study sample, however it was twice as likely to be present than it was to be the dominant frame in the articles in which it appeared. This reflects the finding that whilst considerations of economic impacts and costs were common in coverage, they were for the most part ancillary to the main topics of news stories.

In general, the Economic Competitiveness frame was evoked through an emphasis on the potential opportunities and/or costs to economies presented by policy measures to mitigate GHG emissions, and the wider challenge of climate change. At
the most basic level, this was evident in a focus on financial costs to taxpayers of the Government’s Emissions Trading Scheme, and of meeting its 2020 emissions reduction targets:

The draft bill shows the changes will cost taxpayers $415 million by 2013, before moving into the black over the next four years. However, as the price of longer-term assistance to big polluters takes effect, the bill for taxpayers blows out to $2 billion by 2030. (Small, 2009)

The cost of doing our bit in the battle against climate change will be $27 a week each by 2020 as the Government prepares to sign Kiwis up to a global pact. (Watkins, 2009b)

Considerations of cost vs. benefit were particularly evident in deliberation over the level of ambition New Zealand should adopt in its approach to domestic emissions policy measures, and overall, is broadly consistent with the 2010 National Government’s stated approach of seeking to balance “New Zealand’s economic opportunities with its environmental responsibilities…” in its approach to climate change (Ministry for the Environment, 2009b). Indeed, Williams found that coverage of climate change in The Press tended to focus strongly on “economic elements of proposals such as the boost to the region in terms of gross domestic product or jobs” (2010, p. 37).

Following the Government’s announcement of a 2020 emissions reduction target of 10-20 percent below 1990 levels for example, an article in The Dominion Post framed the decision in terms of economic costs versus benefits through the interpolation of a quote defending the decision:
Prime Minister John Key said yesterday that there needed to be a ‘healthy dose of realism’ between the cost to NZ of doing nothing, and the ‘huge economic implications both to NZ and the average worker’s pocket’ of meeting the more ambitious 40% target.’…‘Achieving these…reductions will mean higher costs for consumers and business for petrol and electricity. I’m not prepared to see an even higher target of minus 40 per cent which our advice says will cost jobs for already struggling kiwi families’. (Watkins, 2009b)

A tension between the potential economic implications of being “too ambitious” and of not being seen to be ambitious enough was frequently constructed in coverage around domestic emissions policy:

    Not only are the environmental risks high. Unless NZ produces a credible policy, it faces the serious risk of finding its tourist flights empty and its exports boycotted, or worse, shut out of overseas markets. …At the same time, New Zealand cannot cripple its economy with a policy so rigorous that it puts it at a disadvantage to its competitors. That would simply invite New Zealand industry to up sticks and set up where the restrictions on emissions were not so fierce. (“Lost opportunity on emissions deal,” 2009)

    Climate Change Minister Nick Smith said the report [by the NZ Institute of Economic Research] highlighted that getting too far ahead of other countries raised the cost to New Zealand. But doing nothing was not an option either: ‘If we slip too far behind international efforts we damage our clean, green reputation and may put our export market access at risk’. (Watkins, 2009a)

Criticising the Government’s eventual policy response as “overly cautious” and “timid”, a number of articles emphasised the potential costs to the New Zealand
economy of not living up to the country’s “clean green” brand. Interestingly, this framing was often employed by spokespersons of environmental groups and NGO's, for example by the Executive Director of Oxfam New Zealand, and Gary Taylor Executive Director of the New Zealand Environmental Defence Society:

We need to take into account the costs of setting too low a target… We are putting our huge asset - our clean green brand – at risk by being one of the climate change pariahs in negotiations…Potential damage to our image from dragging our feet on climate change is enormous, as is the cost to our businesses if they fall behind international standards of good practice. (Coates, 2009a)

You’d have also thought a business-savvy Government would realise the dangers such a weak response poses to our international reputation. As an exporting nation we’re very vulnerable to changes in purchasing behaviours caused by growing awareness about climate change and environmental performance. This is particularly so when our goods travel long distances to their markets. We could make a real virtue out of being truly 100% Pure but instead we place our powerful, compelling national brand at risk by a limp response. (G. Taylor, 2009b)

This was taken a step further in a small number of articles highlighting the potential opportunities for economies presented by the wider challenge of climate change:

Business leaders have been pressing the Government to look on climate change not just as a risk to be managed or a cost to be allocated, but a potentially transformative opportunity to be seized….It is also about shoring up the national clean, green brand, which is increasingly under threat. And more broadly it is about
reducing future risks to the economy ranging from oil shocks to carbon tariffs imposed on countries seen as free-riders. (Fallow, 2010)

…there is not just a climate threat, but a climate opportunity as well. The 21st century must be the era of the low carbon green revolution. Thousands of green jobs, earning millions of dollars, are up for grabs. The country – or region – which recognises this will win business and export markets as well as help to save the planet from dangerous climate change. (Bryant, 2009)

Echoing the calls of Shellenberger and Nordhaus (2007; 2004) scholars have suggested that stronger public and political engagement could be achieved by a shift in communications away from the “pollution paradigm”, and towards considerations of climate change as an “energy problem” that provides opportunities for economic growth and job creation (Groffman et al., 2010; Nisbet, 2009). In the analysis of the Economic Competitiveness frame, we see some evidence of such a message in New Zealand media coverage. With that said, the wide definition of the Economic Competitiveness frame used in this deductive analysis means that it is not possible to determine to what extent the precise message has been featured in content. Because the methodology did not distinguish the “valence” of a given frame (i.e. climate change as economic cost or as opportunity), judgements of whether the New Zealand media emphasised the potential costs to individuals and the economy of action to stem climate change, or the potential costs of failing to do so are not possible. Nonetheless, the relative prevalence of the Economic Competitiveness frame is consistent with the overall finding that the New Zealand media appear to have moved beyond a focus on the “pollution paradigm” (i.e., the causes and consequences of the problem), to a focus rather on how to deal with the problem,
including a weighing of potential costs to individuals and the economy presented by different options.

The emphasis on maintaining New Zealand’s “clean green” brand as a rationale for stronger emissions policies was one of the more interesting findings of this study, and is something that has not been identified in the literature to date. Cultivated as a marketing strategy following the declaration of the country as a “nuclear free zone” in the late 80’s, this “place myth” has been capitalised upon by New Zealand’s tourism and agriculture industries (C. Bell, 1996, 2008; Dew, 1999). Being repeatedly emphasised in political, public and media discourse, it has become established in the national consciousness as part of the country’s identity, and as a key asset to its export economy. The emphasis on the “clean green” brand in both justification and criticism of the Government’s emissions policy could thus be seen to represent attempts to appeal to this culturally embedded myth.

The power of a frame to shape attitudes and perceptions is understood to be contingent upon its resonance with audiences’ deeply held, and culturally embedded values and beliefs (Ho et al., 2008; Scheufele, 1999). Indeed, scholars argue that perceived threats to the country’s “clean green” brand have in the past mobilized public and political action to tackle environmental issues, and have for example shaped public discourse around biotechnology (Coyle & Fairweather, 2005; Dew, 1999). This considered, we might expect that reference to the “clean green” brand could be potentially powerful as a framing device in promoting support for strong emissions reductions amongst a cross section of the New Zealand public. Further research thus may look at how it might be more effectively harnessed in climate
change communication and advocacy strategies, and perhaps how it could be tied into a “reframing” of climate change as an opportunity for economic development in New Zealand.

5.2.4. The Science Frame

In articles evoking the Science frame climate change was largely presented as a “scientific” issue in which the expert authority of scientists and academics was emphasised. The Science frame was commonly found in articles presenting new research and findings:

Global warming has been blamed for the alarming loss of ice shelves in Antarctica, but a new study says newly exposed areas of sea are soaking up some of the carbon gas causing the problem. (“Sea absorbs carbon,” 2009)

Deep holes drilled in the seabed off the Canterbury coast this summer will help scientists determine the link between climate and sea-level changes over the past 35 million years…. (Williams, 2009b)

The frame was often characterised through the use of “technical” details and terminology, emphasising the expert nature of the subject.

The study, led by NASA’s Goddard Institute for Space Studies in New York ….found methane and another pollutant, carbon monoxide, soaked up an atmospheric “scrubber” called hydroxyl that would otherwise join other substances to make cooling aerosols. The sulphate aerosols elbows aside by methane cooled the earth by scattering light and affecting the clouds. (Gibson, 2009b)
The carbon dioxide emitted by that activity had raised the average global temperature to 3-6°C above the current level, and all the melted ice had raised the sea level by 25-40 metres. But the actual level of CO2 that caused all that was only 400 [parts per million]. (Dyer, 2009b)

The Science frame was also evident in articles presenting the “scientific background” of climate change and recapitulating what is “known vs. unknown”. The fact that articles discussing this kind of information often did so with regard to claims regarding “controversy” and ongoing debate perhaps explains why the Science frame was more likely to be present than dominant focus of the articles it appeared in. Following the leak of the “climategate” emails and revelations of mistakes in the 2007 IPCC report for example, Peter Hardstaff attempts to “take a step back from the hype and put things in perspective” by reifying the consensus position on climate change whilst acknowledging where uncertainties still remained:

The facts on climate change and its causes remain unchanged. The overwhelming majority of scientists from all relevant fields continue to support the conclusion of climate science: the Earth is warming because of rising levels of greenhouse gases in the atmosphere and this is a result of human activities such as deforestation and burning fossil fuels… There is, of course, uncertainty on the extent of climate change impacts. Projecting what will happen in different countries or ecological zones is not simple. (Hardstaff, 2010)

Similarly, a series of articles by New Zealand Herald environment reporter Eloise Gibson (2010a) featured discussions with New Zealand scientists “about what they don’t know, what they wish they knew and how they can find out more”, with
particular regard to regional predictions, “actual rainfall patterns around the globe, the role of aerosols in warming and cooling, and paleoclimate data...”.

Dr Renwick said there were already signs of wet places getting wetter and dry places getting drier ...But that is on a global scale. ‘Teasing that out into how rainfall is going to change over the Wellington region versus Hawkes Bay, that is hard...’ said Dr Renwick....‘The smaller the scale you go to the more variable things are and the harder it is to pin down what is causing what - is this natural variability or is it climate change? (Gibson, 2010a)

Car and smoke-stack pollutants shunned since the 1970s for causing acid rain may be cooling the earth, but there is uncertainty about their exact effect... Despite years of work, scientists do not know exactly what the net effect of the particles is and must work within huge margins of error, holding back efforts to make better projections of climate change. (Gibson, 2010b)

Research on the communication of scientific uncertainty is an important burgeoning field, however thus far there is no consensus apparent on a “best-practice” approach. Nonetheless, Corbett and Durfee (2004) have suggested that the inclusion of context (i.e. what is known and unknown), as evident in the above articles, might help “mitigate the uncertainty stirred by scientific controversy” (p. 142). Scholars have suggested that the key to public communication of climate change is then not to deny scientific uncertainty, but to accommodate it, and to place it “in the proper and objective context of the scientific process” (Corbett & Durfee, 2004, p. 143) . In their employment of the Science frame, New Zealand journalists - and New Zealand Herald science reporter Eloise Gibson in particular - have done this by acknowledging that
whilst uncertainties exist, they are neither insurmountable nor a statement of “ignorance” on the issue, but rather are a part of the scientific process. Furthermore, the fact that the Science frame was overall more prominent than the Scientific Controversy frame is promising in that it indicates a higher ratio of contextual information to emphasis on uncertainty and controversy.

5.2.5. The Consequences Frame

The Consequences frame generally featured an emphasis on the potential effects of climate change on people and the environment as central to considerations of the problem, and the need to act to mitigate it. The frame was characterised through the use of dramatic language and the outlining of potential, often disastrous future impact scenarios.

The relatively limited employment of the Consequences frame identified in this study is particularly interesting as it sits in stark contrast to the focus on catastrophic and fatalistic disaster scenarios, and the overriding alarmist tone which has been shown to characterise climate change coverage in the UK, Germany and Sweden (Ereaut & Segnit, 2006; Grundmann, 2007; M Hulme, 2007; Olausson, 2009). Indeed, elements of sensationalism were identified in particular articles, for example through comparing the effects of climate change to “terrorism” or “armed conflict”, and the force of “an invading army”; or in presenting projected impacts as inevitable outcomes and through the use of dramatic language:

[Global warming] also increases the chances of catching the life-threatening diseases that are more prevalent in poorer countries.…..

Warmer weather allows the bugs to move into previously unaffected
altitudes, spreading a disease [malaria] that is already the biggest killer in Africa…Dengue fever has been expanding its range: its incidence doubled in parts of the Americas between 1995-97 and 2005-07. On one estimate, 60 per cent of the world’s population will be exposed to the disease by 2070 [emphasis added]. (“Climate for change,” 2009)

The same article also employed personalisation and time compression in order to emphasise drama whilst also suggesting the attribution of a cyclone to the effects of climate change despite the fact that there is little evidence to support a causal link between current extreme weather events and climate change:

In late April Mostafa Rokonuzzaman, a farmer in south-western Bangladesh, gave an impassioned speech at a public meeting in his village, complaining that climate change, freakish hot spells and failed rains were ruining his vegetables. He didn’t know the half of it. A month later Mr Rokonuzzaman was chest-deep in a flood that had swept away his house, farm and even the village where the meeting took place. Cyclone Aila…which caused the storm surge that breached the village’s flood barriers, was itself a plausible example of how climate change is wreaking devastation in poor countries. (“Climate for change,” 2009)

It should be noted that the distinction between what are “alarmist” and what are simply “alarming” potential effects of climate change is not a clear cut, or objective one. Risbey (2008) for example argues that claims that might be regarded as alarmist by certain scholars may well be supported by the scientific discourse and regarded as appropriate by others as valid interpretations of the data. Whilst this lack of clarity means that this study did not distinguish between the two, examples such as the above were nonetheless rare overall. This finding is consistent with Kenix’
suggestion that sensationalism was uncommon in NZ coverage of climate change between 2006 and 2007, and that NZ news media appear to show “a shift away from scare tactics” (2008, p. 131). Low levels of alarmism have also been found in US and Portuguese newspapers (Carvalho & Pereira, 2009, p. 149).

Rather than presenting climate change as an “uncontrollable and extreme threat”, or through the lens of fatalism and the “klimakatastrophe” like their counterparts in the UK and Germany, the current study suggests that the New Zealand press constructed the potential consequences as alarming, but not unavoidable if urgent and bold action was taken.

Climate change is happening faster than we believed only two years ago. Continuing with business as usual almost certainly means dangerous, perhaps catastrophic, climate change during the course of this century.... We have less than 80 calendar days to go till Copenhagen. As of the Bonn meeting last month, the draft text contains some 250 pages - a feast of alternative options, a forest of square brackets. If we don’t sort this out, it risks becoming the longest and most global suicide note in history [emphasis added]. (Jose Manuel Barroso: "Now is the time to walk the walk, away from the abyss,” 2009)

More recent scientific assessments have suggested emissions are now rising so fast the Earth is firmly on track to hit the 6C rise if urgent action is not taken. Dr Pachauri listed some of the consequences of ignoring the threat of global warming. They included widespread increases in droughts and floods, greater stress on water resources, increases in tropical cyclone intensity, more extinctions of species and the eventual melting of the Greenland ice sheet, which would cause
sea levels around the world to rise by more than six metres [emphasis added]. (“We won’t let sceptics hijack talks,” 2009)

Interestingly, alongside more generic claims about the impacts of climate change, a number of articles linked the impacts of climate change to issues of global security – something that has not been previously referred to in the literature. It seems that this framing often played on xenophobia and recent public criticism of loose migration policies in the EU. A New Zealand Herald story Headlined “The climate for peace” (2010) for example linked the slow pace of negotiations amongst the international community to the fact that “climate refugees, conflict over increasingly scarce resource and the loss of territory are all impacts caused by climate change that will threaten global peace and security”, whilst another drew this as having a direct impact on New Zealand as “displaced peoples” from the Pacific and Southeast Asia “seek somewhere to live: Climate change refugees are coming our way” (G. Taylor, 2009a).

More explicitly, another article links the success of negotiations at Copenhagen to the risk of mass northward migrations into the US and the EU:

If the Copenhagen climate summit in December does not make a serious start at getting climate change under control, Europe could be swamped by people fleeing Africa in 20 years time…As their crops die from too much heat and too little water, huge numbers of climate refugees will head north – out of Mexico and central America to the US, out of Africa and the Middle East to the European Union. (Dyer, 2009a)
Reflecting a call in the literature (e.g. Maibach et al., 2010, 2008), impacts on human health were also a significant focus - their severity linked to the extent of action taken to stem GHG emissions:

…the New Zealand Medical Journal recently published an article supported and/or written by more than 100 senior doctors, health professionals and health organisations calling for New Zealand to have more responsible targets and rapid action on climate change. We are faced with a future of worsening food and water shortages, and disasters arising from floods, droughts, storms and sea-level rise. All of these threaten our basic needs for health and survival, and the scale of the damage depends on the degree to which we act now to prevent catastrophic warming [emphasis added]. (Hosking & Lindsay, 2009)

Indeed, whilst the above example shows that dramatic devices were used, “alarming” consequences were almost always paired with calls for action, and as avoidable if sufficient action is taken. Scholars have pointed to the emergence of a similar frame in European news media more recently which contrasts with the prevailing tendency towards “doom and gloom”, which they argue could be far more effective than “scare tactics” in empowering and encouraging individuals to engage in actions to mitigate the problem (Ereaut & Segnit, 2006; Risbey, 2008). Comparative studies between New Zealand and European newspapers could shed further light on this finding.

Overall, in comparison to Kenix’ (2008) findings, the current study indicates a decrease in the emphasis on the consequences of climate change in the New Zealand press. This might suggest an active shift as the issue has developed or as journalists have become more familiar with it, however more longitudinal data would be
necessary to confirm this. Given the current data, it would seem equally likely that this shift was due to the fact that the emphasis on the Copenhagen Summit over the 2009 period offered a source of drama that would usually be found in emphasising consequences; and/or the release of the documentary “An Inconvenient Truth” and the publishing of the Stern Report (which both focused on potential impacts) resulting in an inflated emphasis on consequences over the 2006-2007 period. As noted in an earlier chapter however, conclusions drawn from comparisons with Kenix’ findings can be deemed speculative at best, given the discrepancy between the types of media analysed in her study (i.e. the comparison of the New Zealand Herald with the press release/news aggregator Scoop.co.nz). Nevertheless, both the current study and Kenix’ analysis suggest that overt alarmism has been limited in New Zealand press coverage of climate change.

Furthermore, the finding that New Zealand newspapers placed relatively low emphasis on the consequences of climate change and sensationalists claims marks a contrast also from the discourses of “catastrophe” and alarmism that have been found to be dominant in German and British news discourse (Ereaut & Segnit, 2006; Grundmann, 2007; M Hulme, 2007). Previous research has suggested that the framing of climate change has, among other factors, reflected the political agendas which prevail in different countries and regions e.g., the “wait and see” policy approach taken by the US, and the proactive leadership role in international climate policy assumed by nations in the European Union (including Germany and the UK in particular) (Brossard et al., 2004; Grundmann, 2007; Olausson, 2009). The finding that New Zealand newspapers emphasised neither scientific controversy nor
catastrophic consequences lends support to this argument. Whilst climate change is approached as a real and significant problem in the New Zealand political agenda, the Government has clearly stated the ambition to be a “fast follower” rather than a leader on the issue.

5.2.6. The Scientific Controversy Frame

The relatively limited tendency to frame climate change science as “controversial” or “uncertain” (12%) observed in the current study is consistent with the findings of previous studies of New Zealand media coverage (Dispensa & Brulle, 2003; Howard-Williams, 2009; Kenix, 2008). Kenix (2008) for example found that climate change was framed as a matter remaining under scientific debate in just 9 percent of articles sampled over 2006 and 2007, whilst Dispensa and Brulle (2003) found that the New Zealand Herald framed climate change as uncertain in 11 per cent of coverage during 2000 (p. 96).

The perception of an ongoing scientific “debate” over the reality and causes of climate change was evoked through an emphasis on disputes over particular claims and allegations, and the construction of two irreconcilable, though ostensibly equally-legitimate “sides” on which experts and laypeople are divided. This was evident for example in coverage of disagreement over the significance of a paper claiming that temperature rises were due to El Niño/La Niña weather patterns (natural causes), rather than to GHG emissions (anthropogenic causes). Conflict was constructed in a series of articles (e.g., Gibson, 2009c) between the authors of the paper Chris de Freitas, Bob Carter and John McLean, and preeminent New Zealand
climate scientists Jim Salinger and James Renwick of NIWA through the employment of a “duelling experts” scenario (M. Boykoff & Boykoff, 2007; Corbett & Durfee, 2004; Gibson, 2009a; Russill, 2009). In this scenario, drama is elicited through the interpolation of comments and criticisms from Salinger and Renwick with claims made by the authors of the paper as “experts” engaged in dispute over the research:

De Freitas said the research had found about 80 per cent of temperature change was caused by atmospheric circulation... ‘We have used three sets of data... - satellite data...; radiosonde balloon data...; and surface temperatures back to 1961.’ Renwick said he had talked about the paper with NIWA colleagues and their concerns were with the data and the conclusion. ‘They have used their favourite versions of the radiosonde data and don’t discuss the possible issues with some of the radiosonde and satellite data,’ Renwick said. (Gorman, 2009a)

The author of the article Paul Gorman evokes a sense of legitimate scientific debate over the actual cause of the warming trend through the juxtaposition of quotes from disagreeing “experts”. This is amplified by the fact that Gorman does not provide any contextual information regarding the credentials of the papers’ authors or the amount of evidence which supports anthropogenic causes. Furthermore, Chris de Freitas (who is an Associate Professor in the School of Environment at the University of Auckland) is a vocal critic of the consensus perspective on anthropogenic climate change, whilst his co-authors have strong ties with national and international lobby-groups and industry-funded think-tanks dedicated to refuting the science of anthropogenic climate change (see Gibson, 2009c). Through use of the “duelling experts” scenario, and failing to include sufficient contextual information, the author
effectively creates a sense of “false balance” similar to that which has been found to prevail in US coverage (M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004; Oreskes, 2004; Zehr, 2000). With that said, examples of this “balance norm” were overall very rare. Indeed, in coverage of the same dispute, New Zealand Herald Reporter Eloise Gibson provided excellent context regarding the claims, where they sit in relation to the scientific discourse and clearly stating the background of de Freitas and his co-authors (Gibson, 2009a).

The dispute over the particular paper was also positioned within the context of a broader, ongoing back-and-forth of “debate” between “sceptics” and climate scientists, emphasising the perception of a continuing scientific controversy and conflict over the true causes of climate change, of which this disagreement was another part of e.g., “De Freitas said yesterday he had received congratulatory messages from overseas about the peer reviewed research. However, he was expecting a backlash this week from those who believed greenhouse gases were responsible for climate change” (Gorman, 2009a).

Reflecting broader findings in framing literature regarding the media’s emphasis on conflict, this perception of debate and conflict was often emphasised through the use of “war” metaphors (Nisbet et al., 2003). Reporting on the findings of a new study for example, an article carried the headline “Scientists fire back at climate doubters”, opening with “Climate scientists have delivered a powerful riposte to their sceptical critics…” [emphasis added] (Connor, 2010). The gravity of the “battle” between the “two sides” was further emphasised through the use of religious metaphors e.g. “The gloves are now off between the believers and deniers” - suggesting that the leak of
the “climategate” emails represented an escalation in the “fight” between “the faithful” who accept the consensual body of evidence, and those who irrationally oppose it [emphasis added] (Gorman, 2009b). Another article suggested that “Both sides are convinced they are on the sides of the angels...” (“Dark clouds gather over climate scientists,” 2009) whilst a representative of Federated Farmers referred to consensus position that anthropogenic emissions were a cause of climate change as “the ‘mantra’ put forward by the...IPCC” (“Fixation with emissions makes life more difficult,” 2009).

As well as emphasising the perception of deep and intense conflict over the reality of anthropogenic climate change, the use of war and religious metaphors problematically implies that the conflict is over a “belief”, obscuring the fact that the evidence sits overwhelmingly in favour of one “side” and perpetuating the notion that climate change is “uncertain” (Oreskes, 2004). This reduction of climate change to matter of “belief” or “opinion” on which people are divided was exemplified in The Dominion Post’s suggestion that “Depending on your point of view, the [Copenhagen] conference represents either a last chance for humanity to save the planet from a man-made apocalypse, or the culmination of a giant fraud.” (“More than politics at stake in climate talks,” 2009)

The perception of climate change as a scientific controversy was also evoked through the establishment of causal links between otherwise disparate events that occurred over the study period. This was evident for example in the linking of allegations of data manipulation arising from the “climategate” emails in November 2009, and the finding of mistakes in the 2007 IPCC report in early 2010:
First, there was the hacking of emails… which show scientists behaving in ways that fall far short of the candour and integrity expected of top researchers. Then there was the disappointment of Copenhagen… And since then it has emerged that two rather startling predictions of climate-change disaster [referring claims in the IPCC report] turn out to rest on nothing more substantial than a magazine interview and an article by non-scientific members of a pressure group [emphasis added]. (“Underhand Tactics,” 2010)

An article in The Dominion Post similarly links these events with November allegations by New Zealand sceptics that NIWA had tampered with temperature data:

January 2010: United Nation’s Intergovernmental Panel on Climate Change retracts a claim in its 2007 report about the rate at which Himalayan glaciers will melt…

December 2009: Leaked emails… prompted allegations that scientists were skewing climate data and withholding information.

In New Zealand, [NIWA] has been accused of altering its climate data, and has published online explanations of why it made the adjustments. (“A climate of scrutiny,” 2010)

The use of “first”, “then” and “since then” in The Press article, and the timeline in the latter article work to imply causality between each of these otherwise disparate events by linking them together in a temporal sequence. This kind of causal-event structure is a fundamental characteristic of stories, and worked to construct a dramatic narrative supporting the assertion that the integrity and credibility of climate scientists and the IPCC was questionable. By positioning the claim within the
context of the IPCC gaffe and allegations sparked by the “climate-gate” emails for example, The Dominion Post article implied that NIWA potentially did manipulate data (Mar, 2004). According to Entman (1993), one of the ways frames work is to promote a particular “causal interpretation” for given issues or events (p. 52). In these examples we see how this worked to frame climate change as “controversial” or “doubtful”.

The framing of climate change as controversial, uncertain or a matter of significant debate however did not go unchallenged in New Zealand news discourse. Indeed, reflecting the findings of Kenix (2008) and Howard-Williams (2009), when the Scientific Controversy frame was evoked, the suggestion that climate change itself was uncertain was more often only subtly implied, and was in fact regularly and actively dismissed through a reiteration of the consensus position. For example, after admonishing climate scientists at the University of East Anglia for mixing science with “zealotry” and throwing significant doubt over the veracity of their work, a Dominion Post article then goes to close on the single sentence concession that “However it would be wrong to assume that because some of the climate-change messengers are all too obviously flawed, so is their message” (“Dark clouds gather over climate scientists,” 2009).

Often paired with a Science frame, other articles tackled perceptions of uncertainty head on by investigating what the majority of scientist were actually unsure of or disagreed about – for example, the prediction of localised impacts - whilst contrasting this with the overriding agreement over the causes of climate change. An article written by two public health specialists acknowledges the issue of uncertainty,
and uses a medical analogy of how a doctor proceeds in the treatment of patient in order to explain that remaining uncertainties are “not a reason to do nothing”:

Imagine this scenario - a doctor sees a patient who has all the signs of pneumonia, a serious disease that can kill if not treated quickly. The doctor knows that the patient is likely to have pneumonia, but cannot be sure which germ is causing it without doing more tests - the results of which may take days to come back. What should this doctor do? Here's what doctors do in this situation - they start treatment anyway, as soon as they can. (Hosking & Lindsay, 2009)

Uncertainty and controversy were also played down through the dismissal of sceptics as “doubters”, “deniers”. In response to the leak of the “climategate” emails for example, then-British Climate Change Secretary Ed Miliband referred to groups and individuals challenging the mainstream scientific view as “irresponsible and dangerous”, and called for nations to be wary of “climate saboteurs” (“Warning on eco ‘saboteurs’,” 2009). Kenix (2008) found similarly that when climate change was framed as matter of conflict and debate, sceptical voices were regularly marginalised (p. 129).

Overall, the findings of the current study provide further evidence to suggest that in comparison to the US, the New Zealand press has tended to frame climate change in a manner which is largely consistent with the scientific consensus (Dispensa & Brulle, 2003; Howard-Williams, 2009; Kenix, 2008; Williams, 2010). Indeed, with the exception of the US, the low emphasis on uncertainty identified in New Zealand broadsheet press is representative of a general trend across studies of similar papers in nations around the world, including those both developed and developing (Billett,
With that said, the active attempts to counter certain claims regarding uncertainty and debate identified both by Kenix (2008) and in the current study have not been highlighted elsewhere in the literature. This is perhaps a promising indication regarding the relative quality and accuracy of New Zealand press coverage of climate change – a suggestion reinforced by Bell’s finding that even in 1994 the New Zealand media was by and large accurate in its presentation of the issue (A. Bell, 1994b).

The current findings mark a contrast with studies of US newspapers which have been shown to frame climate change in terms emphasising “controversy” and disagreement, and to regularly give space to sceptics and “deniers” as sources (M. Boykoff & Boykoff, 2004; Dispensa & Brulle, 2003; Grundmann, 2007; Zehr, 2000). Whilst the complexity of “frame building” processes means that isolating the reason for this contrast is problematic, it likely reflects the differing political, cultural and industrial contexts in which news has been constructed in New Zealand and the US (Grundmann, 2007; McCright & Dunlap, 2003). These might include the lower emphasis on the “objectivity” or “balance” norm in New Zealand journalism which has in the US led to a “balance bias” in climate change reporting (M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004; Hasan, 2007; Sessions, 2003); and the relative absence in New Zealand of the strong political and industrial opposition to emissions reductions in the US, which has seen influential conservative political and fossil fuel interests move to actively challenge and cast doubt over the evidence for climate change in the media (Dispensa & Brulle, 2003; McCright & Dunlap, 2000, 2003).
5.2.7. The Morality Frame

The Morality frame was the least prominent in the sample, consisting just 5 percent of the total frames coded, and dominant in less than a fifth of those. This low emphasis on Morality closely reflects Kenix’ (2008) finding of “very little evidence of this frame overall”, which she found to be dominant in just one percent of articles in the New Zealand Herald and Scoop.co.nz over 2006 and 2007, suggesting that the New Zealand news media has overall focused little on moral considerations with regard to climate change (p. 127).

Nonetheless, when the frame was identified, it was often evoked in an emphasis on the charge to act on climate change for the sake future generations and the environment, establishing both individuals and humanity as whole as accountable for the problem:

It’s not just for ‘greenies’ and ‘tree huggers’. It’s for grandparents who may already have a personal connection to the end of this century through precious little ones in their own family. It’s for people who think the term ‘environmental refugee’ should not need to exist. It’s for those who feel the Arctic’s polar bears are more important than ice free shipping lanes. (G. Stewart, 2009)

Ultimately, we are talking not only about protecting our own future, but that of our children and grandchildren. What does it say about our stewardship of the natural world that we face passing on such a diabolical mess? What does it say about us as human beings if we are not prepared to do what it takes to sort it out... Look at the science, look at the evidence and look at the world around you. Then ask
yourself what kind of world you want to pass on to your kids, and act accordingly. (Hardstaff, 2010)

Moral and ethical considerations of “fairness” were emphasised as the justification for why “rich” countries in the developed world should shoulder a greater share of the burden in efforts to mitigate emissions.

For developing countries the problem is one of fairness and history: rich countries are responsible for two-thirds of the carbon put into the atmosphere since 1850; to cut emissions in absolute terms now would perpetuate an unjust pattern. (“Climate for change,” 2009)

The responsibility for acting on climate change as resting with the developed world was also underscored through an emphasis of the disparity between the relatively low contribution of people in developing and poor countries to the climate change problem, and the high level of risk they faced from as a result of it. This focus on a “risk-responsibility divide” closely reflects the “North versus South” frame discussed by Billet as characterising Indian press coverage of climate change whereby the problem was seen as one caused by affluent developed nations, but causing disastrous impacts in poor developing nations (Billet, 2009).

Bangladeshis have one of the lowest carbon footprints per head in the world, at 1.1 tons a year, compared with 29 tons for the average American and 15 tons for Britons, yet they are suffering most from global warming. ‘It is time for rich countries to accept their responsibilities in terms of reducing emissions and providing assistance to developing countries that did not cause the problem but are going to suffer the consequences’... (Gray, 2009)
New Zealand was implicated in this divide as one of the “rich countries” in the North who have created the problem:

If we do something that harms others, we should put it right, even if it costs us to do so... We are among a relatively small proportion of the world’s population that caused the problem, and our industrialised countries grew rich from using cheap fossil fuels. Collectively, we have contributed about three-quarters of the world’s greenhouse gases from human sources into the atmosphere. The injustice is that a billion of the world’s poorest people...are responsible for just 3 per cent of global emissions, but are bearing the brunt of our pollution [emphasis added]. (Coates, 2009a)

The moral responsibility of New Zealand to be bold in its efforts to mitigate emissions was emphasised through a focus on the plight of island nations in the Pacific as “our neighbours”, providing evidence of how national contexts may shape framing (Anderson, 2009, 2011):

These tiny states contribute next to nothing to global warming but they face paying the highest price: quite literally losing their countries. ...Kiribati and Tuvalu are both sovereign states, so New Zealand does not have a responsibility for their future, nor a legal reason to do something for them. But they are our neighbours, fellow human beings, with families that need feeding....New Zealand has a moral and ethical responsibility to take action to assist Kiribati and Tuvalu. (McKinnon, 2009)

[Tuvalu has] acted as the moral conscience of the world, reminding delegates that the survival of their people, their lands, their culture and their nation is under threat.... It is hard to reconcile our professed
friendship for our Pacific neighbours with our narrow-minded, self-interested approach to climate change. (Coates, 2009b)

These applications of the Morality frame, whilst overall rare, are nonetheless significant in that they reflect an emphasis on “justice and equity” which has been called for by scholars in the field such as Mike Shanahan and Matthew Nisbet who have commented on how the media framing of climate change could be improved in order to better engage and empower audiences. Indeed Shanahan (2007) has suggested that it could serve to “connect in audiences’ minds the emissions one place and impacts in another, and to share the voices and concerns of the poorest, most vulnerable people who have contributed least to the problem but will suffer the most from its impacts.” (2007, p. 3). The examples above serve as evidence that although rare, the New Zealand press has taken up this call, almost it seems, verbatim.

These findings are perhaps even more promising considering that in comparison to other countries, New Zealand media appears to have placed a relatively marked emphasis on moral considerations. Indeed, recent studies of press in the US, UK, France, and Holland for example suggest that the frame has been largely absent in coverage of climate change in these countries (Dirikx & Gelders, 2010; Grundmann & Krishnamurthy, 2010). With that said however, there is a general dearth in data on the employment of the Morality frame, particularly over the time period analysed in this study. As such, more comparative research over 2009 and 2010 period would be required in order to determine whether the higher use of the Morality frame and emphasis on “justice and equity” in framing reflects New Zealand’s geographical
context neighbouring a number of threatened island nations, or is representative of a broader shift in international media coverage of the issue.

5.3. **Newspaper Differences**

The mean prominence of frames between newspapers was found to be relatively similar (see Figure 5.3). Nonetheless, the results of the one-way ANOVA showed that the Consequences frame was significantly more prominent in both *The Dominion Post* \( (m = 0.40523, n = 144) \) and the *New Zealand Herald* \( (m=0.42387, n = 243) \) than it was *The Press* \( (m = 0.208, SD = 0.514) \) \([F (2, 537) = 4.880, p<.05]\) (See Appendix 2 for analysis details). The Science frame was found to be significantly more prominent in the *New Zealand Herald* \( (m=0.461, SD = 0.717) \) than in *The Press* \( (m = 0.257, SD = 0.623) \) \([F(2,537) = 4.633, p<.05]\), and the Economic Competitiveness frame was found be significantly more prominent in *The Dominion Post* \( (m=0.57516, SD=0.758) \) than it was in the *New Zealand Herald* \( (m=0.29630, SD=0.577) \) \([F (2,537) = 8.606, p<.05]\).

Interestingly, the differences in the prominence of these three frames between the Fairfax-owned *The Dominion Post* and *The Press*, and the APN owned *New Zealand Herald* suggest that patterns of ownership have not played a major role in shaping the framing of the issue. Indeed, despite the copy-sharing agreement under Fairfax, *The Dominion Post* emphasised a Consequences frame significantly more than its sister publication *The Press*, whilst sharing an almost identical score with the *New Zealand Herald*. Similarly whilst the *New Zealand Herald* placed a significantly greater emphasis on the Science frame than *The Press*, no significant difference was detected
in the prominence of the frame in *The Dominion Post*. Overall, this finding appears to be consistent with previous studies suggesting that ownership patterns in New Zealand press have not in themselves had a significant effect in determining the content and presentation of reporting on climate change and other science issues (Kenix, 2008; Rupar, 2010; Williams, 2010).

**Figure 5.3.** Bar graph comparing mean frame score (0-2) of each frame between the *New Zealand Herald* (n = 243), *The Dominion Post* (n = 153) and *The Press* (n = 144). Significant differences were detected in the mean scores of the Economic Competitiveness \( F(2,537) = 8.606, p<.05 \), Science \( F(2,537) = 4.633, p<.05 \) and Consequences \( F(2, 537) = 4.880, p<.05 \) frames.
In a study comparing the coverage of biotechnology across the *New Zealand Herald*, *The Dominion Post* and *The Press*, Verica Rupar suggested that differences in the presentation of biotechnology in coverage could be best explained by the “community structure” of the regions served by the papers. Finding greater similarity between coverage in the *New Zealand Herald* and *The Dominion Post*, Rupar argues this was likely due to the fact they are both major centre newspapers, reflecting the prevailing business and political “community structures” of Auckland and Wellington respectively, whereas coverage in *The Press* by contrast reflected the more local or regional perspective of the Canterbury area (2010, p. 54). Whilst compelling, a “community structure” explanation for the differences in coverage of climate change is not supported by the current data. Indeed, although there are similarities between the major centre newspapers, the *New Zealand Herald* featured the lowest prominence of the Economic Competitiveness frame, whilst the “regional” *Press* showed the highest score for the Politics frame. Furthermore, the overall similarity in the prominence of 4 out of 7 frames suggest that further research would be necessary to determine the adequacy of the “community structure” model as an explanation for the differences observed.

It is possible that the differences in the prominence of frames between papers are reflective of variations in editorial policies. Williams (2010) for example suggested that in comparison to its sister papers *The Dominion Post* and the *Waikato Times*, a relatively higher level of attention to climate change in *The Press*, (as well as the fact that the paper has two specialist science/environmental reporters) could be explained in part by the autonomy and preference of the paper’s editor (Williams, 2010).
Previous work by Carvalho (2007) has similarly shown compelling evidence for the influence of editorial lines and prevailing “ideological cultures” upon the representations of climate change amongst British newspapers, however limited data on the editorial differences between New Zealand papers mean that such a reading is not possible in the current study.

Interestingly, there is some evidence to suggest that individual science and environment reporters have contributed to the differences detected between papers. Science reporter Eloise Gibson for example authored 16% of stories in the New Zealand Herald sample and showed a marked tendency to use a Science frame; whilst environment reporter David Williams authored just-under 20% of those in The Press sample and showed a strong tendency to employ the Politics frame (see Figure 5.4). These preferences are reflected in the fact that the New Zealand Herald placed significantly greater emphasis on the Science frame than The Press, and that the Politics frame was more prominent in The Press than it was in the New Zealand Herald (see Figure 5.3). The role of individual journalists in shaping how issues come to be framed has generally been played-down in the literature (e.g., Carragee & Roefs, 2004), however this finding suggests that in the context of relatively small market such as New Zealand, the influence of specialist reporters in particular may indeed be considerable. Whilst a more rigorous analysis would be needed to verify any influence these journalists had on the overall framing of the issue at each paper, the finding is nonetheless intriguing and calls for further investigation.
Figure 5.4. Bar graph comparing percentage frame frequency in articles written by *New Zealand Herald* reporter Eloise Gibson (n=31) and *The Press* reporter David Williams (n=28). Key: Economic Comp. = Economic Competitiveness.

5.4. Sources

Government figures, officials, politicians and political elites were the most commonly cited source category, representing 33 per cent of all sources coded. Academics, scientists and “experts” such as meteorologists were the second most common, making up 20 percent of sources. Non-Governmental Organisations and environmental groups followed as the third most common, consisting 13 percent of all sources. Representatives of business and industry represented 11 percent of sources. This was closely followed by citizens, public figures and celebrities which represented 10 percent and Independent Research Groups which represented 6 percent of sources. Sceptics made up 3 percent of the sources coded. Economists...
made just 2 per cent of sources. Articles in which no source or actor was present, or an unnamed expert was referred to together made up 2 percent of the total.

Figure 5.5. Pie chart showing prominence of sources in terms of percentage frequency (n = 847)

**Political and Academic Sources**

The prominence of political/governmental and academic sources in climate change coverage is consistent with broader trends identified in the literature (Brossard et al., 2004; Kenix, 2008; Trumbo, 1996; Williams, 2010). Kenix (2008) for example found that governmental and academic sources were the most prominent in coverage of climate change in the *New Zealand Herald* and *Scoop.co.nz*, over 2006 and 2007; whilst Williams (2010) found that Government representatives featured most prominently
as sources in *The Press* between 2005 and 2009 (2010, p. 37). More generally, Hasan (2007) noted a similar tendency for New Zealand journalists to rely on political and academic sources in coverage of “environmental” issues. He argued that journalists relied heavily on these sources because they brought “credibility” and legitimacy to stories, and with regard to political figures - tended to be readily available for comment within short time-frames (Hasan, 2007). This is consistent with a broader suggestion that part of journalists’ reliance on political elites in reporting is an outcome of journalistic norms and organisational routines (Anderson, 2009; Brossard et al., 2004). The prominence of political sources over academic sources is a more general reflection of a shift which occurred in the late 1980’s as climate change transformed from a “scientific” issue into a socially defined problem (Trumbo, 1996).

On a pragmatic level, journalists may have simply determined that political figures and scientists were the “right” sources to consult given the nature of salient events and issues over the study period (Hasan, 2007). Nonetheless, the prominence of political and academic sources is consistent with the contention that the degree of access accorded to particular actors as “primary definers” is contingent upon the cultural and economic capital available to them (Carragee & Roefs, 2004; Chong & Druckman, 2007a; Hall et al., 1978). As “official” and “expert” sources, the capital possessed by political and academic actors is reflected in their prominence as “primary definers” of issues pertaining to climate change in New Zealand newspapers.

Overall, the finding that scientists and academics continue to be prominent sources in climate change coverage suggests that they may exert a degree of influence over
how such issues come to be framed and defined in media discourse. This is relevant to the field of science communication in that it suggests that academics are in a strategic position to introduce new frames and perspectives pertaining to scientific or environmental issues into public discourse, and to perhaps influence the social construction of these issues. Moreover, this finding lends some credence to current initiatives which seek to educate academics in journalistic and news organisational practices so as to better equip them in communicating effectively in media.

Non-Governmental Organisations
A particularly interesting finding is that NGOs and environmental groups such as Greenpeace, Oxfam and 350.org together represented the third most commonly cited or quoted sources in coverage over the study period. Contrasting with the current findings, Hasan (2007) found that New Zealand journalists tended to be reluctant to use environmentalists as sources in coverage of environmental issues due to a perception that they “would want to project their agendas” and that the issues and perspectives they presented are “less trustworthy” (p. 242). The findings also contrast with Olausson’s observation that “political and environmental actors outside the sphere of institutionalized politics” were to a large extent omitted from climate change coverage in the Swedish press. Anderson (2011) has pointed to difficulties faced by NGO’s and environmental groups in attaining media access, suggesting that as “unofficial” sources many have embraced celebrity advocacy as a means of attracting media attention. The results of this study suggest that this has been successful to some extent, in that celebrities such as actors Lucy Lawless and Keisha Castle-Hughes featured in articles reporting on Greenpeace’s “Sign on” campaign (e.g. “Climate of care called for,” 2009; Espiner, 2009). Anderson (2011)
however also points out that celebrity advocacy can backfire on environmental
groups by challenging the legitimacy of their messages. This was evident in criticism
of Greenpeace’s celebrity-focused media strategy, and in Prime Minister John Key
suggesting that Castle-Hughes should “stick to acting” in response to her advocacy
for stronger emissions targets (e.g. Nicholson, 2009; Trevett, 2009). Overall, the
relative prominence of environmental groups and NGO’s as sources suggests that
they have represented a marked voice in New Zealand news discourse around
climate change issues over the study period. This perhaps points to advancements in
their media strategies and/or a shift in journalists’ attitudes towards such groups,
however with that said, the current data does not clearly support these speculations,
and thus further research is called for.

*Sceptics*
Another interesting finding was the very low number of sceptics appearing in
climate change coverage. This finding suggests that like their German and Swedish
counterparts, New Zealand quality newspapers have by and large not buoyed the
perspectives of climate sceptics and sceptical lobby groups in their coverage
(Grundmann, 2007; Olausson, 2009). The low number of sceptics is also consistent
with the findings of previous studies of New Zealand newspapers by Kenix (2008)
and Howard-Williams (2009). Furthermore, it highlights a distinction with US
climate change coverage which has historically given a significant amount of space to
sceptics as a result of an adherence to the culturally-entrenched journalistic norm of
“balance” and “objectivity”, and the presence of strong political and industry
opposition (M. Boykoff, 2007a; M. Boykoff & Boykoff, 2004; Grundmann, 2007;
McCright & Dunlap, 2000, 2003). Indeed, studies suggest New Zealand journalists
see “objectivity” as a worthy goal, but an unrealistic one, and thus are perhaps less inclined to seek out, or give space to sceptics for the sake of presenting a “balanced account”. Whilst industry lobbies such as the Greenhouse Policy Coalition which represents the “energy intensive” sector do exist in New Zealand, they possess little of the power and influence wielded by their counterparts in the US (Dispensa & Brulle, 2003; Hasan, 2007; Sessions, 2003). Furthermore with the exception of the minor party ACT, there is an overwhelmingly acceptance of the consensus position on anthropogenic climate change across the New Zealand political spectrum. Overall, these factors suggest that in comparison to the US, the relatively minimal space given to actors sceptical of anthropogenic climate change in the New Zealand news media is likely to reflect the overwhelming political agreement with the consensus position, the comparatively limited size and ambition of the local sceptical lobby and perhaps a better understanding of the issue by New Zealand journalists which has led to an unwillingness to support fringe perspectives (A. Bell, 1994b).

**Future Research**
The methodological approach adopted by the current study meant that frames were measured at the level of the article as a whole. As such, the frames evoked by individual sources in quotes and paraphrased statements were not measured. Future research therefore may improve upon the current research by carrying out an analysis of how various actors and stakeholders acting as sources worked to promote different problem definitions, causal interpretations, evaluations and/or suggest potential solutions (Entman, 1993). This could be particularly useful for studies in science communication by providing a foundation of knowledge on how academics and scientists or politicians for example have worked to frame climate change thus
far. Given that people are understood to delegate to such “elites” and experts in forming opinions around complex issues, understanding how they frame climate change could offer valuable insight into public attitudes and perceptions, and could prove useful in the design of future communication strategies around other science-based or environmental issues (Fiske & Taylor, 1991; Scheufele & Lewenstein, 2005).

5.5. Coverage

Tracking the overall frequency of reporting on climate change between June 2009 and May 2010, coverage was observed to grow steadily between June (22 articles) and October 2009 (50), punctuated by a small peak in August (58), before almost doubling in November (99) and culminating in a peak of 122 articles in December. This peak was followed by a rapid drop-off in January 2010 which saw coverage fall back to June 2009 levels, around which it hovered into the end of the period in May, reaching a study minimum of 10 articles in March 2010 (see Figure 5.6). The peak in coverage occurs within the same time-frame as the leak of the “Climategate” emails in late November, and the holding of the Copenhagen Summit in December.

Whilst the literature concerning this period remains extremely limited at this point in time, this pattern in New Zealand coverage appears to be representative of a more international trend in attention to climate change over the latter part of 2009 and early 2010 (Anderson, 2011; M. Boykoff, 2010; M. Boykoff & Mansfield, 2011). The major peak observed over November and December is consistent with a global, historical peak in climate change coverage detected at the end of 2009 by Boykoff and Mansfield (2011).
Figure 5.6. Overall Article Frequency June ’09 - May ’10. Total no. articles on climate change per month between June 2009 and May 2010 showing historical peak between November and December 2009 (n = 540)

Referring to this peak, scholars have similarly pointed to the leak of the “climategate” emails in November and the December 7-18th Copenhagen Summit as being the primary catalysts for the substantial increase in news media attention over this period (Anderson, 2011; M. Boykoff, 2010). Evidence for such an association in this study is suggested in the high concentration of reporting within the time-period immediate to these events: 45 of the 99 articles appearing in the November sample were published within the six days between the leak of the emails on 24th November and the end of the month, and 107 out of the 122 articles in the December sample were published between the 1st and the 18th - the final day of the summit.
That the “climategate” saga and the Copenhagen Summit are closely correlated with the highest levels of coverage recorded to date is in accordance with their magnitude as major “events” in the development of climate change as an issue (Anderson, 2011; M. Boykoff, 2010). Intertwined and falling within just weeks of each other, the concatenating nature of these events is likely to have played a major part in catapulting climate change to the top of political, public and news agendas and producing the major peak in coverage evident at the end of 2009. Considering the significance of these events, this finding is broadly consistent with the historical precedent that peaks in attention to climate change in news media have been closely associated with major climate science and policy “events” e.g., the peak in 1997 around Kyoto Conference, and the 2007 peak with the release of the IPCC Fourth Assessment Report (Anderson, 2009, 2011; M. T. Boykoff & Roberts, 2007, p. 5). Moreover, this finding presents strong evidence to support the contention in the literature that media attention to environmental and science issues tends to be closely tied to “events” (Anderson, 2009; M. Boykoff & Boykoff, 2007; M. T. Boykoff & Roberts, 2007; Trumbo, 1996; Ungar, 1992).

Copenhagen and the potential for “drama”
In addition to their significance as key moments in climate science and policy, the high levels of coverage associated with the Copenhagen Summit and the “climategate” controversy can be explained by the fact that as high-stakes issues with far-reaching consequences and respectively involving major policy decisions, world leaders and leading climate scientists – these events possessed an inherent degree of “news value” and significant potential for drama (e.g., Nisbet, Brossard, & Kroepsch, 2003; Weingart, Engels, & Pansegrau, 2000). Indeed, the more general orientation of
journalists and editors towards “events” in reporting on science and environmental issues stems from a preference for drama that is rooted in journalistic norms and commercial directives to cover and construct “exciting” stories (Brossard et al., 2004; Dispensa & Brulle, 2003; Grundmann & Krishnamurthy, 2010). Whilst like many environmental and science-based issues climate change is complex, abstract and – given the indeterminate nature of its impacts and time-scale – lacks in inherent immediacy and drama, “focusing events” such as policy summits, disasters, new research announcements and claims of controversy and conflict by contrast often lend themselves to the construction of familiar dramatic or exciting narratives (Anderson, 2009; Nisbet & Hugie, 2006; Nisbet & Lewenstein, 2002). Given the time and resource constraints facing print journalists, such focusing events allow for “easier”, more “exciting” reporting and thus potentially higher volumes of coverage amongst both specialist and general-desk reporters (Hasan, 2007; Sessions, 2003).

Whilst the characteristics of “climate-gate” as a focusing event meant that it inherently lent to a dramatic focus on conflict and controversy, drama in coverage of the Copenhagen Summit was constructed largely around anticipation over its potential outcome. This sense of anticipation characterised reporting over the course of the Summit, with the New Zealand Herald for example running the sub-headline “12 Days to Save the World Copenhagen, Dec 7-18” across a number of articles – the deadline and hyperbole emphasising a sense of urgency and gravity suggesting that the conference had the potential to produce a “solution” to, or prevent climate change (e.g., “Hitting 2C target: It’s only 50/50,” 2009). The Dominion Post also highlighted the importance of the Summit by outlining its position in a front-page
editorial on the first day of negotiations entitled “More than politics at stake in climate talks” (2009), as well as reprinting on the second page an editorial by the UK newspaper the *Guardian* headed “Climate call: all for one and one for all” (2009) which called for decisive action at Copenhagen.

*Copenhagen as a “meta-event”*

This anticipation over the outcome of the Copenhagen negotiations however was not limited to coverage of the Summit itself, but rather as evidenced in the pattern of growth and the content of reporting over the latter part of 2009, permeated as a focal-point of climate change reporting in the months leading up to the event. Indeed, in contrast to the uncertainty and abstraction that characterises climate change as an environmental and social problem, the Copenhagen Summit represented a tangible potential “solution” with an explicit “dead-line”, and with clear possible outcomes of either “success” or “failure”. In this sense, the Summit, and anticipation over its outcome, could be considered as part of a narrative framework around which climate change discourse - across policy science and public spheres and within national and international contexts - was organised and embellished with a mounting degree of significance and news value. Domestic disputes over emissions reduction targets and the Government’s Emissions Trading Scheme for example were attributed greater gravity and urgency by juxtaposing them against the success of negotiations, and New Zealand’s reputation in Copenhagen:

> Deadline looms as parties clash on how to change greenhouse gas law…The government would be embarrassed going to Copenhagen with its climate change policy a ‘complete mess’, Ms Fitzsimons said. (Gower, 2009)
With this level of ambition [regarding the emissions targets to be taken to negotiations] from rich countries like Australia and New Zealand, there is no chance developing countries like China and India will sign on. (Williams, 2009a)

Elements of this dramatic narrative are evident as early as June in hyperbolic references to the Copenhagen Summit as “…the last opportunity to secure a stable climate for future generations” (“Five-minute-’freeze’ for the environment,” 2009) and as “one of the most important exercises in international diplomacy in decades” (Bryant, 2009). Along with rates of reporting, dramatic rhetoric continued to ramp up as the “deadline” approached with a quote from Green Party co-leader Russell Norman for example describing the Summit as “one of the most important meetings in the history of the human race” (“Pressure on Key to attend climate talks,” 2009), whilst other articles referred to the Copenhagen as the place “where again the world’s politicians will meet in an attempt to thrash out a binding ‘save the planet’ protocol” (McCrone, 2009) and attempt to “…save the world” (Easton, 2009).

Other articles within this “anticipation” narrative constructed drama through emphasis on doubt and anxiety over the likelihood of a positive outcome with headlines such as “Vision dimming for climate deal” (2009) and “Chance blown” (2009), alongside suggestions that “A ‘comprehensive global agreement’ at Copenhagen in December is all but off the cards” (“Costing climate change,” 2009). This continued as differences between developed and developing nations emerged as a sticking point during eventual run of negotiations in December with headlines such as “Cracks showing” (2009) and “Kyoto may cause meeting to founder” (McCarthy, 2009). Even as it became clear in the last days that a binding deal was not
going to eventuate at Copenhagen, anticipation marked with anxiety over the outcome was still maintained in headlines such as “Agreement on climate change nears stalemate, says minister” (2009) and “Chances of a deal down to 20% - Smith” (2009).

The conclusion of the Copenhagen Summit on the 18th of December appears to have marked also the conclusion of the dramatic narrative which had been constructed around it over the latter part of 2009. With the outcome of the Summit announced, and the potential for drama which had buoyed reporting all but evaporated, coverage of climate change was seen to drop rapidly. This was despite the fact that the major topics that were covered following December were very similar to, or were in fact continuations of on-going issues such as mistakes identified in the IPCC Fourth Assessment Report, disputes over the Government’s ETS, conflict and controversy amongst scientists and sceptics over particular claims and the political conflict in Australia. Indeed, just 15 of the 122 articles in the December sample were published after the 18th, whilst coverage dropped dramatically back to June 2009 levels with a total of just 23 articles in January, around which it hovered until the end of the study period in May 2010. This trend broadly reflects that seen in news coverage of genomic research in the late 1990’s which Nisbet and Huge (2006) argue was driven by a narrative built around a “scientific ‘race’ to be the first to crack the human genetic code” (p. 33). When the two teams working on the project finally reached the “finishing line” in 2000 with the publication of the genome sequence, the researchers argue that “journalists could no longer fit the issue into a particular narrative structure and turned their attention to other issues”, leading to a steady
decline in coverage “even though genomics research had continued forward on multiple fronts, with many policy and scientific questions left unresolved” (Nisbet & Huge, 2006, p. 34).

Whilst the narrative around Copenhagen, combined with the “climate-gate” leak in November offers a potential explanation for the general trend of growth identified between June and December however, its conclusion explains only part of the rapid decline in coverage seen in January and the relatively low attention to climate change seen over the rest of 2010. Editorial fatigue arising from a need for new and “novel” issues and topics for example is likely to have played a part in the cessation of coverage following the relatively high level of attention given to climate change in the latter part of 2009 (Anderson, 2009, p. 168). The drop in coverage may also be tied to the development of similar kind of “issue-fatigue” amongst the public reflected in opinion polls in New Zealand and abroad in early 2010, which might have seen climate change slide down the media agenda (Maibach et al., 2010; ShapeNZ, 2009). Furthermore, as news agendas have a limited “carrying capacity”, different issues can be seen to be in “competition” for space and attention (Zehr, 2000, pp. 91-92). With column space at a premium given also that newspapers in New Zealand generate most of their revenue from advertising, a persistent drive for novelty and excitement in reporting means that a given issue has a limited “shelf-life” before a newer or more exciting issue takes its place (Nisbet & Huge 2006, pp. 31-32; Rosenberg, 2008). This considered, the low levels of attention to climate change following December 2009 were likely shaped in part by the breaking of other major “environmental” issues such as the devastating January 12 earthquake that hit Haiti,
the Chilean earthquake and tsunami on February 27, the Eyjafjallajökul eruption in Iceland which caused major air traffic disruptions and the Horizon Oil Platform spill in the Gulf of Mexico on April 20th.
Chapter 6: Conclusions

The aim of the current study was to build upon the current literature by investigating how climate change has been framed in recent coverage in New Zealand’s major daily newspapers the New Zealand Herald, The Press and the Dominion Post. Through the employment of a quantitative content analysis of coverage between June 2009 and June 2010, this study found that climate change was framed in a manner which reflected a strong alignment with the scientific consensus on the reality and anthropogenic causes of climate change. Sceptics or deniers were given little voice, and on the relatively rare occasion that controversy or disagreement over the scientific evidence for climate change was emphasised in coverage, it was often attenuated through a recapitulation of the scientific consensus. Moreover, as evidenced in the dominance of Politics, Social Progress and Economic Competitiveness frames, coverage over the study period was focused strongly upon ways of responding to climate change, rather than upon the potential consequences, or moral implications of the problem itself.

The prominence of these frames appears to be linked to a focus on climate policy in the lead up to the highly anticipated 2009 Copenhagen Summit, however the findings are broadly consistent with previous research over the past decade in the New Zealand Herald and The Press by Dispensa and Brulle (2003), Kenix (2008), Williams (2010), and Howard-Williams (2009). Taken together, these findings show that New Zealand’s major newspapers over the past decade have not given undue emphasis to claims challenging the scientific evidence for climate change, and for the
most part have framed it in terms reflecting the consensus within the scientific community on the reality and causes of the problem. Climate change has been framed as a serious challenge, however as the current study has shown - one that is not insurmountable if necessary steps are taken by policymakers and political leaders, as well as by individuals and through technological innovation to mitigate greenhouse gas emissions. What is more, this study has shown that such steps are regularly framed in terms of the potential additional benefits they could offer to the economy, individuals, and to the “progress” of society more generally.

In light of similar findings in recent studies around the world, the current study provides further evidence to suggest that “quality” newspapers have generally moved past questioning the scientific evidence for climate change – certainly a promising sign for advocates and science communication professionals working in the field of climate change communications (Billett, 2009; Carvalho, 2007; Carvalho & Pereira, 2009; Takahashi, 2010). By the same token, the current study further evidences that the tendency to frame climate change in terms of “controversy” and disagreement has been largely centred in the US media (Billett, 2009; Dirikx & Gelders, 2009; Dispensa & Brulle, 2003). A unique contribution of this study has been to highlight a contrast in New Zealand news discourse from the sensationalist emphases on potential “catastrophe”, alarmism and fatalism which have pervaded in coverage of climate change in the British and German press (e.g. Ereaut & Segnit, 2006; Grundmann, 2007). These differences in the framing of climate change in the US, New Zealand, British and German press highlight key differences in the political,
industrial and cultural terrains in which frames are “built” and news discourse has been produced in these countries.

The literature on the framing of climate change has thus far been characterised by the dichotomy between the US emphasis on “controversy” and “uncertainty”, and the emphasis on “catastrophe” and alarmism in some EU nations (Dirikx & Gelders, 2009; Grundmann, 2007). The current study highlights New Zealand as a promising “third” or “middle option” for research in that it is not beleaguered by the immense industrial and conservative political opposition to emissions reduction policy faced by the US; and unlike nations in the EU, does not seek political leadership on the issue. Future studies in processes of “frame building” may therefore generate some unique insights in directly comparing coverage between New Zealand, the US and perhaps Germany or the UK, and could perhaps further develop our understanding of the focus on “solutions” that has been shown to characterise coverage in the New Zealand press.

The complexity of framing effects mean that it is not possible to infer with any certainty how, and even if the dominant media representations identified in this study might have shaped attitudes and perceptions of climate change amongst the New Zealand public. Nonetheless, the uncertainty and controversy which studies argue is likely to undermine public engagement and action to address climate change has shown to be rarely emphasised in New Zealand newspaper coverage (Corbett & Durfee, 2004; Lorenzoni et al., 2007; Morton et al., 2010). Indeed, studies have suggested that an emphasis on the potential “gains” to human health and the economy as evidenced in the prominence of Social Progress and Economic
Competitiveness frames could in fact be effective in *facilitating* public engagement and action with regard to climate change (Maibach et al., 2010; Shellenberger & Nordhaus, 2004; Spence & Pidgeon, 2010). Overall, whilst such judgments are outside the immediate scope of this study, the results suggest that it is unlikely that representations in New Zealand’s major newspapers are linked to, or otherwise explain the incongruity between the scientific consensus on anthropogenic climate change, and the trends in public attitudes and perceptions towards the issue identified in recent polls (e.g. ShapeNZ, 2007, 2009; UMR, 2010). The framing of climate change in New Zealand newspaper coverage in other words offers few clues as to the apparent confusion amongst the public regarding the certainty and causes of climate change, and the more general lack of strong support for action to address the problem.

This of course does not rule out the possibility that the framing of climate change communications in other media have contributed to these beliefs and attitudes. Rather, adding to a growing chorus in recent work, the findings of this thesis point to a need to further analyse coverage of climate change in television news and current affairs programming – the most widely cited source of science and technology news amongst the New Zealand public (ShapeNZ, 2007); as well as in the rapidly growing formats of news websites and blogs. Furthermore, the evidence from recent public opinion polls in New Zealand can be considered anecdotal at best. More in-depth studies will be necessary to develop a better understanding of if and how media frames have in any way influenced the ambivalent attitudes and perceptions New Zealanders hold of climate change. Considering recent research suggesting that
individual values play a key role in moderating the strength of “frame effects”, a strong understanding of target audiences will be vital to effective communication and advocacy both with regard to climate change, and to science issues more generally.

Overall, whilst the findings are by no means groundbreaking, the current study has reinforced, and expanded upon the literature by presenting the first analysis of climate change coverage across New Zealand’s three major newspapers including The Dominion Post, and by extending the body of knowledge on the framing of climate change into 2010. Furthermore, taking into consideration time and resource constraints, the study has achieved its wider aim of providing a foundation of knowledge upon which further studies on media representations of climate change in New Zealand can build.

Paired with sensitive analyses of public attitudes and values, these insights could aid in the development of improved communication strategies. In doing so, they can perhaps help to facilitate efforts to stimulate bottom-up pressure for meaningful national and international measures to mitigate the threat of climate change.
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Key events and issues

Following is a summary of the key issues and events associated with climate change evident in the sample of coverage from the New Zealand Herald, The Dominion Post and The Press between June 2009 and the end of May 2010.

June-July - Coverage in July was centred on the 2009 G8 Summit in L’Aquila, Italy where worries about reaching a deal at Copenhagen began as leaders failed to make headway over commitments to emissions reductions beyond an agreement to limit temperature rises to 2°C. Discussion around New Zealand’s 2020 emissions targets to take to Copenhagen negotiations picked up following the summit, with Greenpeace launching its “Sign On” campaign for New Zealand to aim for a target of 40 percent below 1990 levels in order to limit atmospheric concentrations of greenhouse gasses to “safe” levels.

August - Discussion around 2020 emissions targets intensified into August following Tim Groser’s announcement of a target of 10-20 percent below 1990 levels at talks in Bonn, Germany. The target was met with significant criticism directed at Prime Minister John Key and Environment Minister Nick Smith over its potentially negative impact upon the success of the Copenhagen negotiations, efforts to stem climate change and New Zealand’s “clean green” trading image. Salient issues were also continuing political conflict in Australia over Prime Minister Kevin Rudd’s proposed Emissions Trading Scheme; conflict over a paper published New Zealand
climate sceptic Chris de Freitas; and speculation over the 2010 National Government’s efforts to gain support from smaller parties in order to pass its reworked Emissions Trading Scheme.

**September** - Debate over the ETS dominated coverage in September as the Government manoeuvred to garner support from ACT and the Maori Party, whilst snubbing Labour’s attempts to work on a bipartisan deal. The Government’s eventual deal with the Maori Party, who had initially opposed the ETS, stirred significant controversy over potential benefits it gave to Iwi leaders with stakes in Agriculture and Forestry and drew criticism as an opportunity to develop a stable, long-term bipartisan policy that was passed up in order to deny Labour any political “kudos”. Coverage was also focused on the costs to taxpayers of the proposed ETS as well as debate over its’ “toothless” nature in presenting little incentive for polluters to make changes, and cost vs. benefit disputes over the Government’s attempt to clean up industry without damaging the economy. The G20 talks in New York were also a point of coverage towards the end of the month, as leaders discussed a deal regarding financial assistance for developing countries that would be crucial to success at the Copenhagen Summit, and the US, China and India tabled their respective commitments.

**October** - October saw a sustained focus on climate change policy in the run up to Copenhagen, however coverage was characterised by a slightly different emphasis on activism for an ambitious legally binding treaty. Impassioned calls resounded from a range of actors including IPCC head Rajendra Pachauri, Oxfam, Greenpeace, Brazilian President Luiz Inácio da Silva, Air New Zealand CEO Rob Fyfe, British
Prime Minister Gordon Brown and environmentalist Bill McKibben. McKibben’s highly visible 350.org campaign gained traction with local demonstrations being held around the country before and after the October 24th – designated as the International Day of Climate Action by the 35.org movement. This was complemented by a focus on new research regarding the impacts of climate change on human health, on poor and low-lying nations, as well as on parts of New Zealand.

**November** - Coverage essentially doubled between October and November amidst growing anticipation over the Copenhagen Summit; continuing criticism and debate over the 2010 National Government’s ETS which was eventually passed with the support of the Maori Party; and escalating political conflict in Australia over the Rudd Government’s ETS. Much of the jump in November coverage occurred towards the end of the month, coinciding with breaking of the “climate-gate scandal” on 24th November. “Climate-gate” saw New Zealand sceptics move to pronounce the emails as undermining the evidential basis for ACC, whilst scientists and other bodies moved to challenge the claims and denounce the hacking as a strategic attempt to derail Copenhagen negotiations. Allegations from local sceptical groups that NIWA had tampered with its own temperature measurements arose just days after the leak of the “climategate” emails.

**December** - December saw a continuation of speculation over the significance of “climate-gate” as media attention ramped up towards the Copenhagen Summit. Extensive reporting on the Summit itself featured a focus on the daily “comings and goings” of New Zealand representatives, and on the progress of negotiations. Coverage featured an overriding focus on disputes over the expected commitments
of developed and developing countries as a significant obstacle to the summit’s success. Interspersed with stories emphasising the potentially disastrous impacts of a failure to reduce emissions urgently, coverage dropped off markedly following the “failure” of negotiations and the signing of the conciliatory agreement the “Copenhagen Accord”. December also saw contention over the British Meteorological Service’s claim that 2010 would be the hottest year played out between various groups.

**January – May** - Coverage over this period featured a focus on controversy over the identification of two mistakes in the IPCC’s 2007 Assessment Report between January and February, and renewed focus on the NIWA allegations as the institute made available online all of its temperature records. The mistakes which had slipped through the IPCC’s review process, involved an unverified claim regarding the melting of Himalayan glaciers, and incorrectly referenced claim regarding the loss of parts of the Amazon rainforest were respectively coined “glacier-gate” and “Amazon-gate”. The ongoing issue of the Australian ETS finally came to close with the deferral of Kevin Rudd’s ETS after it was rejected by Australian Senate for the second time in December.
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The mean difference is significant at the 0.05 level.