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Negotiating a Mainstreaming Spectrum: Climate Change Response and Communication in the Carolinas

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ABSTRACT *North and South Carolina have experienced considerable land-use change, urban sprawl and environmental management challenges within the past 30 years that have amplified and interacted with growing impacts from climate variability and change. However, with strong conservative majorities in the legislatures of both states, political tension around the issue of climate change has intensified, increasing the need for sensitive and deliberate climate change response strategies that mainstream action into salient areas of public concern. With data from online questionnaires and interviews with over 100 leaders within the Carolinas, this research explores a number of context-specific socio-ecological factors that influence climate change response activities and the mainstreaming process. Additionally, this study highlights how a key component of mainstreaming climate response action in the Carolinas involves the careful use of public communication frames. As such, mainstreamed climate change response within this region of the USA is often aligned publicly with other relevant areas of concern, not referenced or communicated as climate change response. Focusing on the process of mainstreaming provides a salient opportunity to bridge literatures around the concepts of mainstreaming and communication framing while analysing pathways by which climate change response activities are initiated, developed and enacted.*

KEY WORDS: Climate change response, mainstreaming, communication frames, North Carolina, South Carolina

Climate variability and human-induced global climate change have complex reach into US social, environmental and economic processes (Karl *et al*., 2009; Parry *et al*., 2007). Although climate change policy strategies have traditionally

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been developed at the federal or international level, climate impacts are experienced, and arguably, most effectively responded to, at local and regional levels (Selin & van DeVeer, 2011; Zimmerman & Faris, 2011). Within these local and regional systems, diverse social, environmental and economic sectors may experience varying degrees of climate change impacts because of differences in the magnitude of expected climate change, the presence of unique social resources and stressors, and sector-specific sensitivities (Parry *et al*., 2007). In addition, the institutional goals, responsibilities and governing authority of diverse sectors may lead to a focus on certain climate change concerns and impacts over others, while also influencing the ability of these sectors to respond to potential threats in a comprehensive or effective manner (Vasi, 2006). Access to relevant information, public awareness and support, and political or resource constraints and opportunities all shape the nature of local and regional climate change mitigation and adaptation and the ways in which these strategies are communicated to constituent groups. Accordingly, mitigation and adaption activities aimed at moderating climate impacts must be informed by distinct analysis of regional social, environmental and economic contexts.

This article draws on research that involved questionnaires and interviews with over 100 public leaders among multiple sectors and interest groups in North and South Carolina (the 'Carolinas') to examine key strategies to respond to climate change. Instead of wading into public opinion debates and conflict over climate change, not only do regional leaders intentionally mainstream climate change response activities but they also focus deliberately on framing these activities within areas of public interest that resonate with the values and beliefs of constituent groups (Brouwer *et al*., 2013; Nunan *et al*., 2012). Study authors contend that this is due to the lack of emphasis on climate change as a major public concern in the Carolinas and the growing hostility towards climate change science and action by political leaders. To understand the mainstreaming process more fully, this study examines the varied pathways of mainstreaming climate change response within a variety of context-specific socio-ecological factors. These factors include the unique biogeographical characteristics of an area and climate change threats, institutional responsibilities and priorities, cultural and political norms, and available resources and capacity to respond.

'Climate mainstreaming' involves both an internal process of establishing and enacting specific activities and an external framing process of communicating those efforts to public or constituent groups. Analysis of these procedures reveals valuable information about the policy mainstreaming process. Focusing on the *process* of mainstreaming as a practice provides a salient opportunity to bridge literatures around the concepts of mainstreaming and communication framing while considering the dynamic internal and external procedures involved in climate change response in the Carolinas. After a brief overview of contemporary research on mainstreaming climate change response and public communication framing as well as the research methods of this study, authors reveal the primary climate change response activities occurring in the region. Additionally, details are provided regarding the pathways through which such activities are commonly developed and enacted as well as the framing categories utilized to communicate those activities publicly.

Mainstreaming Climate Change Response and Framing Public Communication

Although mainstreaming as a concept was first developed within a sustainable development context in the early 1990s (Nunan *et al*., 2012), it has become much more popular among leaders in the USA and the UK as a method to integrate climate change response actions into broad governance activities, particularly with regard to climate adaptation (Bierbaum *et al*., 2013; Wilbanks & Kates, 2010). Within a climate change response and policy context, mainstreaming has been defined as

> [I]ntegrating climate adaptation into existing environmental, climate, or sustainability frameworks or sector-based plans (e.g. hazard mitigation, ecosystem conservation, water management, risk contingency planning, public health, environmental management, energy and national security). (Bierbaum *et al*., 2013, p. 378)

Kok and de Coninck (2007, p. 588) further emphasized the goal of climate mainstreaming:

> The aim of a mainstreaming strategy, as part of climate policies, is to capture the potential in other policy areas and sectors for implementing climate-friendly and climate-safe development pathways (Munasinghe, 2002). It would help to enhance the climate change regime by increasing policy coherence, minimising duplications and contradictory policies, dealing with trade-offs and capturing the opportunities for synergistic results in terms of increased adaptive capacity and lower emissions.

Climate change mainstreaming is theoretically connected to a broader environmental mainstreaming movement (Gupta, 2010) that is designed to integrate environmental concerns into extensive policy contexts. Nunan *et al*. (2012) argue that mainstreaming is a deliberate process, achieved by multiple routes and outputs, that takes place across and between multiple levels of government. This approach to policy negotiation and management is often called environmental policy integration in European settings (Adelle & Russel, 2013), leading some scholars to use the term climate policy integration to reference the climate mainstreaming process (Mickwitz *et al*., 2009). Although minor theoretical distinctions between these terms exist, this article uses the term climate mainstreaming to describe these concepts collectively. Within the USA, climate mainstreaming is often lauded as a strategy to help diffuse political tension around climate change, allow customized approaches to integrated policy management and utilize unique resources and strengths of private and public sectors (Wilbanks & Kates, 2010).

Over the past decade, climate mainstreaming theory and practice has started to focus on tradeoffs among competing priorities and efforts to identify synergies or co-benefits among multiple socio-ecological values or interests (Kok & de Coninck, 2007). Scholars have identified several areas in which climate change response is commonly mainstreamed, including water and energy resource or infrastructure management, public health, planning and development, hazard mitigation and ecosystem conservation (Bierbaum *et al*., 2013). Additionally, research suggests many factors affect the mainstreaming process. These include political will, the capacity of an organization to regulate or set policy, a lack of

recognized synergistic opportunities and availability of resources (Bauer *et al*., 2012). Dow and Carter (2012) observe that benefits of mainstreaming include using existing institutions to avoid duplicative efforts, increasing coordination and growing existing support and networks across levels of organizations and governments. However, mainstreamed efforts are embedded in the challenges and limitations of existing institutions.

Nunan *et al*. (2012, p. 274) argues that 'mainstreaming is not a straightforward, purely technical exercise, and that organizational arrangements established to support mainstreaming should be given due consideration'. Regarding climate mainstreaming more directly, there remains a limited understanding of the *process* of mainstreaming in a governance context and the factors that influence that process on local and regional levels in more developed countries (Brouwer *et al*., 2013; Preston *et al*., 2011). Where relevant literature does exist, it is largely developed within international sustainable development contexts (Brinkerhoff, 1996; Lafferty & Hovden, 2003). While scholars have considered the organizational structures and systems involved in mainstreaming by identifying essential elements necessary for successful integration (Jordan & Schout, 2006) and constraints to mainstreaming activity (Burley *et al*., 2012; Dalal-Clayton & Bass, 2009), this research rarely attempts to understand the details regarding how, when and via what pathways climate mainstreaming occurs.

Framing Public Communication About Climate Change

Although climate mainstreaming as a *concept* refers to efforts to incorporate specific actions to mitigate or respond to climate change threats into other salient or established areas of activity, as a *practice* it involves careful attention to communication messages, messengers and processes. To understand this aspect of the climate mainstreaming process, a rich body of literature exists regarding the way in which individuals communicate and interpret information. Scholars within sociology and psychology have noted that people routinely 'frame' the information they receive on a daily basis because the complexity of the world prevents individuals from making sense of it fully (Goffman, 1974; Kahneman & Tversky, 1984). These frames or 'heuristics', formed within a social context, can influence the opinions and behaviours of individual actors (Gilovich *et al*., 2002). Much of this scholarship has stressed that while frames may involve some rational assessment of information, they are also based on references to values, beliefs and social norms (Dietz *et al*., 1998; Nisbet, 2009).

Historically, the field of science communication has long focused on the use of specific 'communication frames' to convey complex scientific information concisely within a journalistic context (Fischhoff, 2011; Hart, 2011; Moser, 2010; Nisbet, 2009). As defined by Scheufele and Tewksbury (2007, p. 12), communication framing 'refers to modes of presentation that journalists and other communicators use to present information in a way that resonates with existing underlying schemas among their audience' but that does not necessarily advocate a specific position. Such strategies seek to convey complex issues succinctly and efficiently for the purpose of providing accessible information to lay audiences in a manner that resonates with the values, beliefs and interests of those audiences. A number of broad public discourse frames around climate change

have been identified within the science communication literature. These include framing climate change concerns as issues of economic development and competitiveness, social progress, risk abatement or security threats, public accountability and governance, and morality or ethics (Nisbet, 2009; Robinson *et al*., 2006).

Although this research highlights the frames through which *climate change as a phenomenon* is communicated and discussed as a matter of public discourse, policy leaders utilize more tactical and situational communication strategies to align *specific climate change response activities or policies* with mainstreaming pathways (Lockwood, 2011), many times without any explicit connection to climate change. For example, policies designed to decrease greenhouse gas (GHG) emissions and increase the use of renewable energy in the UK have been championed as reducing reliance on foreign oil and gas and as new economic opportunities. From a science communication perspective, while these policies may be situated within an economic development or national security frame in the media, the specific policy recommendations themselves are not explicitly associated with climate change as a matter of deliberate practice. Research on these communication strategies is part of a growing area of scholarship around climate change frame analysis that concentrates on the integration of specific response strategies into public policy instead of the broader media frames within which issues are situated (Fletcher, 2009; Lockwood, 2011). Within a climate change policy context, public communication frames around response strategies are used to provide justification for, and, as this article demonstrates, avoid controversy over, activities that have adaptation or mitigation benefits without direct connection to the issue of climate change. In these cases, public climate policy framing is strategic in nature and often conveys a specific message or perspective, with the goal of influencing political 'agenda setting' within mass audiences and public policy systems (McCombs & Shaw, 1972). Such policy framing is an essential element of the climate change response mainstreaming process.

Methodology

Research Context

This study was part of a larger research project (Lackstrom *et al*., 2012) designed to assess the climate change concerns, response activities, decision-making processes, management needs and public communication strategies of key climate-sensitive sectors in North and South Carolina. These two states jointly make up an area of the southeast USA locally known as 'the Carolinas'. The Carolinas collectively have experienced considerable population and socio-economic transitions in the past 30 years, although differences between the two states do exist (Table 1). North Carolina has historically been considered more politically moderate than other southern states like South Carolina. However, while Republicans have controlled both chambers of the South Carolina state legislature for years, 2010 was the first year in over 120 years that the North Carolina state legislature was fully controlled by Republicans, marking a notable shift in state-level politics. With strong conservative majorities in the legislatures of both states since 2010, political tension around the issue of climate change and increased scepticism and hostility towards climate mitigation or adaptation efforts among elected

Table 1. Brief introduction to North and South Carolina

	North Carolina	South Carolina
Population	9,535,483 (as of 2010)[a]	4,625,364 (as of 2010)[a]
Metropolitan statistical areas	14[a]	10[a]
Economic base	From 1980 to 2010, economic base shifted from agriculture and traditional manufacturing activities (such as textiles and furniture) to more knowledge-based and service-related industries[b]	
Political climate	Traditionally more moderate, swing towards more conservative since 2010	Traditionally conservative
State legislative control	Governor and both chambers of legislature controlled by Republicans (since 2012)	Governor and both chambers of legislature controlled by Republicans (since 2003)
Major state-level environmental challenges	Coastal development, land-use change, habitat fragmentation, urban sprawl and natural resource management[c]	
Gross GHG emissions	180 MMt of CO_2 equivalence[d] (as of 2000)—principal sources, electricity and transportation	93 MMt of CO_2 equivalence[e] (as of 2005)—principal sources, electricity and transportation
State Government Climate Change Assessments/ Initiatives	• Legislative Commission on Global Climate Change (Initiated by state legislature in 2005, *now expired*)[f] • NC Department of Environment and Natural Resources (DENR) Climate Change Initiative (launched in 2010, *now de-funded*)[h] • Climate Action Plan Advisory Group (established in 2006, *no longer active*)[j] • NCDENR North Carolina Climate Change Ecosystem Assessment (draft released in 2010)[k] • NC Sea-Level Rise Assessment (completed in 2010)[l]	• Climate, Energy and Commerce Advisory Committee (launched in 2007, *no longer active*)[g] • SC Department of Natural Resources Climate Impacts Assessment (completed in 2011, *draft not released until 2013*)[i]

[a]United States Census Bureau (2010).
[b]Bennett and Patton (2008) and Schunk and Woodward (2000).
[c]Napton *et al*. (2010).
[d]Peterson *et al*. (2007); MMt, million metric tons.
[e]Strait *et al*. (2008).
[f]North Carolina General Assembly (2010).
[g]South Carolina Climate, Energy, and Commerce Committee (2008).
[h]http://www.climatechange.nc.gov.
[i]South Carolina Department of Natural Resources (2013).
[j]North Carolina Climate Action Plan Advisory Group (2008).
[k]North Carolina Department of Environment and Natural Resources (2010).
[l]North Carolina Coastal Resources Commission (2010).

officials has amplified, increasing the need for sensitive and deliberate climate change response strategies. Although efforts to assess climate change impacts and address relevant concerns have taken place in North and South Carolina (Table 1), none of the official advisory or commission groups listed were active by April 2013.

The environmental challenges outlined in Table 1 are interconnected and have far-reaching impacts on the availability of natural resources, services provided by state and local governments and the health of ecological communities. Existing challenges and stressors are often exacerbated by climate variability, including recent periods of extreme drought (North Carolina Drought Monitoring Advisory Council, 2009; Weaver, 2005), frequent occurrences of tropical cyclones (Konrad & Perry, 2010) and an intensification of variability in summer precipitation (Wang *et al*., 2010). In addition, regional concerns about climate change include increased variability in temperature and precipitation, more extreme flooding and droughts and sea-level rise (Konrad & Fuhrmann, 2012; North Carolina Department of Environment and Natural Resources, 2011; South Carolina Department of Natural Resources, 2013).

Research Methods

Climate change response activities and public communication strategies across the Carolinas were assessed through document analysis, implementation of a combined questionnaire and interview with regional leaders and data processing and analysis of survey data. The first step used a web-based search to develop a comprehensive list of climate change-related documents and key decision-makers and organizations throughout the Carolinas (see Lackstrom *et al*., 2012, for further details regarding data collection and analysis). One hundred and twenty-eight documents were identified and included in the database, with publication dates ranging from 2003 to 2011. Although many of these documents discussed actions to address climate change concerns, they were notable for their lack of emphasis on 'climate change' as a stand-alone or focal issue. Of the 128 total documents, only 13 specified actual measures and actions to be taken by the organization to address climate change concerns explicitly. The majority of these 13 documents were climate action plans or local-level sustainability plans that focused heavily on climate change mitigation (e.g. reduction of GHG emissions, programmes to improve energy efficiency) and not adaptation measures. Even when climate change was explicitly addressed, it was almost always in the context of potential *impacts* on communities so that any discussion around the *causes* of climate change (a much more politically tenuous subject) could be sidestepped. This observation highlighted the need to interrogate mainstreaming practices and communication frames in more depth during the second portion of the study.

Within these documents and web searches, individuals were identified who could be considered climate change 'opinion leaders' in the region. Opinion leaders include individuals who are actively involved with or knowledgeable about a topic, communicate information or raise awareness about that topic to colleagues, friends or acquaintances, and influence and legitimize the adoption of new opinions, attitudes and behaviours of others (Rogers, 2003). We focused on finding individuals engaged in climate change issues and activities in applied settings, but who were not necessarily climate scientists or climate service providers. We specifically targeted individuals from a variety of sectors most sensitive to the impacts of climate change in the region, including forestry and wildlife management, public water utilities, outdoor recreation and tourism and public services (e.g. public health, community planning). A total of 130 individuals with the

highest counts of opinion leader activities (i.e. public presentations, publications, etc.) were retained and considered opinion leaders.

Combined web-based questionnaires and semi-structured interviews were then used to identify major climate concerns, response activities and public communication frames among regional leaders. Questionnaires and interviews were conducted from June to September 2011. Participants were initially contacted via telephone calls and e-mails, using standardized research protocols. The online questionnaire consisted of 23 questions focused on the use of and need for climate information and existing or planned activities to address climate concerns. In follow-up interviews that lasted approximately one hour each, participants elaborated on their climate change concerns and response activities, how their organization and sector generally approaches communication about climate change activities, what message framing is preferred or most useful and how these frames correspond to organizational or sectoral responsibilities and/or climate response activities.

Participants were also asked to recommend other individuals who might have relevant knowledge or experience of these issues. This 'snowball sampling' method produced referrals for 122 additional decision-makers. Overall, 252 individuals were invited to participate in the questionnaires and interviews, with a response rate of 46% ($n = 117$) and 38% ($n = 96$), respectively. Participants were distributed geographically across the Carolinas and represented various types of organizations (Table 2).

Data Processing and Analysis

Audio files from each interview were transcribed using *Dragon Naturally Speaking* software and edited for confidentiality. Each transcript was reviewed by project staff to ensure the accuracy of the transcription process. Open-ended text regarding climate-related concerns and activities from the web-based questionnaires was added to each interview transcript and the transcripts were imported into QSR *NVivo* for coding and content analysis. Initial coding categories were developed based on a preliminary document review and interview notes. Categories were revised and additional categories added as new ideas and themes emerged

Table 2. Study participants by organization type and geographic scale of engagement

	Totals
Organization type	
Academic	13 (11%)
NGO/NPO	35 (30%)
Private	12 (10%)
Public	57 (49%)
Geographic scale	
Local—NC	28 (24%)
Local—SC	7 (6%)
State—NC	27 (23%)
State—SC	20 (17%)
Carolinas	13 (11%)
SE Regional	22 (19%)

during the coding process. For the sake of clarity and to reduce duplication, activities were coded within only one primary category, although several activities could reasonably fall within more than one area. Descriptive statistics for the coded transcripts were calculated for each climate-related concern, response activity and framing category; the percentage distribution of specific concerns, activities and framing strategies were also calculated.

Findings

Many activities are occurring across the Carolinas to address specific concerns associated with climate change. Activities range from climate-related data collection and monitoring, to adaptive management experiments in coastal land use, emissions reduction (mitigation) projects, education and outreach, risk and vulnerability assessments for emergency management purposes and habitat protection and conservation. Adaptation-related research and pilot projects are receiving greater, although not universal, support along the coastal areas where there is observational evidence of sea-level rise and ecological impacts. Adaptation-related interests also intersect around topics of water resource and land-use management. North Carolina demonstrates more advanced adaptation efforts and a larger community working on climate change than South Carolina.

Inductive iterative analysis of data on climate change responses revealed *eight* categories which capture the range of activities pursued throughout the Carolinas (Figure 1). Review of these activities and the pathways through which they are enacted as described by study participants uncovered significant internal efforts to strategically mainstream such initiatives into other salient issues of public concern. Additionally, study participants revealed that as activities are intentionally mainstreamed into other relevant areas, deliberate external communication around those activities becomes a critical component of the mainstreaming process. Five

Climate Change Response Activity (n=334)	**Examples of Internal Mainstreaming Strategies**
Data Collection and Monitoring (20%)	Climate is often considered among a suite of socio-ecological factors in broad scale vulnerability or risk assessments, environmental monitoring programmes or impact assessments.
Ecological Protection, Conservation and Management. (20%)	Incorporate climate impact reduction efforts into existing comprehensive strategies that address broad-scale socio-ecological benefits (e.g. conserve or protect species, habitats and ecosystems). This includes traditional conservation management strategies or more complex alteration of environments or infrastructures
Education and Outreach (18%)	Integrate climate education into other programmes centred on environmental education (e.g. health, pollution, preservation)
GHG Emissions Reductions (18%)	Fold GHG emissions reduction strategies into energy efficiency programmes aimed at reducing energy costs, enhancing renewable energy and building energy independence. Reductions treated as secondary benefits
Policy and Law Revisions (8%)	Draft laws and policies to address existing concerns that may be affected by climate (e.g. set-back regulations within coastal management plans)
Hazard Mitigation and Emergency Management (7%)	Integrate climate concerns into broader processes of emergency preparedness and risk reduction (e.g., hazard mitigation plans)
Sustainability Projects and Programs (6%)	Fold climate concerns into efforts that enhance the overall sustainability of socio-ecological systems. These efforts gear discussions around the negotiation of social, environmental and economic interests
Internal Policies, Practices and Management (3%)	Incorporate climate concerns into new/existing organizational procedures, practices and programs

External Framing Categories (applicable to response activities in diverse settings) (*n*=152)				
Responsible Planning and Preparedness (30%)	Ecosystem Conservation (29%)	Sustainable Futures (19%)	Emergency Management/Hazard Mitigation (11%)	Energy/Energy Security & Efficiency/National Security (11%)
Activities generally presented as elements of broader comprehensive planning and preparedness projects and indicative of responsible and responsive governance	Activities framed as components of existing land or ecological resource conservation practices and not as additional efforts to manage climate change impacts. Conservation presented as essential for the future and may include an ethos of preservation for intrinsic value	Activities presented as part of larger processes to ensure that economic, social and environmental needs are advanced simultaneously. This may include highlighting 'green' economic investments and global competitiveness	Activities framed as components of risk management to prepare for emergencies, address threats to socio-ecological systems and reduce the impacts of hazards	Activities primarily framed to focus on concerns relating to energy. Concerns about costs and financial efficiency are also part of this frame

Figure 1. Primary climate change response activities, mainstreaming strategies and framing categories in the Carolinas. Percentages indicate the distributive proportion of each activity or framing strategy among all of those stated by respondents. Data were coded as mutually exclusive.

primary categories that study participants utilize when framing climate change response activities for external groups are also included in Figure 1.

Mainstreaming in the Carolinas

Leaders within the Carolinas utilize a complex 'toolbox' of mainstreaming strategies both to position climate change response activities in a manner that allows for integration in other areas and to frame external messaging to resonate with public or political constituent groups. Participants justify the conspicuous use of mainstreaming in a number of ways. In some cases, mainstreaming is part of efforts to develop more holistic and integrative planning or resource management processes that consider multiple threats or concerns alongside comprehensive solutions to those problems. For example, study participants involved in the forestry sector consistently mainstream climate change adaptation work into broader resource management processes. In particular, respondents in this sector noted the use of frames around energy efficiency and security to expand support for biofuels, a distinct interest of the sector. In other instances, mainstreaming climate change response activities into other areas of action is a means to capitalize on opportunities for an organization to advance their core mission, demonstrate relevancy or provide a needed service. For instance, Energy Efficiency & Conservation Block Grant funding availability prompted a number of local municipalities to focus on residential energy consumption as a climate response strategy.

Most often, however, participants suggested that mainstreaming is utilized predominantly to avoid wading into public opinion debates and conflict over the topic of climate change altogether. Leaders noted that instead of developing specific activities designed explicitly to tackle climate change (i.e. local municipal climate action plan), the potential impacts and consequences can be addressed within other areas so that the politically controversial topic itself is circumvented:

> Working in a politically conservative state like South Carolina where skepticism of climate science is strong, we in the conservation community have decided to cede the scientific debate and focus our efforts on energy reform. We are working at the state and federal level to pass comprehensive energy reform, including a clean energy standard for South Carolina that promotes energy efficiency and reduces our dependence on fossil fuels. (Participant 022)

Framing Climate Change Response

While internal communication, planning and discussions may acknowledge and include climate change as an issue requiring strategic response activities, such emphasis is often abandoned when communicating with external public groups. Not only are climate change response activities mainstreamed, but public messaging around those activities (even those already incorporated into other areas) is carefully constructed as well. In fact, many study participants clearly stated that they have intentionally decided not to discuss the issue publicly at all given the political sensitivity of the topic.

> We do not always bring it back to global warming or climate change. We make that connection internally but a lot of times when we are talking

> about it publicly, it is really more about jobs, it is really more about diversifying our energy source … I think that the politics and dynamics have shifted dramatically in North Carolina and I think climate change is a dirty word right now in the political environment of the state. (Participant 013)

> We are not talking about climate change. We have gone through things and scrubbed out references to climate change. (Participant 019)

> We talk a lot on the planning team about a strategy to reduce risk and increase community resilience. Because there's a lot of concern, given the turnover in the General Assembly, that we don't want to call unnecessary attention to what we're doing. (Participant 061)

As indicated in Figure 1, this study uncovered a suite of five common external framing categories, each utilized to various degrees by area leaders to publicly frame the range of response activities occurring in the Carolinas. In some cases, external messages align with the mainstreamed action itself, like when GHG emissions reduction activities that have been internally folded into energy efficiency programmes are framed as energy security initiatives to boost public support. In other instances, more relevant public messaging may be developed to further mainstream an activity in a way that reverberates with specific constituent groups. Using the example above, GHG emissions reduction activities might also be framed around sustainable futures or ecosystem conservation. Communication frames that directly connect action on climate change with dimensions of societal well-being were most prevalent. These include frames that focus on the value of ecosystem services to society, the responsibility to plan for the future with foresight and caution, and, more recently, opportunities associated with green jobs and sustainability. For example, activities like shifting beach management practices to support healthy dune systems and prevent beach erosion (precipitated by rising seas) are generally framed as one piece of a comprehensive management strategy aimed at reducing economic loss, thereby connecting perceived risks and uncertainty about the climate to practical resource management strategies with social benefit. Interviewees from the water utility community often situated climate change response within general future planning and emergency management processes. One water utility representative intentionally framed climate change response as responsible planning and preparedness:

> If we're saying that we're doing everything we can to mitigate impacts from global warming or climate change, they would look at me and say you need to spend your time doing something else. But rather if I said we understand climate variability in weather patterns is affecting our ability to provide our intended service, that we need to prepare for those changes, they say you know, wow, that's great, we're glad you're thinking ahead. (Participant 099)

Discussion

This brief review of the prominent climate change response activities, communication frames and mainstreaming efforts in the Carolinas yields several significant observations pertaining to the phenomenon of mainstreaming and the methods by which it is achieved. As noted earlier, rarely are the details or differences of

how and when mainstreaming takes place considered in the literature on the topic. Assuming a universal mainstreaming definition or process may limit our understanding of the various reasons mainstreaming is selected as a strategy to address climate change concerns and the efficacy of such efforts within diverse environments.

Study participants noted that mainstreaming is both intentional strategy and absolute necessity in the Carolinas region. Not only is the approach utilized to enhance the ability to connect climate change response activities with topics that resonate with the current concerns and priorities of public and political constituents, in many cases, participants noted it as the only way to achieve even modest action in an unsupportive political climate. With intense scrutiny about climate change issues in the region, the majority of participants indicated carefully considering the economic and political palatability of climate change activities and positioning activities in a manner that resonates with public audiences and elected leaders.

A Mainstreaming Spectrum

Even between these two states, a range of socio-political environments influence the nature and degree of climate change response and the extent to which mainstreaming is employed. Although leaders in South Carolina have been accustomed to mainstreaming climate change response due to a longstanding and prevalent scepticism towards climate change science and response in the state, individuals in North Carolina expressed increased attention and use of the strategy given the significant state legislative shifts in recent years. These two states demonstrate that mainstreaming occurs via multiple pathways in multiple forms, in response to specific contextual constrains, barriers or opportunities.

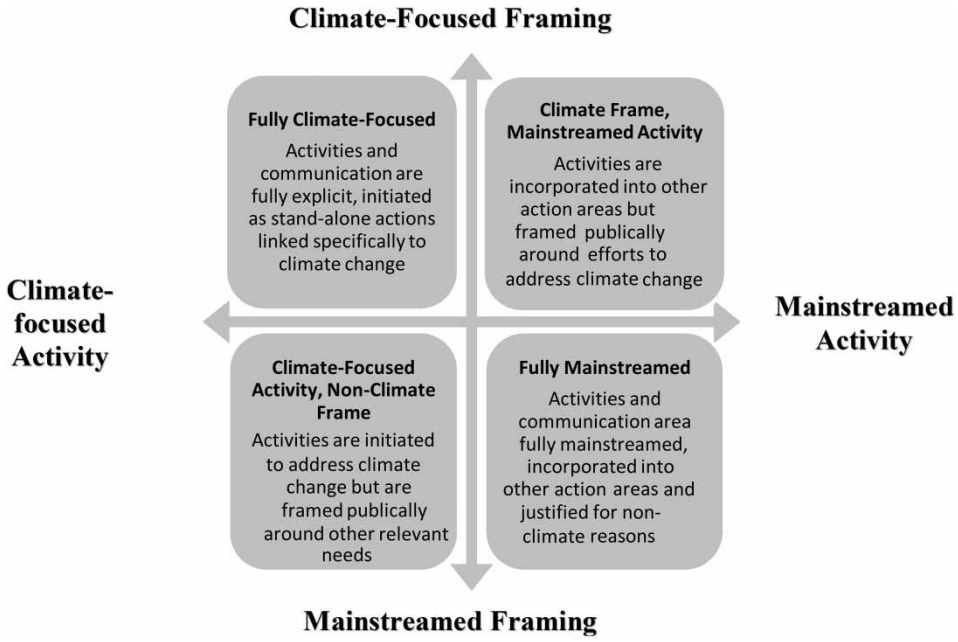

Figure 2. Mainstreaming process spectrum.

What emerges is a mainstreaming spectrum (Figure 2), involving intricate negotiations around when, where and how fully to integrate climate change response activities and the type and degree of public communication around such activities. On one extreme of the spectrum (upper left-hand quadrant) are fully explicit climate change response activities and public communication messages where little to no mainstreaming occurs. The few stand-alone climate action plans identified in the region exemplify this approach, where activities target climate change threats or opportunities and are communicated as such (Local Governments for Sustainability, 2007; UNC Chapel Hill, 2009). One interviewee who worked on a climate action plan in a major North Carolina city revealed that this community in particular was very open to discussing climate change mitigation, as opposed to the more common mainstreaming of emissions reduction strategies within a broader sustainability plan. This explicit approach was an exception in the Carolinas:

> Here in this community, we don't have to do a lot of convincing. I'm lucky in that respect. My challenges are not about climate change—is it real, is it happening? It's more about why aren't we doing more. (Participant 040)

Similarly, adaptation-oriented activities at the Alligator River National Wildlife Refuge are conducted and discussed openly. Collaborating partners are evaluating different adaptive management strategies in order to increase the resiliency and stability of the wetland ecosystems likely to be affected by sea-level rise (United States Fish and Wildlife Service, 2012).

On the opposite extreme of the spectrum (lower right-hand quadrant) are fully mainstreamed climate change response activities where actions to address climate change concerns are completely integrated into broader, more holistic efforts. Messaging to support such work makes no mention of climate change whatsoever. In coastal areas of the Carolinas, a number of efforts designed to prepare communities for sea level rise are integrated into strategic planning or resource management documents (e.g. comprehensive plans, coastal zone management plans, flood plain management documents, community strategic planning, etc.). As noted earlier, in many of these instances, stark differences exist between external and internal communication strategies about climate change. While leaders may acknowledge and express concern about potential climate change impacts internally and actively develop strategies to address those concerns, communication with external constituent groups assumes a more forcefully mainstreamed position. In the example of sea-level rise along the coast, most often these efforts are discussed as strategies to enhance community resilience or emergency preparedness or to reduce economic loss.

Efforts that employ a mixture of mainstreamed activities and communication messages are located in the remaining quadrants. The upper right-hand quadrant includes mainstreamed activities where climate change is discussed externally. North Carolina Session Law 2010-180 required state agencies to assess the degree to which state planning or regulatory programmes consider climate change impacts. Although the effort was framed as a climate change assessment with public groups, most of the activities identified or discussed were heavily mainstreamed into other agency processes or planning frameworks. In contrast, the lower left-hand quadrant involves those activities that were designed explicitly to address climate change concerns, but which are framed in a very different way. In one local municipality, a special task force developed a sustainability plan for

the city, primarily for the purpose of climate change response and preparedness. However, by the time the plan was completed, a new city council had been elected, including members who were more hostile regarding the issue of climate change. As a result, activities first recommended to address climate change impacts were reframed for political and public groups around other issues:

> But particularly because of the city council that got elected, we've kind of avoided talking about that [climate change]. Instead, we want to be energy efficient, conserve resources, reduce the taxpayers' burden, save money for the city, and help protect the local economy, hopefully create some kind of new green industry. That's what we are saying. (Participant 048)

Organizational Objectives and Mainstreaming Pathways (Climate Response vs. Goal Oriented)

An additional observation involves the specific pathways by which activities to address climate change are initiated, developed and mainstreamed, as well as the organizational objectives that inform this process. Response to climate change threats or opportunities in the Carolinas appear to fall along a continuum of goal orientation or climate response orientation, each type initiated for different reasons, with different benefits and constraints, following a distinct mainstreaming pathway. *Goal-oriented actions* originate from a dedication to a specific activity or approach, which may exist due to a specialized organizational objective, opportunity or a mandate from a higher governing authority to engage in a particular strategy. A number of organizations and businesses around renewable energy (e.g. biofuels, solar, wind) have emerged within the Carolinas over the past 10–15 years. Many of these initiatives have emerged from energy resources fields, with distinct objectives to provide a reliable energy supply. In some instances, renewable energy efforts are connected to concerns over GHG emissions from fossil fuel energy sources, in others the emphasis is on response to an economic opportunity (i.e. biofuels). Regardless, the mainstreaming process begins with a pre-determined activity or approach. Such an orientation may yield fewer options for mainstreaming as there are only so many ways to integrate or frame a particular action.

In contrast to goal-oriented actions, *climate response-oriented actions* originate from an overall dedication to respond to climate change threats or opportunities, but without allegiance to one particular activity or method of response. These actions are a result of individuals or groups committed to acting to address climate change, sometimes including specific concerns like sea-level rise, but with enough flexibility to respond to climate changes of greatest public salience or with the most political or financial support. The nonprofit organization Conservation Voters of South Carolina (CVSC) has maintained an emphasis on climate change response for years, but has also maintained flexibility with regard to the specific activities or issues of focus, in order to capitalize on opportunities or salient public concerns. In this case, a desire to actively address potential impacts caused by climate change on South Carolina environmental and cultural resources has led to a full gamut of initiatives over the years, including those focused on climate change and drought, land-use change, clean air and renewable energy. CVSC is not particularly wedded to any one of these topics, but is able to

respond to timely opportunities to mainstream action in areas of robust public interest. Such an orientation provides much more flexibility to capitalize on opportunities, but presents more risk that if political winds shift around a previously 'hot' issue, investment in building response capacity in that area may be negated.

From a distant view, the activities of these groups seem to comprise a fairly disjointed landscape of climate change responses with loosely connected activities that are mainstreamed in a number of community-specific topics of interest. The logics appear at a finer scale of analysis. At times, a specific concern or mission will prompt organizations to engage in a precise activity to address the issue with communication strategies designed in line with those efforts. In the Carolinas, threats to local ecosystems have prompted conservation efforts that are mainstreamed into community strategic planning efforts with framing strategies built around the benefits of ecosystem services. Other times, external pressures prompt organizations to engage in activities because they are particularly salient, even when the activity is a response to a concern that was not originally a priority for that organization or community. A successful communication campaign around sustainability, for example, might prompt a tourism organization to engage in further activities around sustainable building or practices, because it allows the agency to meet its organizational goals.

To describe this process as complex is an understatement. Nevertheless, understanding climate change response activities within a context-based, multi-linear mainstreaming framework can be a fruitful exercise in identifying collective opportunities for regional action where multiple actions overlap. Although actors may engage in a climate change response activity for diverse reasons and via distinct pathways, identifying those areas of synergy among various mainstreaming efforts and framing strategies can lead to more organized, focused, cross-sector approaches to building adaptive capacity. Indeed, the ability to recognize and capitalize on salient opportunities to address social and ecological needs presented by a changing climate is an essential aspect of adaptive capacity (Adger *et al*., 2005).

Among all the potential climate change impacts noted among study participants in the Carolinas, major interests intersect around water resources, land-use management and coastal zone management. Activities to address concerns in these areas align with many of the current mainstreaming initiatives in the region, both with regard to current areas of mainstreamed activities (i.e. hazard mitigation and emergency management) and communication around such efforts (responsible planning and preparedness, ecosystem conservation). Improvements in factors influencing the overall adaptive capacity offer potentially broad benefits. The shared interests and overlapping responsibilities among study participants in these areas create the prospect for expanding networks, partnerships and collaborations and may open doors to innovative multi-scalar initiatives (Dow *et al*., 2013).

Conclusions

Underscoring the impacts of a politically unsupportive environment within which to advance activities to mitigate or adapt to climate change threats or opportunities, participants in this study consistently appear to utilize mainstreaming as an intentional and necessary approach to negotiate and build support around activities that directly or indirectly respond to climate change concerns in the Carolinas. It is clear, though, that diverse mainstreaming pathways and communication messages exist

even in this small region of the USA. The study revealed a landscape of carefully targeted and multi-tiered mainstreaming approaches, each tempered by distinct socio-political and socio-ecological factors that require careful negotiation. However, such negotiations can lead to breakthrough innovations when the timing is right, or when the right constellations of opportunities align (Anguelovski & Carmin, 2011).

Contrary to assumptions about mainstreaming 'best practices', this research indicates that the relationships among climate change response activities, internal mainstreaming techniques and external communication framing strategies are highly complex and do not always follow a consistent pattern (i.e. identify climate risk/concern, design a response action/strategy, mainstream into allied area, communicate and frame the response). While the overall efficacy of these various approaches in achieving a desired result is unclear, study authors have argued that specific opportunities of synergy are revealed via this mainstreaming analysis, presenting prospects for the development of more comprehensive and politically acceptable discourse coalitions (Hajer, 1993) or areas of 'political convergence' (Giddens, 2009).

This research raises a number of significant future research questions regarding the practice of mainstreaming and its outcomes. Although it is clear that socio-political factors influence the specific mainstreaming pathways and messages selected by participants in this study, future research might explore this relationship in more depth, particularly considering the interactions between certain political environments and selected mainstreaming processes. For example, under what political contexts do certain types of mainstreaming messages (e.g. energy security) or pathways (i.e. action-oriented) develop? Furthermore, how successful are efforts that fall within a particular point on the mainstreaming spectrum within individual socio-political contexts and what can this tell us about best practices? And, even if activities and messages are successfully mainstreamed in the region, do adequate resources and support exist to sufficiently enhance the capacity to respond and adapt to climate change? Such research might yield important clues about the most effective mainstreaming processes, strategies or messages, given the unique constraints or opportunities within an area. It might also reveal evidence about what can and cannot be accomplished via mainstreaming pathways and if such strategies have definite limits in building the overall adaptive capacity of an area.

Finally, although leaders within the Carolinas are finding innovative methods to mainstream climate change response, enhanced public scrutiny about activities to address climate concerns is a significant constraint to further action. In particular, a number of participants indicated that organization leaders or elected officials cited difficult economic conditions as a justification to halt resource- or time-intense programmes intended to address climate change; although it was unclear whether such cuts were a reflection of economic reality or ideologically motivated actions. As such, the economic and political palatability of potential actions will continue to be a major factor in decision-making processes around climate change mitigation and adaptation within the region:

> The main constraint is, well of course money is always a constraint, time is also a constraint, but the big constraint is the political atmosphere, it is just such a regressive anti-science, anti-government, sort of anti-everything atmosphere that is very difficult, almost a paranoid sort of situation

> that is very difficult to get some people in some groups to take this stuff seriously. I think that is the biggest hurdle. (Participant 098)

This type of opposition underscores the considerable energy committed to mainstreaming climate issues with sensitivity and purpose among regional leaders. The diversity of communication tactics also indicates that regional and sectoral differences are considered when mainstreaming climate change response activities, enhancing the personalized and specialized nature of very complex and multi-faceted climate change phenomena. This presents a unique challenge for research around climate change response, governance and assessment. How can activities to address climate change be assessed if they are fully mainstreamed into other areas of action? What implications does this have on general public opinion about climate change and willingness to engage in individual-level mitigation or adaptation behaviours? Examining such issues allows for a more detailed assessment of the opportunities that exist to enhance local and regional response to climate change among existing areas of concern, while acknowledging significant uncertainties and barriers that may hinder the implementation of comprehensive and effective mitigation and adaptation practices.

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