Navigating the Political and Emotional Terrain of Adaptation: Community Engagement When Climate Change Comes Home

Chapter forthcoming in: Moser, S.C. and M.T. Boykoff (eds., in press). *Successful Adaptation to Climate Change: Linking Science and Policy in a rapidly Changing World*. Routledge, London.

By Susanne C. Moser
Susanne Moser Research & Consulting and
Stanford University, Woods Institute for the Environment
Santa Cruz, CA, USA

ABSTRACT

Understanding the challenges of communicating climate change impacts and adaptation when the global problem comes "home" is a matter of successfully navigating the political and emotional terrain of people facing inevitable change and loss. Planners and resource managers in US coastal communities are struggling to find effective approaches to engaging their communities and sometimes shy away from raising the issue due to concerns about coastal stakeholders' responses. This chapter begins by describing this context for communicating adaptation and engaging communities in solution-finding in contemporary American society, and then reports on focus group research conducted in California to explore coastal homeowners' understanding of impacts and solutions, with a focus on their visions of successful adaptation. Findings suggest that place attachment and emotional responses to climate change deeply color visions of a desirable future – visions that go far beyond technical solutions to intractable climate change dilemmas. The chapter suggests that starting with a place-based vision of success and meaningfully engaging people in finding adaptive responses for multiple timeframes are crucial elements of effective engagement and prerequisites for pursuing a communal goal that is larger than the sum of individual self-interests.

PARADISE NO MORE: DRAWING THE BATTLE LINES IN THE SAND

> I'd say that this place is Paradise. Overall, it's a beautiful area. You walk down the beach sometime in the sunset and the birds and sea lions – that picture is Paradise to me.
>
> (Participant, Focus Group 1, Moss Landing, California, 2012)

For years, sea-level rise and related impacts of climate change has been communicated to the public in familiar terms: climate change is causing global average sea level to rise by 18–51 cm by 2100 (Solomon *et al.* 2007), or using more recent estimates (reviewed in Moser *et al.* 2012), "We'll see the oceans rise by 3 or more feet by 2100." Others have tried to link future projections of sea-level rise to the change experienced historically, suggesting that future sea-level rise will accelerate over the 7–8 inches observed over the past century (e.g. NRC 2012). For most people living at the coast, the anchoring effect of such seemingly small figures – a mere hand span, which most of them have weathered quite well – results in projections not seen as a warning, but a relief. Even several times that figure expected "in a hundred years from now" is easily dismissed as an issue for future generations, not present time coastal dwellers. It certainly

does not rise to being an equal to the concerns over imminent coastal erosion and occasional storm-related flooding problems communities already have, much less to the economic woes and immediate struggles of day-to-day life. Many lay audiences do not make the causal link between the slower, creeping process of sea-level rise, and the acutely felt impacts of storms and floods that are being made worse by the changing baseline. In fact, Spence *et al.* (2012) and Leiserowitz *et al.* (2012a) show that many people continue to keep climate change and sea-level rise per se at a geographic and psychological distance and do not connect the more immediate coastal changes they see with the global problem. Neatly compartmentalized in this way, people's responses seem utterly rational.

The factual reality in coastal America today, however, already resembles that far-away future. Sea-level rise and climate change impacts have already "come home" (Slocum 2004): In Norfolk, Virginia, streets in downtown areas flood monthly during high tides (Fears 2012; Kobell 2012). In Florida, periodic "sunny weather" high tides leave front yards under several inches of salt water (Peach 2012a). In Louisiana, the state approved a coastal master plan (State of Louisiana 2012), which, while never mentioning the words climate change, fully recognizes that even with massive planned efforts to protect and restore some portions of southern Louisiana, others cannot be protected and communities will eventually be compelled to leave – not by the force of law, but by the force of nature. And in coastal Alaska, a dozen native villages are considering relocation to higher ground, but continue to have trouble obtaining the federal and state funds to do so (GAO 2009; Steinsiek 2012; Dowie 2011).

A coordinated federal response to these growing coastal problems is lacking to date, despite a number of positive developments. In response to President Obama's 2009 Executive Order 13514 (The White House 2009), efforts are underway to develop adaptation plans for all federal agencies that manage federal land, waters and climate-sensitive assets (C2ES 2012).[1] Several agencies have developed these adaptation plans for their own sphere of influence and operations, conduct science in support of adaptation, and have developed educational and guidance documents for others to use. The National Flood Insurance Program was reformed in important ways in June 2012, but still does not account for future sea-level rise (IIA 2012). Meanwhile, funding for major shoreline protection projects lead by the US Army Corps of Engineers has been declining over recent years (Marlowe 2012), and since 2010 Congress has denied funding requests by federal agencies to undertake climate adaptation efforts, thus undermining the implementation of their adaptation initiatives (for tracking of policy and budget decisions see: http://www.aaas.org/spp/policyalert/).

Despite some of these positive developments, the lack of concerted action and direction from the federal level leaves states and municipalities to determine for themselves how to address sea-level rise, and, in fact, land use decisions on all but federal lands are essentially local (albeit requiring consistency with state and federal laws). This leads to a wide range of responses at

---

[1] Principal agencies involved in coastal land management include the National Oceanographic and Atmospheric Administration (NOAA); the Environmental Protection Agency (EPA); the Department of the Interior with its National Park Service (NPS), US Fish and Wildlife Service, and Bureau of Ocean and Energy Development; the Department of Homeland Security which includes the Federal Emergency Management Agency and which administers the National Flood Insurance Program; the Department of Transportation; the Department of Defense; and a large number of other agencies that provide supporting services and information (e.g. the US Geological Survey).

lower levels of governments (EcoAdapt 2011). Currently 12 of the 23 ocean-bordering states have some kind of adaptation plan or guidance document focusing on shoreline area (status tracked at: http://www.georgetownclimate.org/). Clearly, engagement is uneven and in some instances antagonistic. The North Carolina state legislature gained worldwide media attention in 2012 with its attempt to prohibit using scientific projections of sea-level rise in its coastal planning and decisions (Leshner and Chameidis 2012; Sheppard 2012); in a growing number of states "climate change" and "sea-level rise" are considered liberal conspiracies and pressure exists to not use these terms (e.g. Bump 2012; Peach 2012a,b). "Retreat" is another term that raises red flags for politicians, developers, and coastal home owners alike (Chang and Dearen 2012; Dean 2012; Prevost 2012; Barboza 2011), as does shoreline "armoring" for those trying to protect wetlands and beaches. In California, state and local agencies fight over the right to build seawalls on public beaches to protect private property (Lee 2012), while conservative Tea Party activists have launched concerted efforts across the nation to disrupt local efforts to plan for the future, whether the efforts fly under a climate change, adaptation, or broader sustainability banner (Hull 2011; Gass 2012; Kaufman and Zernike 2012). Recent scientific studies suggest that many regions of the US coastline – not, as typically assumed, just those of small island states and developing countries (Nicholls *et al.* 2007) – could face *un-managed* retreat because many coastal communities will not be able to afford large-scale shoreline protection under higher sea-level rise scenarios (Martinich *et al.* 2012).

Recent national surveys provide initial insights into public responses to climate change impacts in the US. Findings suggest that more than 50 per cent of Americans expect flooding, winter storm, and hurricane-related injuries and deaths to increase with climate change (Leiserowitz *et al.* 2011, 2012a); and 33 and 29 per cent, respectively, believe that global warming will harm public and private property. Higher percentages of respondents expect harm to more distant entities such as crops or wildlife (*ibid*). A small percentage believes coastal erosion and flooding is already made worse by climate change (*ibid*). Few surveys have been conducted, however, to assess public understanding of and attitudes toward local sea-level rise impacts and possible adaptation responses (e.g. Responsive Management 2010), and deeper understanding of coastal residents responses to these issues is lacking.

In particular, coastal resident's affective responses to the realities of sea-level rise have been neither seriously acknowledged nor empirically studied in the US. While the notion of "climate grief" – an intuitive application of Kübler-Ross's five stages of grief and loss (Kübler-Ross and Kessler 2007) to climate change – has been popularized by climate scientist Steven Running (2007), and mental health implications of weather disasters are increasingly recognized (Coyle and Van Susteren 2012), there is much ridicule of "eco-anxieties" all over the blogosphere. Few, if any, empirical studies in the US examine the range of people's emotional responses to climate change impacts. Such studies, and practical applications, have recently emerged in Australia and the UK (Albrecht *et al.* 2010; Lonsdale and Goldthorpe 2012; Randall 2009), and concerted effort to understand them among US populations is needed (Moser 2012). In part, such an examination could help elucidate whether the harsh battle lines drawn in contemporary coastal management disputes are indeed fueled by the unspoken, maybe unconscious emotional responses that climate change and sea-level rise evoke in people through the increasingly visible impacts on coastal places.

For now, however, little is known about how coastal residents perceive the implications of sea-level rise for their lives and livelihoods, their property and the natural and cultural places they love, or about their visions of a desirable future. These perceptions, interpretations, and visions will deeply shape coastal residents' judgment about which adaptation processes and outcomes are "successful." Such lack of understanding of these personal reactions and their implications for coastal politics fundamentally hampers the development of effective public engagement strategies through which stakeholders could express their concerns and see them addressed in a successful adaptation process (see also Lebel *et al.* this volume).

As sea-level rise accelerates and climate change increasingly unveils its forces at the coastal fringe (Moser *et al.* 2012), there is every reason to believe that the direct physical losses will mount, struggles over how to manage them intensify, the need to fund shoreline protection skyrocket, and the strain on the civic fabric of coastal communities increase. What then is "adaptation success" in a context where loss – of at least some land, some structures, ecosystems, money, culture, community, and peace of mind – is assured? This chapter does not attempt to comprehensively answer this complex question, but focus on the opportunities for more effectively engaging coastal stakeholders in an increasingly challenging situation where "keeping what we've had" is not a realistic, long-term option. Such engagement requires sophisticated navigation of the very human terrain of people living in affected coastal communities and having to change what they know. This terrain is political on the surface and personal – psychological, spiritual and cultural – deep underneath.

CALIFORNIA FOCUS GROUPS: VISIONS OF ADAPTATION SUCCESS?

Against the backdrop of protracted coastal management challenges experienced at present, widespread lack of concern over future sea levels, and a polarized political debates over climate change, two focus group sessions with residents of the larger Monterey, California, region were held in April and June 2012. The goal of these sessions was to explore public views and understanding of local sea-level rise impacts and adaptation to identify possible communication and engagement angles that could be further explored and tested in public outreach in the region. Here, the main focus is on results pertaining to coastal residents' notions of adaptation success.

Because so little is known about people's perceptions empirically, the focus group method was chosen as a first step in generating empirically grounded hypotheses and testable communication approaches. Two focus groups were held, two months apart, on a Saturday to allow working individuals to attend. The two groups included homeowners of shorefront property with the first group consisting of six men and two women, and the second group consisting of six women and one man (the gender mix was accidental). Participants were identified via tax records held by the City of Monterey; they ranged roughly between approximately 40 and 80 years of age, and by accepting the invitation to participate they exhibited a self-selection bias as being individuals interested in coastal management issues, in particular coastal hazards (mentioned in the invitation). Participants were offered lunch and a $50 stipend. The arc of conversation began with prompts regarding participants' length of residence and perceptions to the region, and then went on to questions about current coastal threats, coastal hazards, personal and governmental hazard mitigation efforts, expectations of future threats, and climate change impacts. The

conversation ended with questions about adaptation. The focus groups lasted two hours each, were recorded and transcribed, and qualitatively analyzed.

Expectations of the Future

To date, there is no empirical data on how citizens in coastal communities would define adaptation success. However, from ongoing interaction with coastal stakeholders, there are some early indications of what people's positive visions of the future might entail, what they might want from adaptation. While anecdotal, they can serve as a framework for grouping potential responses.

The first category of desirable outcomes can be described as "something better than what we have." Such comments suggest that coastal management is already not entirely successful in maintaining what people care about; they might also indicate that people hope for panaceas, some sort of magic solution, to solve a wide array of problems – a setup for disappointment given the complex challenges ahead. On the other hand, it may point to coastal residents' willingness to work toward larger change.

A second category of desirable outcomes can be summarized as "keeping what we have" – an attitude reflecting the common human aversion to change and risk, and maybe even an unwillingness to consider potential losses. A reading of existing local and state adaptation plans in the US – if not necessarily explicit on the question of adaptation success – carry a tone that reflects these first two categories.

A third category of future expectations that might still be considered successful or acceptable might be termed "tolerable, livable conditions." Expressions of this sort reflect an expectation that climate change and sea-level rise might bring negative impacts to coastal areas, or at least a recognition – maybe from direct experience or reports – that extreme events can cause significant disturbance, and thus that some amount of coping with disruption and change may be required. These sorts of expectations echo academic discourses on keeping societies within their "coping range" (Moser and Luers 2008; Hess *et al.* 2011), and reflect humans' substantial technological, institutional, economic and socio-psychological adaptive capacity and ingenuity in adapting to different, and sometimes quite undesirable, environmental circumstances.

Contextual factors can shape these sets of expectations, albeit in complex ways. Current ecological and social conditions in a coastal community; economic well-being as reflected in employment rates, general economic optimism, and sense of opportunity; a history of coastal management conflict or alternatively, proactive, inclusive and responsive coastal management may all shape what people want from the future; a generalized national "mood" or competing priorities (e.g. terrorism, disasters), and personal traits will affect people's visions of the future, and by implication, their versions of "success."

Place Attachment

To place focus group participants' expectations of the future in context – and with those their notions of successfully dealing with climate change impacts – it is helpful to first summarize

how they view their environment currently and how they perceive impacts from climate change. The two groups differed somewhat in how much they spoke of climate change adaptation and management approaches to coastal problems. Each group included individuals strongly persuaded that climate change was occurring and caused by human activities as well as individuals skeptical of a human role in climate change.

Invariably, participants in both groups loved their home region. Words like magical, paradise, treasure, wonderful, idyllic, restorative, and special were used emphatically; people expressed their love for this particular stretch of coastline, openly acknowledging their strong, compelling, and in many cases long ties to Monterey Bay. Particular aspects of the natural and cultural environment of the city and the Bay (including birds, sea life, trees, the beach and nearby mountains, the fog and climate overall, the people, music and other cultural offerings, the accessibility, deep family ties) featured prominently in participants' descriptions of what they loved about living there. Thus, place attachment is significant, even for people who moved to the area only in the last 10 years, and climate and ecology are an important part of it.

Emotional Response to Global Warming

When explaining their interest in participating in the focus group both groups expressed worries and concerns that quickly involved climate change. And while it emerged as an issue for everyone, those who were most actively engaged in civic, political and coastal management issues expressed the greatest concerns about global warming. While some spoke freely about these concerns and without prompting – "So we're like in the second row of the Titanic, kind of" (Participant, Focus Group 1, 2012) – others found the topic so emotionally distressing that they did not volunteer their fatalistic views until invited to speak to them:

> And it really sets in, the reality of what we're trying to hold back here. And it does seem almost futile, with all the government agencies that get in the way, the sheer cost of doing something like that – it seems hopeless. And that's kind of depressing, because I love this area. Like I said earlier, I think it's paradise.
>
> (Participant, Focus Group 1, 2012)

> Global warming, for sure. I mean, if what they're predicting is true – the oceans are going to rise by X amount, and – it's all prediction but if you take the least worst-case scenario and it's going to come up by three feet, I mean, you can just pretty much wash away the whole …– right down there next to the pier. All that's going to be gone.
>
> (Participant, Focus Group 1, 2012)

> Now, the long-term stuff we're talking about – what are you going to do? … It almost feels like we're helpless against Mother Nature or the forces of nature.
>
> (Participant, Focus Group 1, 2012)

> There's no way that we can deal with this as individuals. It's a problem that's almost too big for anybody to deal with.
>
> (Participant, Focus Group 1, 2012)

> Well, it's just so depressing. And I think the apathy of humans is just so depressing. I can hardly even stomach it. … I see the decay of civilization, and it just kills me. … I'm going to sound terrible. The earth is a self-correcting organism. She will do away with us, and that will be fine. Humans – maybe that's what we've done to ourselves. But it's the animals. And just pictures of the polar bears clinging to little bits of ice – … just brings me to tears.
>
> (Participant, Focus Group 2, 2012)

> It's so overwhelming to even just think about it.
>
> (Participant, Focus Group 2, 2012)

Understanding of Problems and Solutions

Individuals had a surprisingly good understanding of the causes of erosion and the impacts of sea-level rise on agriculture, tourism, urban areas; they also well understood the impacts of individual protection measures on neighboring properties, and – given the magnitude of the task – the scale of the "real solution" needed. They spoke to the institutional problems and politics ("the politics of erosion", "the death of common sense") that get in the way of finding systemic solutions:

> "I think in this country where we've gotten is there are so many special interest groups that are now protecting special interests. And there's no one in a place to say: let's talk about the common good. So we're very good at not being able to do things or preventing things from being done, but we're not very good at solving problems. And I think that's an issue that's far bigger than erosion."
>
> (Participant, Focus Group 1, 2012)

Individuals did not think they themselves could do much to address flooding/erosion problems, much less the larger sea-level rise problem; some spoke of limited personal preparedness measures; but virtually everyone expressed an expectation that government would need to manage these problems. At the same time, they did not believe such a concerted effort was likely:

> The coastal homeowners are being forced to seek individual solutions because a systemic solution is just impossible because of all the competing interests. And, you know, our country is a great country but it tends not to do things that are uncomfortable until there's a disaster. So when the ocean gets up another three or four feet and Alvarado gets washed away and the regional sewage treatment plant can no longer keep sewage [from] pumping into [the Bay], then there's going to be action to solve the problem.
>
> (Participant, Focus Group 1, 2012)

> You really can't plan on federal aid for that, for local help. Just think about it: it goes up four or five feet and half of Florida is going to be under water. And will the federal government have money to spend for coast repairs and to save our sewage plant here when they're trying to save half of Florida? I mean, clearly not.
>
> (Participant, Focus Group 1, 2012)

The more familiar participants were with local coastal management issues, the more willing they were to also talk about adaptation, and many were quite familiar with a range of options. Retreat was understood by everyone. Those less familiar with adaptation were hard pressed to venture into the topic since it seemed to demand more technical knowledge than they felt they had. The proposals for adaptive solutions clearly recognized the limitations of piecemeal, property-by-property protection efforts (e.g. seawalls or riprap) and pointed toward larger approaches (e.g. regional sediment management) and far more fundamental interventions (e.g. changes in electoral politics and greater community engagement in local politics, basic education of children and the public, change in worldviews).

Visions of Successful Adaptation

Participants generally felt that they did not have "the answer" to solving the massive adaptation challenges ahead of them, but each offered elements that collectively amounted to a multi-faceted vision of a desirable future. This vision involved aspects of a beautiful coastal natural environment, and a deep sense of appreciation for it among those who are privileged to enjoy it; a large-scale regional solution to the erosion problems; a strong local economy; an educated and civically engaged populace; improvements in governance and collaboration among relevant institutions; extended outreach to the community; strong leadership; and an orientation toward the common good. In their own voices:

> But one thing that I guess would give me some hope would be to have a unified voice on all this.
>
> (Participant, Focus Group 1, 2012)

> We need a world view, that we can build something that can solve these problems. I just think we need the right set of people and some teeth in government to give them some authority.
>
> (Participant, Focus Group 2, 2012)

> You have to elect people that have your vision in mind, and keep in touch with them that that is your vision, and try and keep them from being corrupted ….
>
> (Participant, Focus Group 2, 2012)

> But it gets down to just families or individuals… it's a matter of leaving the world a little bit better than it is.
>
> (Participant, Focus Group 2, 2012)

> Preserve the beauty that we have, and nourish the people that we have so that we have an educated population who is willing to get in and do the dirty work, and hold the politicians' feet to the fire and make them follow through with these empty promises that they dole out and try to spoon-feed us with. … Having a responsible population.
>
> (Participant, Focus Group 2, 2012)

> Basically, I think really the only way short of a disaster to mobilize people is to work on something that's in everybody's self-interest. And I think about the only thing that is self-interest is to preserve the coast so that everybody can use it in a fashion that they can enjoy and can support their livelihoods. … So I think if we can somehow craft a plan or something that will, instead of saving those greedy homeowners their choice lots on the ocean, create a plan that says this is saving something for the common benefit of everybody, the beaches and whatever, then I think we can maybe make a little bit of progress there.
>
> <div align="right">(Participant, Focus Group 1, 2012)</div>

> I think what will mobilize people is … to protect the shore resource itself. That's really why we're all here.
>
> <div align="right">(Participant, Focus Group 1, 2012)</div>

Their advice was to seek common ground; not to wait for a disaster; not to engage in self-interest battles but to stay focused on a larger vision, the common interest; and to step forward with clear leadership to send an important signal to the community that this big and seemingly overwhelming issue is being addressed. Such leadership would involve authenticity, truth-telling, and giving people hope. Participants enjoyed the focus group conversation and urged that more dialogs should be held to educate people but also give them a chance to voice their opinions and concerns. They urged community leaders to work toward adaptation strategies for multiple timescales. In the near-term, shorefront homeowners need some immediate help and flexible interim solutions to address the crises at erosion hotspots and to get past the imminent threats. More importantly, however, there is a need to focus on tactical strategies for the medium term, and plan for the inevitable, i.e. retreat in the long-term, should sea-level rise turn out to be as severe as projected.

INSIGHTS, LESSONS AND OPPORTUNITIES

Given the small number of participants, and the self-selection bias of participants, focus groups do not lend themselves to broad generalizations, although findings can be interpreted with caution in the context of other existing research. On the other hand, the self-selection bias may not be a significant problem here, since those who were eager to participate in the focus groups are also those who belong to the interested and engaged "issue public" (Krosnick 1990). The findings certainly generate valuable qualitative insights into people's thinking on a specific topic, and thus allow for the development of testable hypotheses and practical pilot applications (Krueger and Casey 2009).

Visions of adaptation success were placed in the context of people's views and feelings about their coastal home environment and their responses to the prospects of climate change and sea-level rise. An emerging body of research acknowledges that emotional attachment to place and the multi-faceted notion of "place identity" are strong drivers of people's responses to threats to that place, and to environmental management and adaptation options to deal with them (Fresque-Baxter and Armitage 2012; Knez 2005; see also Barnett *et al.* this volume). Participants expressed very strong attachment to the Monterey Bay region – its natural and socio-cultural environment – through their emotional ties, rootedness, familiarity, sense of belonging, social

connections, commitment to place and civic/political engagement for it. These feelings were reiterated in the discussion of visions and hopes for a successfully adapting Monterey.

Not surprisingly, threats to one's place identity as might result from climate change thus lead to strong emotional reactions:

> When places become threatened from real or perceived changes, continuity of place may be disrupted, potentially impacting place identity. This may result in engagement in coping strategies (e.g., taking actions against change, denial, reestablishing place meanings) to alleviate the threat and/or the resultant tension caused by it. Changes or disruptions can result in changing perceptions of place meanings/values, feelings of loss, or the experience of grief.
>
> (Fresque-Baxter and Armitage, 2012: 253)

In fact, several of the participants expressed deep distress (grief, frustration, desire to not speak about it) over climate change and what it may mean to the region, aggravated by the fact that they did not see an adequate ("responsible", visionary, common-good oriented) local, national, and global response. This is consistent with the extensive literature on emotional responses to climate change, denial, and despair (Brace and Geoghegan 2011; Norgaard 2011; Dickinson 2009; Lertzman 2008; Moser 2007; Catton 1996). Others spoke about their repeated engagement in neighborhood disaster preparedness groups, local electoral politics, and regional coastal management – a source of knowledge, self-efficacy and adaptive capacity in the face of tremendous challenges (Milfont 2012; Grothmann and Patt 2005; Tompkins 2005). These responses both reflect and engender hope, trust, and confidence in the future though political bickering, frustration with government, and perceived public apathy threatened to undermine it (Roeser 2012; Zaalberg *et al.* 2009; Fritze *et al.* 2008; Snyder *et al.* 2005).

Only the most engaged and informed focus group participants had concrete suggestions as to what types of adaptive actions would be preferable. This speaks to the educational opportunities for local government (which is already active on adaptation planning (Abeles *et al.* 2011)). But virtually everyone understood that continuation of "business-as-usual" coastal management would be insufficient – a response that might be encouraging to coastal managers who are trying to initiate changes from within government yet who perceive a lack of public demand for adaptation (Hart *et al.* 2012; see also Ekstrom and Moser, this volume).

Moreover, everyone had a clear and emotionally charged moral compass as to what type of future they would like to see unfold. Interestingly, all three categories of desirable futures described above (something better, keeping the same, and at minimum tolerable conditions) were explicitly mentioned. Achieving something better was expressed in ways that echoed the common intergenerational desire to leave a better future than was bequeathed. This sentiment was most frequently related to the things people see going wrong at present – stove-piped, overly bureaucratic, inadequate or overreaching governance, coastal development, missing political leadership and community engagement, or the polarized debate around climate change. Keeping things the way they are corresponded most directly with what people valued about their community and environment. And obtaining some kind of tolerable outcomes in the future (only to be achieved with a focus on the common good) emerged in response to the intolerable

alternative of a hopeless, destructive future when sea-level rise and climate change impacts will be more severe.

CONCLUSION: WHEN WINNING IS LOSING AND LOSING IS WINNING

Adger and Barnett (2009: 2803) argue that "metrics that may be used to determine the goals of adaptation, the measures of its success, and the trade-offs that may be involved can be understood only in terms of the social context in which adaptation takes place." The research reported here begins to capture that social context – deeply interwoven with what individuals value about their environment and community. Importantly, the adaptive solutions discussed by focus group participants were not just focused on a technical, structural approaches, but involved institutional changes (see Ekstrom and Moser, this volume), a deeply involved public, and a strong dose of personal reflection among all involved (see O'Brien, this volume). Participants wished for local government leadership but also wanted an active and meaningful role in governance of the shoreline, not just an "illusion of inclusion" (Brulle 2010; Few *et al.* 2007; see Hale *et al.*, this volume); they reprimanded ineffective government officials and special interests as much as an uninvolved, apathetic public. They also recognized narrow, individualized self-interest ultimately as a losing proposition (i.e. protecting one's own property from erosion results in neighbors facing increased erosion) and offered as remedy a "common self-interest" where the main draw to the coast – the natural shoreline – is the primary asset to protect even if individuals lose their homes. This amounts to a paradox of successful adaptation: giving up something of direct personal value – a narrow self-interest – paves the way for an ultimately more desirable solution that is in the larger, common interest.

Tapping into what people love, their place attachment and identity, reminding people of their connectedness to each other and the non-human world, and engaging citizens meaningfully in joint problem-solving that leads to tangible outcomes constitute the core recommendations for more effective engagement strategies proposed by Crompton and Kasser (2010). Others, too, have appealed to various elements of such a strategy (e.g. Moser 2012; Atkisson 2009; Orr 2003; Berry 2000; Meadows 1994). These may, indeed, constitute a promising starting point, which may allow people to consider the links between the problems they have now and the implications of sea-level rise surely yet to come. Repeated engagement in this manner may also enable people to see what desired adaptive management outcomes can be obtained, which need frequent or occasional adjustment, and which may be unrealistic in light of continually and more rapidly rising seas. It might also help people – by way of active engagement – be with and in their emotional responses – e.g., grief and despair – to the changing environment and the loss of loved places, and help the cynical or indifferent rediscover meaning (Lonsdale 2012). It might further help soften the harsh battle lines drawn in the sand of many US coastal communities at present. While this proposal comes with no illusion about the ease with which hardened self-interests can be redirected toward common goals, there is emerging evidence that even those more skeptical of climate change are more likely to engage in pro-environmental and collective behavior if their actions and they themselves would be perceived as contributing to a caring and considerate society and to a future rich in opportunities (Bain *et al.* 2012). Thus, an active, dialogic engagement strategy launched from a collective sense of place and a desire to create a future where the beauty and human-environment connections are the driving forces behind finding

acceptable adaptation options may set a tone for planning and decision-making, where climate contrarianism will not find hospitable ground.

What then is "adaptation success" in the context of inevitable loss? Delineating adaptation success, first, means to circumscribe which loss is inevitable. Rather than land or structures, things or money, the inevitable – and seemingly acceptable – loss is narrow self-interest. At a deeper level, what will inevitably be lost are some tangibles, while adaptation success means retaining the intangible – the love and connection to place and community. Success is also the ability to hold on to or create a positive vision of the future and being engaged in shaping it, rather than standing helpless and unheard on the side lines watching an imposed future unfold. Finally, adaptation success is a way of coming to terms and accepting what is being lost, and deepening the bonds to one's community in the process. The stories of those who are literally losing ground at present in coastal Alaska and Louisiana (Dowie 2010; ITEP 2008), those who find themselves unable to shore up their private interests against the forces of the sea, appear to have one principal bottom-line: sustaining the cohesion of their communities, their lives in its naturally embedded way, and their livelihoods. Those on the more privileged shores of the country able to see the writing on the wall wish, it appears, for exactly the same.

ACKNOWLEDGMENTS

BIBLIOGRAPHY

Abeles, A., Grimmer, K. and Papendick, H. (2011) *Preparing for the Future: Climate Change and the Monterey Bay Shoreline*, Summary Report of a Workshop, 6 December, 2011, Monterey Conference Center, Monterey, CA. Monterey, CA: Center for Ocean Solutions. Online. Available HTTP: <www.centerforoceansolutions.org/sites/default/files/PreparingForTheFutureWorkshopReport.pdf> (accessed August 24, 2012).

Adger, W.N. and J. Barnett (2009) 'Commentary: four reasons for concern about adaptation to climate change', *Environment and Planning A*, 41: 2800-2805.

Albrecht, G., Sartore, G.-M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., *et al.* (2010) 'Solastalgia: the distress caused by environmental change', *Australasian Psychiatry*, 15(Suppl.), S95–S98.Atkisson, A. (2009) *The Sustainability Transformation: How to Accelerate Positive Change in Challenging Times*, London: Earthscan.

Bain, P.G., Hornsey, M.J., Bongiorno, R. and Jeffries, C. (2012) 'Promoting pro-environmental action in climate change deniers', *Nature Climate Change,* 2(8): 600–603.

Barboza, (2011) 'Even conservative Newport Beach gets serious about rising sea levels', *The Los Angeles Times*, 6 March 2011. Online Available HTTP:

<latimesblogs.latimes.com/lanow/2011/03/even-conservative-newport-beach-gets-serious-about-rising-sea-levels.html> (accessed March 6, 2011).

Berry, T. (2000) *The Great Work: Our Way into the Future*, reprint ed., New York: Broadway.

Brace, C. and Geoghegan, H. (2011) 'Human geographies of climate change: landscape, temporality, and lay knowledges', *Progress in Human Geography,* 35(3): 284–302.

Brulle, R.J. (2010) 'From environmental campaigns to advancing the public dialog: environmental communication for civic engagement', *Environmental Communication*, 4(1): 82–98.

Bump, P. (2012) 'Did you say 'sea-level rise'? You liberal. *Grist Magazine*, 11 June 2012. Online. Available HTTP: <http://grist.org/news/did-you-say-sea-level-rise-you-liberal/> (accessed 11 June 2012).

C2ES (Center for Climate and Energy Solutions) (2012) 'Climate Change Adaptation: What Federal Agencies Are Doing, February 2012 Update, Washington, DC: C2ES.

Catton, W.R. Jr. (1996). The problem of denial', *Human Ecology Review*, 3(1): 53–62.

Chang, A. and Dearen, J. (2012) 'Stay or go? Communities are eyeing retreat from sea', *The Associated Press*, June 9, 2012. Online. Available HTTP: <http://today.msnbc.msn.com/id/47660947/ns/today-today_tech/t/stay-or-go #.UDhGEqB54lY> (accessed June 9, 2012).

Coyle, K.J. and Van Susteren, L. (2012) *The Psychological Effects of Global Warming on the United States: And Why the US Mental Health Care System is Not Adequately Prepared,* National Forum and Research Report, Washington, DC: National Wildlife Federation Climate Education Program.

Crompton, T., and Kasser, T. (2009) 'Human identity: a missing link in environmental campaigning', *Environment,* 52 (4): 23–33.

Dean, C. (2012) 'A North Carolina lifeline built on shifting sands', *The New York Times*, 5 March 2012.

Dickinson, J.L. (2009) 'The people paradox: self-esteem striving, immortality ideologies, and human response to climate change', *Ecology and Society*, 14(1): [34]. Online. Available HTTP: <http://www.ecologyandsociety.org/vol14/iss1/art34/> (accessed December 1, 2009).

Dowie, M. (2010) 'Relocating Newtok: a Yup'ik village determined to preserve its cultural identity faces a costly move to higher ground', *Orion Magazine,* Nov/Dec. Online. Available HTTP: <http://www.orionmagazine.org/index.php/articles/article/5928/> (accessed August 18, 2012).

EcoAdapt (2011) '*The State of Marine and Coastal Adaptation in North America: A Synthesis of Emerging Ideas*', Final Report, Washington, DC: EcoAdapt.

Fears, D. (2012) 'Built on sinking ground, Norfolk tries to hold back tide amid sea-level rise', *The Washington Post*, June 17. Online. Available HTTP: <http://www.washingtonpost.com/national/health-science/built-on-sinking-ground-norfolk-tries-to-hold-back-tide-amid-sea-level-rise/2012/06/17/gJQADUsxjV_story.html> (accessed May 5, 2012).

Few, R., Brown, K. and Tompkins, E. (2007) 'Public participation and climate change adaptation: avoiding the illusion of inclusion', *Climate Policy*, 7: 46–59.

Focus Group 1, Transcript, April 28 2012, Moss Landing, California.

Focus Group 2, Transcript, June 23, 2012, Monterey, California.

Fresque-Baxter, J.A. and Armitage, D. (2012) 'Place identity and climate change adaptation: a synthesis and framework for understanding', *WIREs Climate Change*, 3(3): 251–266

Gass, H. (2012) 'Defeating the Delphi – step by step instructions'. Online. Available HTTP: <www.theEastBayTeaParty.com> (accessed 2 April 2012).

GAO (Government Accounting Office) (2009) *Alaska Native Villages. Limited Progress Has Been Made in Relocating Villages Threatened by Flooding and Erosion*, GAO-09-551. Washington, DC: GAO. Online. Available HTTP: <http://www.gao.gov/new.items/d09551.pdf > (accessed August 18, 2012).

Grothmann, T. and Patt, A. (2005) 'Adaptive capacity and human cognition: the process of individual adaptation to climate change', *Global Environmental Change*, 15(3): 199–213.

Hart, J.F., Grifman, P., Moser, S.C., Abeles, A., Meyers, M., Schlosser, S. and Ekstrom, J.A. (2012). *Rising to the Challenge: Results of the 2011 California Coastal Adaptation Needs Assessment*. USC Sea Grant, Los Angeles, CA. Online. Available HTTP: <http://www.usc.edu/org/seagrant/research/climateadaptsurvey/SurveyReport_FINAL_OnlinePDF.pdf> (accessed, 31 May, 2012).

Hess, J.J., McDowell, J.Z. and Luber, G. (2011) 'Integrating climate change adaptation into public health practice: using adaptive management to increase adaptive capacity and build resilience', *Environmental Health Perspectives,* 120(2): 171–179.

Hull, G.B. (2011)'Tea Party: deeper issues simmering below the surface', *Constructing Sustainability* (blog). Online. Available HTTP: <http://www.constructingsustainability.com/tea-party-deeper-issues-simmering-below-the-surface/> (accessed 23 April 2012).

IIA (Independent Insurance Agent) (2012). 'Biggert-Waters Flood Insurance Reform and Modernization Act of 2012: Big "I" Summary of Provisions'. Online. Available HTTP: <www.iiat.oeg/down/biggert-waters_flodd.pdf> (accessed August 25, 2012).

ITEP (Institute for Tribal Environmental Professionals) (2008) *Biloxi-Chitimacha-Choctaw Indians: Rising Tides*. Online. Available HTTP: <www4.nau.edu/tribalclimatechange/> (accessed 27 August 27, 2012).

Kaufman, L. and Zernike, K. (2012). Activists fight green projects, seeing UN plot', *The New York Times*, 3 February 2012.

Knez, I. (2005) 'Attachment and identity as related to a place and its perceived climate', *Journal of Environmental Psychology*, 25(2): 207–218.

Kobell, R. (2012) 'Sea level along Chesapeake rising faster than efforts to mitigate it', *Chesapeake Bay Journal*, January 2012. Online. Available HTTP: <http://www.bayjournal.com/article/sea_level_along_chesapeake_rising_faster_than_efforts_to_mitigate_it> (accessed July 10, 2012).

Krosnick, J.A. (1990) 'Government policy and citizen passion: a study of issue publics in contemporary America', *Political Behavior*, 12(1): 59–92.

Krueger, R.A and Casey, M.A. (2009) *Focus Groups: A Practical Guide for Applied Research*, 4th ed., Los Angeles: Sage.

Kübler-Ross, E. and Kessler, D. (2007).*On Grief and Grieving: Finding the Meaning of Grief Through the Five Stages of Loss*. New York: Scribner.

Lee, M. (2012) 'Sea walls spark battle over state's power', *San Diego Union Tribune*, 25 May, 2012.

Leiserowitz, A., Maibach, E., Roser-Renouf, C., and Hmielowski, J. D. (2012a) *Extreme Weather, Climate & Preparedness in the American Mind.* Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication.

Online. Available HTTP: <http://environment.yale.edu/climate/files/Extreme-Weather-Climate-Preparedness.pdf> (accessed March 30, 2012).

--- (2012b) *Global Warming's Six Americas, March 2012 & November 2011.* Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication. Online. Available HTTP: <http://environment.yale.edu/climate/files/Six-Americas-March-2012.pdf> (accessed 30 March 2012).

Leiserowitz, A., Maibach, E., Roser-Renouf, C., and Smith, N. (2011) *Global Warming's Six Americas in May 2011.* Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication. Online. Available HTTP: <http://environment.yale.edu/climate/files/SixAmericasMay2011.pdf> (accessed 31 July 2011).

Lertzman, R. (2008) 'The myth of apathy', *The Ecologist*, 19(6): 16–17.

Leshner, A. and Chameidis, W.L. (2012) 'N.C. can't outlaw global climate change', *The News & Observer*, 1 August 2012. Online. Available HTTP: < http://www.newsobserver.com/2012/08/01/2234915/nc-cant-outlaw-global-climate.html> (accessed 10 August, 2012).

Lonsdale, K. and Goldthorpe, M. (2012) 'Anticipating coastal change: engaging our senses of loss and hope', Paper presented at *Adaptation Futures 2012*, Tucson, AZ, May 2012.

Marlowe, H. (2012) Personal communication with author, 27 August 2012.

Martinich, J., Neumann, J., Ludwig, L. and Jantarasami, L. (2012) 'Risks of sea level rise to disadvantaged communities in the United States', *Mitigation and Adaptation Strategies for Global Change,* online first, DOI 10.1007/s11027-011-9356-0.

Meadows, D.H. (1994) 'Envisioning a sustainable world', *Third Biennial Meeting of the International Society for Ecological Economics*. San Jose, Costa Rica.

Milfont, T.L. (2012) 'The interplay between knowledge, perceived efficacy, and concern about global warming and climate change: a one-year longitudinal study', *Risk Analysis*, 32(6):1003–1020.

Moser, S.C. (2012) 'Getting real about it: navigating the psychological and social demands of a world in distress', pp. 432–440 in Rigling Gallagher, D., Andrews, R.N.L. and Christensen, N.L. (eds), *Sage Handbook on Environmental Leadership*, SAGE Reference Series on Leadership, Thousand Oaks, CA: Sage.

Moser, S.C., Williams, S.J. and Boesch, D.F. (2012). 'Wicked challenges at land's end: managing coastal vulnerability under climate change', *Annual Review of Environment and Resources*, 37, doi: 10.1146/annurev-environ-021611-135158, in press.

Moser, S.C. and Luers, A.L. (2008) 'Managing climate risks in California: the need to engage resource managers for successful adaptation to change', *Climatic Change* 87(Suppl. 1): 309–322.

NRC (National Research Council) (2012) *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Committee on Sea Level Rise in California, Oregon, and Washington, Board on Earth Sciences and Resources and Ocean Studies Board, Division on Earth and Life Studies*. Washington, DC: National Academies Press.

Nicholls, R.J., Wong, P.P., Burkett, V., Codignotto, J., Hay, J. McLean, R., Ragoonaden, S., Woodroffe, C., Brown, B., Forbes, D., Hall, J., Kovats, S., Lowe, J., McInnes, K., Moser, S.C., Saito, Y. and Tol, R. (2007) 'Coastal systems and low-lying areas', pp.315-356 in *Climate Change 2007: Vulnerability, Impacts and Adaptation, Contribution of Working*

Group II to the IPCC Fourth Assessment Report, M.L. Parry, O.F. Canziani, J.P. Palutikof, P., J. van den Linden and C.E. Hanson (eds), Cambridge, UK: Cambridge University Press.

Norgaard, K.M.(2011) *Living in Denial: Climate Change, Emotions, and Everyday Life*. Cambridge, MA: MIT Press.

Orr, W.D. (2003) Four challenges of sustainability. Paper presented at the School of Natural Resources, University of Vermont, Spring Seminar Series 2003. Online. Available HTTP: <http://www.uvm.edu/gicc/SNR_seminar/Readings/CB-42.pdf> (accessed 10 July 2012).

Peach, S. (2012a) 'Armed with maps and photos, local planners talk sea level rise', *Yale Climate Media Forum*, 24 May 2012. Online Available HTTP: < http://www.yaleclimatemediaforum.org/2012/05/local-planners-talk-sea-level-rise/> (accessed 24 May, 2012).

--- (2012b) 'Sea level rise, one more frontier for climate dialogue controversy', *Yale Climate Media Forum*, 2 February 2012. Online Available HTTP: <http://www.yaleclimatemediaforum.org/2012/02/sea-level-rise-one-more-frontier-for-climate-dialogue-controversy/> (accessed 1March, 2012).

Prevost, L. (2012) 'To repair the shore, or retreat?', *The New York Times*, 3 May 2012.

Randall, R. (2009) 'Loss and climate change: the cost of parallel narratives', *Ecopsychology*, 1(3): 118–129.

Responsive Management (2010) *Delaware Residents' Opinions on Climate Change and Sea Level Rise: Discussion of Survey Results and Messaging Implications*. Report prepared for the Delaware Department of Natural Resources and Environmental Control. Online. Available HTTP: <http://www.responsivemanagement.com/download/reports/DE_SLR_WhitePaper.pdf> (accessed 10 January 2011).

Roeser, S. (2012) 'Risk communication, public engagement, and climate change: a role for emotions', *Risk Analysis*, 32(6):1033–1040.

Running, S. (2007) 'Five stages of climate grief', *Friends of 2 Rivers* (blog). Online. Available HTTP: <http://www.friendsof2rivers.org/dr-steve-running-5-stages-of-climate-grief.html> (accessed 18 August 2012).

Sheppard, K. (2012) 'North Carolina tries to wish away sea-level rise', *The Guardian*, 1 June 2012. Online. Available HTTP: < http://www.guardian.co.uk/environment/2012/jun/01/north-carolina-sea-level-rises> (accessed 1 June 2012).

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

Snyder, C.R., Cheavens, J., and Michael, S.T. (2005) 'Hope theory: history and elaborated model', pp. 101–118 in J. Eliott (ed.), *Interdisciplinary Perspectives on Hope*, New York: Nova Science Publishers, Inc.

Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. and Miller, H.L. (eds) (2007) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Intergovernmental Panel on Climate Change's Fourth Assessment Report*. Cambridge, UK: Cambridge University Press.

Spence, A., Poortinga, W. and Pidgeon, N. (2012) 'The psychological distance of climate change', *Risk Analysis*, in press, doi:10.1111/j.1539-6924.2011.01695.x.

State of Louisiana (2012) *Louisiana's Comprehensive Master Plan for a Sustainable Coast*. Online. Available HTTP: <http://issuu.com/coastalmasterplan/docs/coastal_master_plan-v2?mode=window&layout=http://coastalmasterplan.la.gov/issuu/mpmar2012/layout.xml > (accessed 1 June 2012)

Steinsiek, G. (2012) 'Alaska natives move on as their village washes out to sea'. Online Available HTTP: <http://climaterealityproject.org/2012/06/13/alaska-natives-move-on-as-their-village-washes-out-to-sea/> (accessed 17 June 2012).

The White House (2009) 'Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance', 5 October, 2009. Online. Available HTTP: <www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf> (accessed October 10, 2009).

Tompkins, E.L. (2005) 'Planning for climate change in small islands: Insights from national hurricane preparedness in the Cayman Islands', *Global Environmental Change*, 15(2): 139–149.

Zaalberg, R., Midden, C., Meijinders, A. and McCalley, T. (2009) 'Prevention, adaptation and threat denial: flooding experiences in the Netherlands', *Risk Analysis*, 29(12): 1759-1778.