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Promoting climate justice in high-income countries: lessons from African American communities on the Chesapeake Bay

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Abstract Climate change will unevenly affect people and societies throughout the world. Although high-income nations possess a wealth of adaptation resources, without proper planning, their most vulnerable populations will suffer severely and unjustly. We draw on methods from environmental anthropology and policy analysis to assess the potential to increase justice for African American communities that are particularly vulnerable to flooding from sea-level rise on the Chesapeake Bay. At a multistakeholder workshop, participants identified seven obstacles to increasing justice—lack of resources, preparedness, social capital, transparency, representation, information, and utilization of community knowledge. Participants also identified opportunities to address injustice, particularly by seeking greater engagement and mutual education. Analysis of workshop dialogue revealed that policymakers' and community members' differing perspectives on time, vulnerability, environmental conservation, and knowledge are key—but not insurmountable—obstacles to addressing injustice. We conclude with specific policy recommendations for moving Maryland toward a more just system of adaptation. Our recommendations emphasize that attending to procedural justice is essential to realize climate justice both in Maryland and around the world.

1 Introduction

Policymakers, scholars, and practitioners agree that mitigating the consequences of climate change is tremendously complicated and requires efforts to "advance the interdisciplinary

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dialogue on climate justice" (Roser et al. 2015, p. 349). The concept of climate justice spans various sociopolitical scales and theoretical frameworks (see Fisher 2015; Schlosberg and Collins 2014) and concerns the fair distribution of economic, social, and cultural burdens of climate change to present and future generations (Roberts and Parks 2009). Climate change is fundamentally unjust for three main reasons. First, not everyone is equally responsible for causing climate change. Countries with greater per capita GDPs and individuals with higher incomes have contributed far more to greenhouse gas emissions than those with lower GDPs and incomes (Füssel 2010; Rabinowitz 2012). Second, not all people are equally vulnerable to the impacts of climate change. Those who have been least responsible are positioned to bear the brunt of adverse impacts (Adger et al. 2006; Fiske et al. 2014; IPCC 2014; Mohai et al. 2009; Samson et al. 2011). Finally, not everyone is equally empowered to participate in the decision-making processes that will affect how limited adaptation resources are utilized and distributed (Adger et al. 2006).

While scholars and practitioners have paid considerable attention to issues of climate justice in low- and lower-middle-income countries, much less attention has been paid to similarly disenfranchised populations within high-income countries (Fisher 2015; Harris 2010). Yet disparate levels of vulnerability to climate change exist within high-income countries (Rivera and Nickels 2014). Vulnerability is determined by risk of exposure to climate change impacts, sensitivity to those impacts, and adaptive capacity—the ability to minimize the negative effects of the disturbances (Adger 2006). The vulnerability experienced by a community or individual is not innate but rather is socially constructed and is magnified by past and present injustices in communities with histories of domination or who have been denied access to power, resources, or participation in decision-making processes (Cutter 1996; Cutter et al. 2003). Thus, those communities that have experienced other forms of injustice are also likely to experience climate injustice.

African Americans constitute one group facing climate injustice in the USA. On average, African Americans bear less responsibility for causing climate change but will suffer disproportionately from climate change impacts because of limited access to resources and decision-making processes (Congressional Black Caucus Foundation, Inc. 2004). While a number of grassroots organizations are striving to address climate justice for African Americans and others in the USA (see Schlosberg and Collins 2014), there has been relatively little study of how policymakers can rectify injustices that affect African Americans' vulnerability to climate change.

Our research illustrates the importance of procedural justice—the fair inclusion of all stakeholders in decision-making and planning processes (Paavola and Adger 2006)—within the larger context of environmental justice (Bullard et al. 2007). The environmental justice movement is focused on equal protection from environmental harms and has identified exclusion from decision-making processes as one of the key factors enabling discriminatory environmental outcomes (Mohai et al. 2009; Schlosberg and Collins 2014). In this paper, we demonstrate how current governance fails to sufficiently address the consequences of climate change among vulnerable communities in the USA.

Our interdisciplinary study integrates methods from environmental anthropology and policy analysis to explore the ways in which state-level climate change adaptation policy could address climate injustice. Specifically, we investigate vulnerability to sea-level rise (SLR) and opportunities for improving adaptive capacity for rural African American communities on the Eastern Shore of the Chesapeake Bay. We then analyze current Maryland policy and make recommendations for policy changes that could increase procedural justice. Overall,

we find that current governance systems and processes fail the African American communities by neglecting to assess their local needs and concerns. Specifically, the current governance systems fail to collaborate with the communities in adaptation planning and also undervalue experiential knowledge that exists within them. The findings and recommendations we present here support policymakers' pursuit of climate justice through procedural changes that increase access to the decision-making process for vulnerable populations.

2 Sea-level rise and African American communities on the Eastern Shore

Sea level on the Eastern Shore of the Chesapeake Bay in Maryland has risen about 30 cm over the last century (Titus and Strange 2008), and it is predicted to rise another 110 cm this century (Boesch et al. 2013), which will cause the bay shores along the central portion of the Eastern Shore to retreat 5 to 10 km (Titus and Richman 2001). As early as 1991, at least nine Eastern Shore islands had been abandoned because of land lost to erosion and SLR (Kearney and Stevenson 1991), and many more Eastern Shore coastal communities are at risk of inundation and forced relocation in the coming years (Nuckols et al. 2010).

African American communities on the Eastern Shore are particularly vulnerable to SLR because of historical and institutional racism. Following emancipation, newly freed blacks on the Eastern Shore were faced with the problem of earning a living without having the land, tools, or training to do so. In addition, they faced persistent racism which denied them full rights of citizenship, perpetuated an oppressive system of labor, solidified racial segregation, and brought about new forms of racial violence (Andersen 1998; McConnell 1971). This discrimination compelled many African Americans to settle on marginal, flood-prone land.

The legacy of racial disparity persists to this day in the form of income inequality, different career opportunities for European and African Americans, and residential segregation (Andersen 1998; Miller Hesed 2016). Despite hardship, these communities' tight social bonds and deep ties to the land have promoted the accumulation of experiential knowledge about their social and ecological environments. Nevertheless, limited resources and political isolation inhibit the communities' capacity for adapting to SLR (Miller Hesed and Paolisso 2015). African American communities on the Eastern Shore now face the further injustice of potential relocation from the land to which they are now culturally and spiritually tied (Miller Hesed 2016).

3 Methodology

The primary source of data for both the environmental anthropological investigation and the subsequent policy analysis was a workshop conducted during the summer of 2014. The content of this workshop was informed by regional ethnography conducted during the previous 2 years (see Supplementary Information). Because African American communities on the Eastern Shore have historically been organized around United Methodist churches, GIS mapping was used to identify those African American church communities most at risk to flooding from SLR (Fig. 1). After spending several months conducting on-the-ground research to learn more about flood vulnerability, three communities were selected for more in-depth study: Union United Methodist Church (UMC) in St. Michaels, New Revived UMC and the Church Creek-Cambridge Charge (including John Wesley UMC, Waters UMC, and Christ

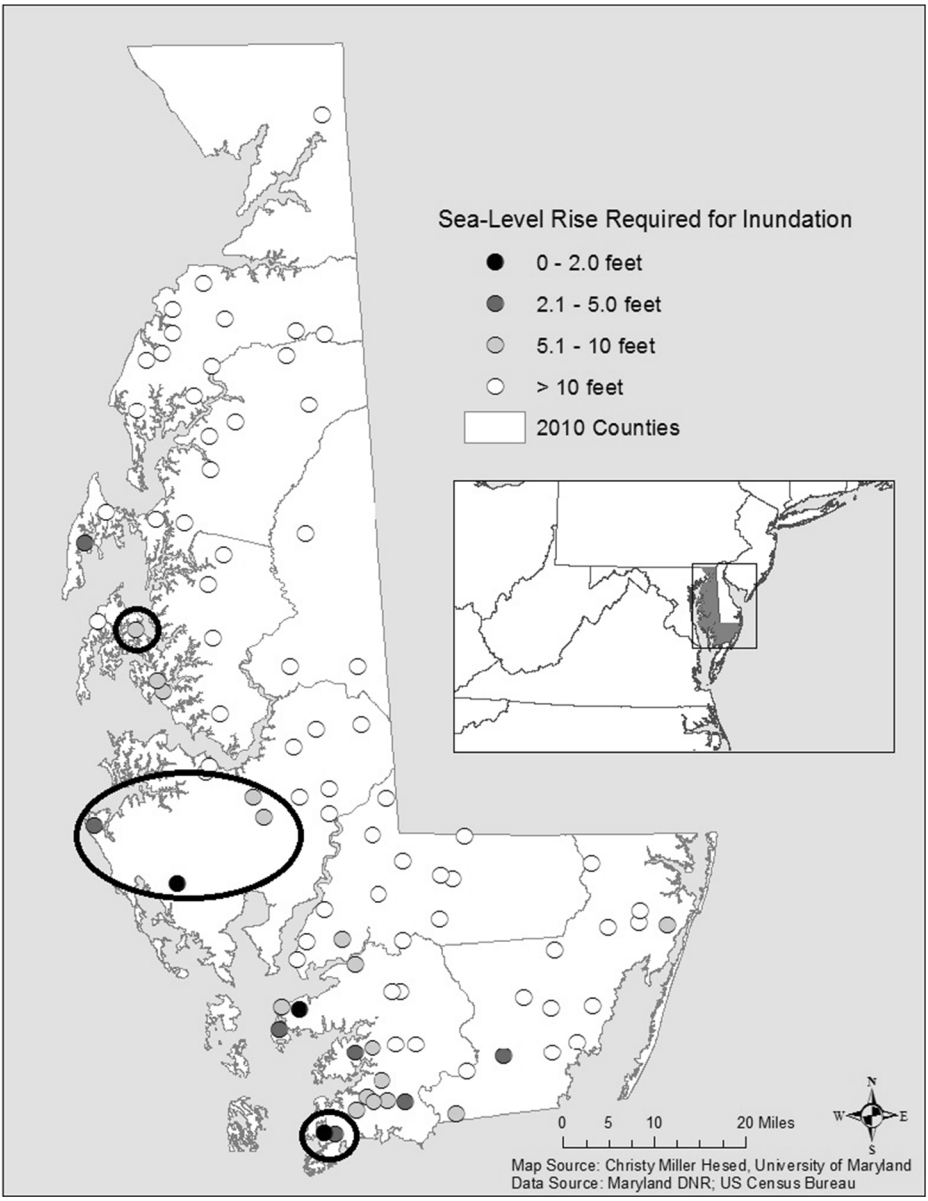

Fig. 1 African American churches at risk to sea-level rise on Maryland's Eastern Shore. Focal study communities are *circled in black*. From north to south, these communities are St. Michaels, Dorchester County, and Crisfield

UMC) in Dorchester County, and the African American community in Crisfield (including members of Enon Baptist Church of Deliverance, Shiloh UMC, and others). By working through the local churches, which are the spiritual as well as social centers of these rural communities (Miller Hesed 2016; Paolisso et al. 2012), all members of the African American communities—including those individuals who did not attend the church—were invited to be included in the research.

The multistakeholder workshop took place on Friday, July 11, 2014, from 9:30 am to 3:00 pm at the Blackwater National Wildlife Refuge Visitor Center. With the goal of gathering a diverse and knowledgeable group, key informants from each of the three African American communities as well as policymakers and environmentalists working on social or ecological adaptation to climate change were invited. Twenty-seven people participated in the workshop, including nine representatives of African American church communities, six state policymakers, one federal policymaker, five representatives of environmental organizations, one representative of the regional United Methodist Church, two anthropology graduate students, and three workshop facilitators. Of the 27 workshop participants, 12 were African American and 15 were European American. The objectives for the workshop were to (1) introduce the project and describe key findings on justice and adaptation, (2) create a space for individuals with diverse backgrounds and expertise to discuss justice and adaptation, and (3) develop recommendations for increasing justice as the Eastern Shore prepares for and responds to flooding from SLR. (See Supplementary Information for further description of workshop content.)

Discussion at the workshop was audio-recorded and transcribed. (See Supplementary Information for examples of direct quotes.) Transcriptions were coded for passages relating to adaptation obstacles and adaptation opportunities and whether they were primarily relevant to African American church communities, government and nongovernment agencies, or both. The PI then conducted pile sorts (see Bernard 2006) of the obstacles and opportunities and gave each pile a label which characterized the theme of the grouped obstacles and opportunities. The PI sent the results of this analysis to all workshop participants to garner their feedback on identified themes. Overall, participant feedback was affirming of the analysis and provided suggestions that helped to increase the clarity of the themes that are presented below. Our policy recommendations are developed directly from the workshop participants' observations of institutional failure and suggested solutions. We place their recommendations into the context of existing policies and the governance system.

Here we first present three outcomes from the workshop: (1) obstacles to increasing justice, (2) opportunities for promoting justice in adaptation, and (3) key differences in perspectives between the policymakers and the African American community members. We then discuss the implications of these findings and make recommendations for policy changes.

4 Obstacles to increasing justice

4.1 Lack of resources in flood-prone communities

The African American communities in this study lack sufficient resources to prepare for and recover from a flooding event. Flood preparation and recovery funding is distributed to counties by the State of Maryland. However, during past events, the amount distributed to poorer counties like Somerset and Dorchester was deemed by workshop participants as insufficient for their emergency needs. Additionally, this research indicated that policies guiding the distribution of resources generally failed to assist those most in need. For example, the Hazard Mitigation Grant Program (HMGP)—which provides funding for projects that decrease risk to populations and structures—is based on a cost-benefit analysis such that, all else being equal, a more expensive home would be prioritized for HMGP funding over a less expensive home (FEMA 2009, 2015). Finally, participants

reported that insufficient emergency funding is compounded by failure to distribute funding in a timely manner.

4.2 Lack of preparedness for flooding

Representatives of African American church communities expressed concern about the lack of adequate local-level planning for an emergency flooding event. In addition, they indicated frustration with the apparent prioritization of long-term flood planning (e.g., zoning and freeboard requirements) over addressing the logistical challenges of immediate flooding events (e.g., evacuation). Workshop participants also discussed disparities in the distribution of information such that some people would be unaware of a coming storm or not informed about plans for evacuation. For example, when Hurricane Andrew swept through Dorchester County in 1992, those who were in the volunteer fire and rescue circles were privy to weather information that many others in the county did not hear until it was too late to make adequate preparations.

Another obstacle to flood preparedness is that many parts of the Eastern Shore lack high-speed internet. According to a report by the Federal Communications Commission (2016), access to broadband of at least 25 megabytes per second is limited in rural communities on the Eastern Shore. For example, Dorchester and Somerset Counties have the lowest access rates in the State, with 41 and 65% of the rural population lacking access, respectively. Thus, if individuals cannot afford smart phones or sufficient data plans, they do not have access to information disseminated online.

4.3 Lack of social capital

Social capital—which consists of social attributes such as trust, networks, leadership, and participation—plays an important role in postdisaster recovery (Rivera and Nickels 2014). However, interview responses and workshop discussions revealed that while the African American church communities have a great deal of social capital within their church communities, there is far less social capital between the communities and external agencies that provide key adaptation resources. As noted earlier, this political isolation stems from historical and cultural legacies of racial discrimination on the Eastern Shore (Miller Hesed and Paolisso 2015). Furthermore, vulnerability is increased by the general lack of collaboration across different levels of government, NGOs, and the racial divide within communities. Speed and efficiency are critical in emergencies; however, during past flooding events, the needs of African Americans communities were overlooked. Regional NGOs do not appear to partner with local governments and/or churches to consider how flood adaptation strategies might benefit both the natural environment and human well-being (Miller Hesed 2016). In addition, there has been little effort to foster stronger connections across cultural and class differences on the Eastern Shore, which hampers successful responses to emergency flood events.

4.4 Lack of transparency

Lack of transparency about how resources are distributed impedes the ability of African American communities to successfully apply for disaster funding. African American community members reported the frustration they felt when funding was denied without explanation. In addition, African American community members stated that the process for granting

variances—official permission to deviate from a regulation—is unclear and therefore poses an obstacle to receiving a regulatory exception. In particular, the "critical area" law that protects wildlife habitat and aquatic resources by regulating the use of land within 1000 ft of the mean high water line (Maryland Code Annotated 2016 Natural Resources §8–1801) causes hardship for the African American communities living near the Chesapeake Bay. In some cases, no variance means that historic church land is being lost to encroaching wetlands because the community cannot build structures that would impinge on critical habitat. While some communities may be eligible for variances, the technical jargon of regulations and uncertainty about whom to ask for assistance prevents them from pursuing these opportunities.

4.5 Lack of representation

One of the largest obstacles to increasing justice on the Eastern Shore is the relative lack of representation of African American communities in both government and NGOs (see Supplementary Information). Lack of diversity in these organizations causes issues of injustice to be largely invisible, requiring African Americans to advocate as private citizens rather than as inside stakeholders. While some of the usual opportunities exist to engage with the government such as public meetings or calls for comment, African American community members face many barriers to participation in the decision-making processes. For example, they lack familiarity with bureaucratic processes, experience with technocratic language, and access to elected officials at all levels of government. Rural communities without municipal governments have an especially difficult time navigating political systems. NGOs that provide social services or protect wildlife habitat focus on governments and overlook the critical impact that their decisions have on local communities. Because the local church serves as each community's organizational center, pastors and lay leaders are quite knowledgeable about their community's particular needs and perspectives. However, government and NGOs often fail to recognize the importance of the church in representing the local community, and being unaccustomed to engaging with church leaders, this source of local expertise is excluded from agency decision-making processes.

4.6 Lack of information

Representatives of the African American church communities reported that many local community members do not fully understand the seriousness of SLR, increased inundation, and storm surges, and thus are less likely to be proactive in preparing for an emergency. A statewide survey conducted in 2015 found that residents of the Eastern Shore generally have a lower perception of climate change impacts than those in other parts of Maryland (Akerlof et al. 2015). Jargon and bureaucratic language in government and NGOs obfuscates information for local communities. Additionally, participants reported that a lack of trust in government at all levels further decreases the willingness of local communities to utilize important information.

4.7 Lack of utilization of community knowledge and experience

Because of historic settlement patterns during a time of intense racial discrimination, many African American communities are located in areas that have been prone to flooding for generations. Before federal and state disaster assistance became available, these communities relied on the knowledge and skills within the community to prepare for and recover after

flooding. The result is that these communities have accumulated experiential knowledge about how to adapt. For example, residents of southern Dorchester County, which is dominated by tidal wetlands, know which roads will flood and which will remain dry in various weather and tide conditions. Agencies generally fail to utilize community knowledge, which results in less effective distribution of assistance during times of greatest need. This was the case when emergency response agencies sent military trucks to assist in rescue operations after Hurricane Sandy flooded Crisfield and other parts of Somerset County in 2012. Unaware that the rural roads are narrow and bordered on each side by deep drainage trenches, many trucks became trapped or flipped onto their sides when their tires encountered the flooded trenches. Had local knowledge been included in emergency response planning, these accidents may have been avoided.

5 Opportunities for increasing justice

To increase justice and address the obstacles described above, workshop participants made 37 specific suggestions. These suggestions generally fell into four categories: education, engagement, financing, and planning (Table 1). While some opportunities can be pursued by all stakeholders, others are most appropriate either for the African American communities or policymakers to pursue in coordinated but separate strategies. We highlight and discuss two of the categories—engagement and education—because they had the most responses and are the most feasible to address in the short term. These procedural changes directly address climate injustices and are critical first steps for political institutions to recognize and respond to the African American community on the Eastern Shore.

5.1 Engagement

A number of specific opportunities to increase engagement would help both groups transfer knowledge and increase mutual trust. First, religious and political leaders could organize regular workshops to bring together diverse groups of people around a common cause such as flood response. Serving food at these meetings would encourage broader participation from the local community and may also create an atmosphere more conducive to informal socializing—an important activity for building trust (Oh et al. 2004). Second, policymakers and community members need to provide each other with contact information for individuals with knowledge relevant to the community response to flooding. Third, policymakers can attend more community events to better understand the situation on the ground, and African Americans can attend more political meetings, contact their local officials, and vote. These opportunities for engagement will help to develop mutual trust and respect between stakeholder groups (Marschall and Stolle 2004) and better prepare the communities to recover from a disaster (Aldrich 2012). (See Supplementary Information for a more detailed discussion of these opportunities.)

5.2 Education

Both policymakers and African American community members possess a wealth of information relevant to successful adaptation to climate change on the Eastern Shore. Workshop participants suggested that for policymakers to effectively share information with African American communities, jargon should be avoided, decision-making processes should be

Table 1 Opportunities for increasing justice by category and stakeholder group

Category	Stakeholder	Identified opportunities for increasing justice
Education	Policymakers	• Teach communities how to utilize resources for flood preparation and planning. • Distribute sea-level rise information and emergency warnings through many forms of media and at community events. • Educate communities about the challenges and opportunities related to permanent relocation. • Provide Community Emergency Response Team (CERT) training. • Share a list of agency contacts who can respond to community concerns. • Clearly communicate the criteria by which resources are distributed. • Train trusted community members as climate champions to educate the public about sea-level rise. • Use examples and storytelling to make information more accessible and relatable to community members.
	African American Church Communities	• Document and share local, cultural, and experiential knowledge about flooding and community vulnerability with policymakers. • Raise awareness of sea-level rise and environmental injustice through sermons, Sunday school, and at existing food and fellowship events. • Share a list of community leaders and a description of informal communication channels with emergency responders. • Photograph the effects of flooding to share with government officials and the public. • Showcase stormwater management practices at the local churches.
	Both	• Learn more about distributive and procedural justice as it applies to climate change adaptation. • Educate elected officials about the justice implications of sea-level rise. • Educate youth about the justice implications of sea-level rise.
Engagement	Policymakers	• Solicit feedback from communities early in policy-planning processes. • Make regular fieldtrips and attend community events. • Promote diversity in government and NGOs.
	African American Church Communities	• Contact government officials and seek information and assistance. • Attend public meetings on climate change and voice your opinions. • Form a group of local church leaders and elected officials to meet regularly. • Take important concerns to the media. • Vote for candidates who will facilitate flood adaptation. • Organize within and among church communities to build political strength.
	Both	• Organize workshops bringing diverse groups of people together around a common cause. • Serve refreshments at meetings to encourage attendance and social bonding.
Financing	Policymakers	• Compensate those who lose land because of justice issues. • Seek federal funding for flood preparation and response.
	African American Church Communities	• Raise money to develop a community flood disaster fund. • Network with other churches to provide aid in emergencies.
Planning	Policymakers	• Prioritize environmental justice considerations in flood planning. • Work with universities to develop inexpensive technologies to mitigate flooding impacts.
	African American Church Communities	• Collaborate with other flood-prone congregations to develop solutions.
	Both	• Make repairs to infrastructure prior to a flood event. • Have flood drills. • Create disaster kits.

transparent, and media communication should be appropriate. Policymakers suggested that African American communities can help to raise awareness of their local knowledge by writing it down and disseminating copies to policymakers at the local and state level. Both groups can work collaboratively to create practical emergency kits, build communication networks that meet the needs of the elderly, and improve knowledge about climate justice.

Several specific proposals related to education were discussed at the workshop (see Supplementary Information); here, we highlight the multilevel benefits of meeting to listen and discuss concerns about relocation. Our recommendation stems from the State's recent experience in offering buyouts to the mostly European American residents of low-lying Smith Island, which was flooded by Hurricane Sandy (Wheeler 2013). State policymakers were surprised when Smith Islanders protested the buyouts, claiming that the State was turning its back on them. Policymakers clearly underestimated the community's place attachment—the emotional connection between individuals and their meaningful environment (Scannell and Gifford 2010)—and the importance of collaborative planning. The State subsequently withdrew the buyout offer in 2010 and has started a long-term series of listening sessions with the island community. While the topic of relocation is not popular among the African American communities, representatives at the workshop hesitantly agreed that such meetings may be helpful, if only to help policymakers understand the unacceptability of relocation and their connection to the place. These meetings would help policymakers better understand how best to facilitate adaptation, and if SLR becomes extreme enough that African American communities must relocate, the meetings would provide a platform for communication.

6 Key differences in perspectives between stakeholder groups

Engagement and education can lead to a more resilient Eastern Shore. Despite overall agreement between the African American community, government representatives, and NGOs, four broad obstacles persist. Stakeholder groups differed in their perspectives about timescale, vulnerability, environmental conservation, and the affirmation of what is accepted as "knowledge."

6.1 Timescale

Regional policymakers were focused on long-term adaptation strategies, while African American community members were focused on more immediate concerns. Political institutions encourage their staff to think relatively objectively about overall strategies for how to address a public issue. In contrast, African American community members are dealing with a very real and immediate threat of flooding. Crisfield recently experienced severe flooding from Hurricane Sandy, and the other study communities can see that water is closer to their homes than in the past. For these individuals, planning for successful adaptation in the coming months and years is a greater priority than planning for the decades to come. Other studies have found the same problems of temporal prioritization among the public and policymakers (Few et al. 2007; Hillier 2003; Treby and Clark 2004). All stakeholders are motivated by their most pressing needs. The challenge is communication and collaboration to resolve their differences through simultaneous short-term actions and long-term planning.

6.2 Vulnerability

A second notable difference in stakeholder group perspectives was defining exactly what it is that is vulnerable. Policymakers were much more focused on long-term, macroscale changes to infrastructure or how governance systems will function, while African American community members felt vulnerable in personal and immediate day-to-day details like availability of food, water, and shelter. Vulnerability for policymakers is measured with flood maps and social indices, while vulnerability for African Americans is waking up to another day of unemployment, flooded roads, subsiding land or, when hurricanes strike, entire flooded communities. What is at stake are both community resources and the adaptive capacity that is rooted in knowledge of their local environment. Relocation would strip African Americans of a social network they depend upon and a familiar environment to which they have been adapting for generations. Even if relocation protects individuals from flood-related harm, it could cause significant harm by disrupting the strong relationships and culture that have long been fostered in these historical African American communities.

A growing body of literature is examining the importance of place attachment and place identity—the sense of self that is mediated by relationships with the local environment—for climate adaptation, resilience, and environmental justice (Agyeman et al. 2016; Anguelovski 2013; Devine-Wright 2013). A common finding in this body of research is that the nonmaterial benefits of place attachment (such as psychological well-being, a sense of identity, and cultural heritage) are overlooked or excluded in cost-benefit analyses of adaptation policies (Adger et al. 2011; Agyeman et al. 2009). Such practices undervalue the potential of place attachment to increase community resilience (Adger et al. 2011; Hess et al. 2008).

6.3 Environmental conservation

A third key difference was that the policymakers present at the workshop were primarily from agencies that focus on the natural environment (e.g., Maryland Department of Natural Resources [MD DNR]), while the African American community members focused on the culture and community. This difference is institutional partly because MD DNR coordinates the primary strategies for SLR mitigation. These policymakers are naturally used to thinking about adaptation for biodiversity. The African American community members also care deeply about the natural environment but are more concerned with the establishment of new industries and housing; they do not understand why it appears that more effort is spent helping migratory birds adapt to climate change than in helping their own communities (Miller Hesed 2016). These two visions for the Eastern Shore are not mutually exclusive, and with careful zoning and planning, both could be achieved.

6.4 Knowledge

A final key difference that emerged throughout the workshop was the type of knowledge most valued by each stakeholder group. Policymakers and agency personnel have a scientific worldview and value knowledge communicated in that context. Studies, reports, and/or peer-reviewed articles inform the discussion and planning events. In contrast, the African American representatives value the experiential knowledge that comes from people they know and trust within their community. This knowledge includes sociocultural and ecological information and is often transferred orally across generations by nonformal means. Bridging these two ways of knowing is an ongoing challenge wherever the government intersects with local, traditional people (Garcia-Quijano 2007). Our research suggests, however, that eliciting

local knowledge is absolutely crucial for the development of adaptation policies that will meet the needs of African American church communities.

This finding lends support to a growing body of research on the value of engaging community members in participatory, deliberative adaptation planning generally (Ayers 2011; Hobson and Niemeyer 2011) and, more specifically, on the importance of local knowledge for reducing vulnerability and promoting more effective, low-cost adaptation strategies (Green 2009; Naess 2013; Shaffer 2010). Importantly, inclusion of local knowledge in assessment of risk and harm also enables policymakers to better address issues of environmental justice (Corburn 2002; Ottinger 2013). In the case of flood adaptation on the Eastern Shore, incorporating local knowledge can help to improve environmental justice by raising the effectiveness of both immediate emergency flood response as well as long-range sea-level rise adaptation strategies in African American communities.

7 Discussion

The results of the workshop highlight the significance of procedural injustice for African Americans on the Eastern Shore of the Chesapeake Bay. The African American communities do not have adequate access to information or resources nor are they sufficiently represented in government bodies to be able to participate in the planning process. These challenges for adaptation and obstacles to collaboration between stakeholders need to be addressed.

The workshop participants suggested concrete steps toward solutions. In the politics of participation, early engagement with the deliberative process is key for the inclusion of diverse voices (Ayers 2011). While African American communities on the Eastern Shore have been marginalized in the past, engaging them now in local and regional adaptation planning is an opportunity to make the system more just and more effective in mitigating the impacts of SLR.

Participants reported that the multistakeholder workshop was highly successful in creating space for representatives of underserved communities and policymakers to identify challenges and opportunities. However, everyone recognized that sustaining the process to address issues of justice and adaptation will require restructuring institutional and procedural models of governance. Currently, CoastSmart is Maryland's key program in facilitating coastal community adaptation. This is a state-level program that provides financial and technical assistance to local governments seeking to incorporate coastal management practices into permitting and building projects to reduce vulnerability to coastal flooding. This program, though intended to be inclusive, is not currently addressing the needs of those who are most vulnerable.

One of the limitations of the CoastSmart program is that it can only provide adaptation guidance and funding through government bodies. Many African American communities do not have access to CoastSmart's resources, either because they live in a rural, unincorporated settlement with no formal local government, or because their needs are not represented by their local government officials. These communities have experiential knowledge that would be useful to facilitate effective local-level adaptation strategies (Miller Hesed 2016). So how do African American communities access the adaptation resources they so desperately need?

To address the procedural gap, we suggest that Maryland expand the existing CoastSmart program to include not only passing information to local communities, but also to bring knowledge and information from the vulnerable communities to the State. Key steps include that the CoastSmart commission create a team to engage communities in planning. Lessons learned from our multistakeholder workshop indicate that members of the team should have

expertise in collecting social data and facilitating participatory decision-making as well as knowledge of the biophysical sciences. The team can combine MD DNR technical knowledge with local experiential knowledge to create adaptation strategies specific to local conditions.

The follow-up to the multistakeholder meeting is to empower communities to finalize and enact adaptation plans. The State can provide targeted grants and incentives along with measures to motivate local governments to include all community members for more equitable representation. We suggest that success depends on all levels of government providing funds for selected adaptation strategies. Investment in adaptation is warranted; studies indicate that efficient adaptation now could substantially reduce the cost of future damages from SLR (Stern 2007).

8 Conclusion

Coastal communities around the world are already suffering from rising waters and more severe storms. Often these communities are poorer and disproportionately suffering the consequences from climatic change while reaping few of the benefits. The coastal African American communities on Maryland's Eastern Shore are particularly vulnerable to flooding from SLR and face similar challenges to vulnerable communities around the world. Just as the international community has disenfranchised many poor communities, problems of environmental justice on the Eastern Shore have largely gone unaddressed by Maryland and federal policymakers. The common roots of the environmental injustices include lack of financial resources, historic prejudices, and little or no access to decision-making processes. Policymakers and the African American communities have differing perspectives on time, what it means to be vulnerable, environmental conservation, and conceptions of "knowledge"; these differences are obstacles to procedural justice, but they may be ameliorated with increased mutual understanding.

Improving a participatory strategy within already existing agencies and organizations at various political scales will serve to facilitate adaptation planning and thereby decrease both vulnerability and climate injustice. In addition, a participatory framework focuses greater attention on the needs of those most vulnerable to climate change and improves the process for identifying challenges. Finally, such an increased focus on vulnerable communities within Maryland may serve to rally greater support for reducing fossil fuels and mitigating the effects of climate change both in the state of Maryland and in coastal communities around the world.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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