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Supporting local climate change adaptation: Where we are and where we need to go

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ABSTRACT

Local governments are on the front line of efforts to address climate-related impacts. Recognizing this, there is a growing movement to develop and deliver tools, resources, and services to support local communities' climate adaptation initiatives. There is, however, limited understanding of what specific types of resources exist and how well these resources match the needs of local practitioners. To bring clarity to these questions, we: 1) assessed the current landscape of climate-adaptation resources and services; 2) surveyed community practitioners to learn how well these resources align with their needs; and 3) convened leading service providers and local practitioners to identify strategic opportunities for moving the adaptation field forward. Findings demonstrate that existing services and resources are meeting the early phases of local adaptation efforts such as conducting vulnerability assessments and creating adaptation plans, but are failing to meet the needs associated with implementing, monitoring, and evaluating adaptation activities. Additionally, a lack of funding and staff time to support adaptation, as well as inaccessible resource formats are barriers impeding local climate adaptation efforts. The mismatch between the types and formats of services being provided and the needs of local governments means that more work is needed to ensure that climate adaptation resources are responsive to the existing and future needs of local governments. Moreover, our research finds that there is a strong and growing need to organize and streamline the climate adaptation resource and service landscape so that practitioners can easily, effectively, and efficiently access the resources they need to build more resilient local communities.

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1. Introduction

Local governments undertake a wide array of activities in the course of fulfilling their responsibilities to ensure the health, safety, and general welfare of their citizenry (Allan and Bryant, 2012; Norton, 2011). From sanitation services to the provision of emergency response and land use planning, local governments provide numerous services that make life in our local communities desirable (Amundsen, 2013; Homsy and Warner, 2015; Laukkonen et al., 2009). Over the last few decades, however, the ability of local governments to provide these services in a cost-effective and efficient manner has been challenged by factors such as the Great Recession, changing economic profiles, and the downsizing of staff.

In addition to economic impacts, local governments must also contend with the impacts associated with a changing climate (Hunt and Watkiss, 2011; Wamsler et al., 2013). From drought to heat waves, flooding, and vector-borne diseases, the impacts of climate change have and will continue to be felt most acutely at the local level (Bierbaum et al., 2013). Since most decisions in the U.S. about land use, infrastructure, hazard mitigation, and water resources are made at the local level, it is imperative that local communities find ways to integrate climate considerations into their planning and management activities (Berke et al., 2015; Betsill, 2001).

Unfortunately, most local governments lack the in-house capacity or expertise needed to engage with the added complexity associated with climate change (Bierbaum et al., 2013). Moreover, recent economic hardships have led to reductions in the basic resources (financial and human capital) that local governments have to undertake their work precisely at a time when issues such as climate change are creating new challenges and demands (Zimmerman and Faris, 2011).

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Given these circumstances, local governments are turning to external agents for assistance with understanding local climate impacts, devising plans to prepare for future impacts, and acquiring the public and political support needed to embrace climate action (Hughes, 2015). A rapidly growing number of information hubs, publications, tools, training materials, and consulting services have been developed to meet growing demands for climate-related resources. To-date, however, the content and quality of these resources have not been assessed, cataloged, or evaluated, and there is little understanding of whether these resources are meeting the needs of local practitioners.

This paper strives to fill these voids by answering three questions: 1) what types of services and resources currently exist to support local climate-adaptation activities; 2) how well do these resources align with the needs of local practitioners; and 3) what is needed to move local climate adaptation activities forward?

1.1. The local adaptation landscape

The global climate is changing (Intergovernmental Panel on Climate Change, 2014). Impacts associated with these changes are felt most acutely at the local level (Baker et al., 2012; Bierbaum et al., 2014). In light of this, a number of communities are beginning to prepare for current and projected future climatic changes (Thayer et al., 2013). To support and track their efforts, the adaptation community created a five-step climate adaptation process that includes: 1) identifying and assessing vulnerabilities/risks; 2) planning; 3) implementing strategies; 4) monitoring and evaluating; and 5) revising and sharing lessons learned (Bierbaum et al., 2014; Intergovernmental Panel on Climate Change, 2014; Moser and Ekstrom, 2010) Fig. 1).

In recent years, a number of surveys and case studies have been developed to assess how local communities are progressing through the adaptation process. A survey conducted by Brody et al. (2010) looking at both efforts to reduce greenhouse gas emissions (mitigation) and prepare for climate impacts (adaptation) at the sub-national level found that decision-makers across sectors have low to extremely low concern about climate change. This translated into little to no climate action in their sample (n = 579). In a more focused analysis of local climate plans, Wheeler (2008) found that communities are planning to mitigate climate change across multiple sectors, but plans contain virtually no strategies aimed at adapting. Bassett and Shandas (2010) found

similar results, noting that virtually no plan in their sample “contained any notable discussion of strategies for adapting to climate change” (p. 440).

More recently, Carmin et al. (2012) conducted a global study of local communities’ adaptation initiatives, 156 of which were in the U.S. The sample included local government members of ICLEI-Local Governments for Sustainability, a membership association of local communities focused on climate and sustainability. Sixty percent of their U.S. respondents were somewhere within the adaptation cycle, with 24% just beginning to initiate their adaptation process, 27% in the vulnerability analysis or planning stages, and 9% in the implementation stage (Carmin et al., 2012; Shi et al., 2015). These results suggest that while adaptation action in the U.S. is still nascent, a growing number of communities are initiating efforts to prepare for climate-related impacts (Carmin et al., 2012; Hansen et al., 2013; Hughes, 2015).

In an attempt to compile a more holistic snapshot of local adaptation initiatives, Hughes (2015) conducted a meta-analysis of U.S. cities’ adaptation efforts by analyzing 54 pieces of peer-reviewed literature, government reports, white papers, and non-governmental organization reports. The author found that “urban adaptation planning is primarily framed as, and motivated by, the need to protect valuable assets and reduce the city’s vulnerability” (p. 23). Berrang-Ford et al. (2011) found similar results through their search of English-language peer-reviewed literature, noting that most of the literature focuses on local vulnerability assessments, not on adaptation actions.

In a report providing detailed case studies of 18 U.S. communities, Abt Associates (2016) found that early adaptation actors are similarly focused on vulnerability reduction, emphasizing the reduction in exposure¹ and sensitivity.² The researchers also concluded that existing adaptation initiatives often fail to address issues related to the unequal distribution of climate impacts, pointing to equity concerns (Abt Associates, 2016); a result mirrored by Hughes (2015), Aylett (2015), and Schrock et al. (2015).

1.2. Barriers and constraints to local adaptation activity

In addition to understanding where local communities are in the adaptation process, a significant body of literature focuses on understanding why communities do or do not take climate action. This literature generally concentrates on factors that enable or constrain local government climate adaptation activities. Political leadership, previous disaster experience, and membership in climate-oriented organizations have all been shown to impact whether a community acts on climate change or not (Tang et al., 2010; Woodruff and Stults, 2016).

Barriers impeding or slowing climate adaptation action commonly include: difficulty in understanding climate science (Bassett and Shandas, 2010; Fünfgeld, 2010), lack of staffing capacity (Aylett, 2015; Shi et al., 2015; Thayer et al., 2013), limited financial resources (Anguelovski and Carmin, 2011; Hunt and Watkiss, 2011) and lack of leadership (Amundsen et al., 2010; Bedsworth and Hanak, 2013; Bulkeley, 2010; Measham et al., 2011; Moser, 2009). More recently, practitioners have cited the sheer volume of adaptation-related services and resources as an impediment to their adaptation efforts (Lawrence et al., 2013; Stults et al., 2015).

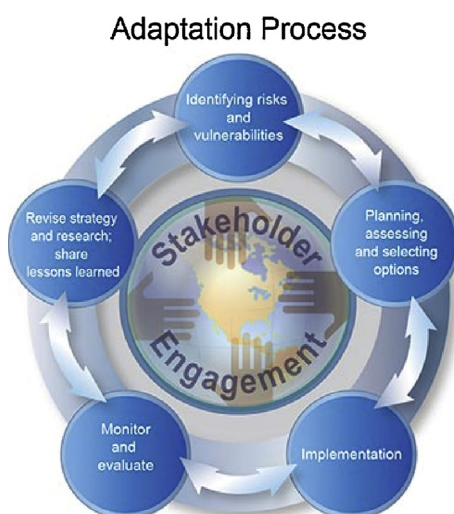


Fig. 1. Basic Adaptation Process Cycle per the 2014 U.S. National Climate Assessment.

¹ Exposure is defined by the Intergovernmental Panel on Climate Change (2014) as “the presence of people, livelihoods, etc., in places that could be adversely affected by changing climate conditions”.

² Sensitivity is defined by the Intergovernmental Panel on Climate Change (2014) as “the degree to which a system or species is affected by climate variability or change”.

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