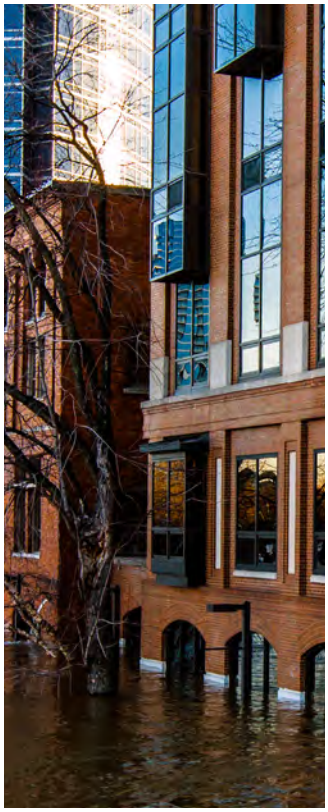

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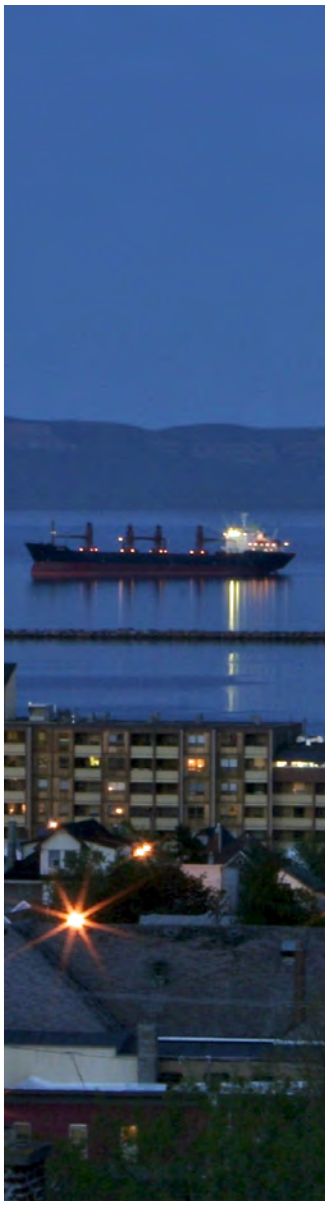

Great Lakes Adaptation Assessment for Cities

PROJECT EVALUATION REPORT

ASHLEE GRACE, OCTOBER 2015

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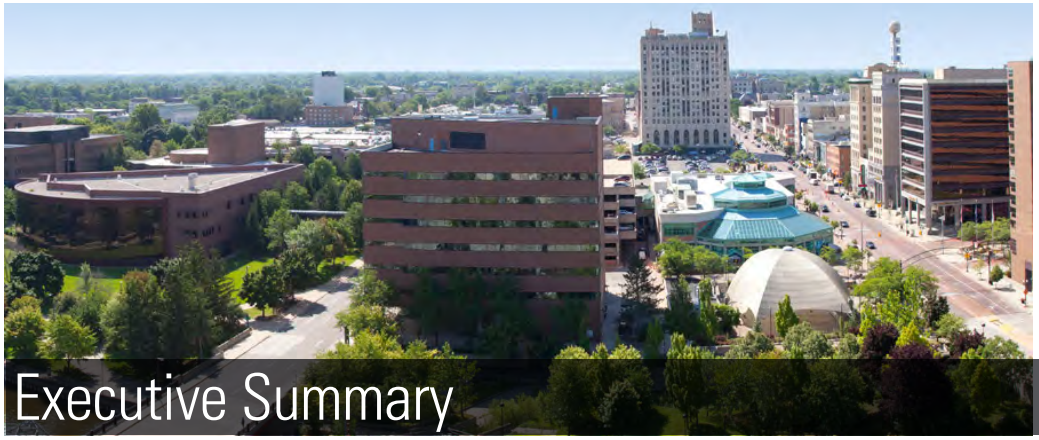

Executive Summary

From 2011 to 2014, the Graham Sustainability Institute at the University of Michigan (Graham), with support from the Kresge Foundation, conducted an integrated assessment (IA) named the Great Lakes Adaptation Assessment for Cities (GLAA-C). This multi-year IA brought together faculty researchers and city practitioners from across the Great Lakes region to identify adaptation needs and opportunities for action, and support decision making efforts throughout the region. GLAA-C involved six principal investigators and multiple Graham staff members working closely with six Great Lakes city teams. Through numerous workshops, conferences, webinars and online tools, we reached hundreds of adaptation practitioners, researchers and resource providers.

Beginning in the fall of 2014 and coming to a close in the summer of 2015, Graham conducted an internal evaluation of GLAA-C's IA process. This evaluation effort served two primary purposes: 1) to evaluate how well the IA process helped GLAA-C meet its project goals (goals that were put forth in the original funding proposal submitted to the Kresge Foundation), and 2) to help Graham continue to reflect upon and learn from its IA projects in order to improve future IA projects. The evaluation focused on the perspectives of all key stakeholders directly involved in the project, including University of Michigan faculty researchers, city practitioners in the project's six partner cities, and Graham staff members who contributed to the project.

According to participants, the GLAA-C project was considered largely successful in obtaining its overarching project goal of furthering urban adaptation in the Great Lakes region. This success is attributed to three critical elements. The first is that beyond simply providing urban practitioners with much needed climate expertise and resources, project staff worked together with city practitioners to ensure that climate information was being delivered in meaningful and useful ways. This collaboration helped move conversations around adaptation and resiliency forward, beyond most cities' mitigation-focused sustainability activities. The second element is that flexibility of the IA process itself allowed the project structure and activities to shift over time as new needs and/or roadblocks were identified. Many cited this flexibility as a reason they stayed engaged and found value throughout the course of the project. Finally, the numerous in-person workshops and conferences that occurred during the project helped establish genuine connections among practitioners, project staff, and faculty researchers, laying the groundwork for a strong Great Lakes Climate Network made up of diverse stakeholders.

The evaluation also revealed an important challenge which was the blending of two fields —academic and practitioner — both with different processes, needs and expectations. One important way in which this challenge manifested itself was in establishing obtainable goals for the project. It became clear throughout the course of the project that both the academic process and the public process had their own timelines and hurdles to overcome when it came to moving ideas and the project forward. These timelines did not always overlap in mutually-beneficial ways. As a result, some of the goals ultimately seemed somewhat ambitious given the proven reality of how slowly certain project activities were executed. Adding to this specific challenge of goal setting was that the overall field of urban climate adaptation was at its infancy when the project began, thus goals were not truly able to be set based on precedent or prior knowledge of how the field would develop as the project got underway. The nascent stage of the field combined with the urgent nature of climate adaptation meant faculty researchers were eager to study and learn about the issues, while city practitioners were more focused on project products and deliverables. In spite of this tension, both faculty researchers and city practitioners indicated that the overall outcomes of the project had far exceeded their expectations. This was primarily because the relationships they established through the project helped bridge the gap between academia and public service.

Thanks to the iterative and constantly evolving approach of the IA process, participants agreed that that the project was successful in its aim to better understand and contribute to the field of urban adaptation in the Great Lakes region. The project helped expand urban adaptation dialogue across the region and among mid-size cities that otherwise may not have had the opportunity to gain such a strong understanding of climate change and its impacts at the local, urban level. Furthermore, lessons from the project were shared across the country during the fourth year of the project, ranging from webinar presentations to national conferences. Thus, although it is hard to quantify the success of the project, the largely positive feedback gathered through the evaluation process, accompanied by the large interest in learning about the project findings in its fourth year, demonstrate the project's success and contribution to the field of urban adaptation.

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Introduction

GREAT LAKES ADAPTATION ASSESSMENT FOR CITIES

From 2011 to 2014, the Graham Sustainability Institute at the University of Michigan (Graham), with support from the Kresge Foundation, conducted an integrated assessment (IA) named the Great Lakes Adaptation Assessment for Cities (GLAA-C). This multi-year IA brought together faculty researchers and city practitioners from across the Great Lakes region to identify adaptation needs and opportunities for action, and support decision making efforts throughout the region. GLAA-C involved six principal investigators, multiple Graham staff members, worked closely with six Great Lakes city teams, and reached hundreds of adaptation practitioners, researchers and resource providers through numerous workshops, conferences, and webinars. The work of GLAA-C was supported by another program at Graham, the Great Lakes Integrated Sciences and Assessments (GLISA) program, which provided climate information and expertise. In addition to advancing adaptation understanding and efforts throughout the region, GLAA-C also generated two useful online tools for use by practitioners, including the Great Lakes Climate and Demographic Atlas and the Cities Impacts and Adaptation Tool.

INTEGRATED ASSESSMENT APPROACH

To accomplish its goals, the GLAA-C project employed an IA model. This model was used because IA offers an effective way to frame and guide decisions for sustainability problems that lack consensus on the cause or solution. Through an innovative approach to analysis that includes engaging representatives from a wide range of impacted sectors and perspectives on a given issue, IA participants collaboratively define problems, address diverse perspectives, use and share best available information, and establish local and embedded partnerships to analyze options for bringing about positive change. Figure 1 illustrates how the input of both analytical technical experts and engaged stakeholders is necessary to ensure the best possible outcomes. Participant-identified benefits of IA include generating analytical reports and supporting data, modifying perspectives, creating new partnerships, changing processes, and leveraging additional resources.[1]

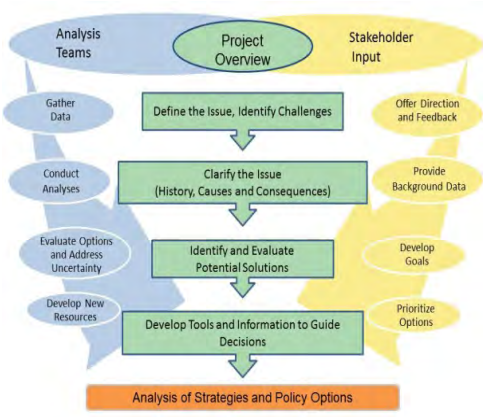

Figure 1

OVERVIEW OF GLAA-C PROJECT TIMELINE AND EFFORTS

The GLAA-C project was initially conceived in 2010 when Graham convened 39 city practitioners, adaptation experts, and researchers from around the region to discuss what was needed to assist Great Lakes cities in better preparing for the impacts of climate change. This scoping meeting eventually led to a proposal for an urban adaptation project that was funded by the Kresge Foundation. The Kresge Foundation committed to provide the project with $600,000, an amount that was matched by Graham, bringing the total project budget to $1.2 million. The GLAA-C project team, which included six University of Michigan faculty researchers and numerous Graham staff, began meeting in 2011 and continued to meet until December 2014 when the primary project work came to a close. The faculty members represented several fields of study including the School of Natural Resources & Environment, the Ford School of Public Policy, Taubman College of Architecture & Urban Planning, the School of Public Health, and the College of Engineering. Many of the Graham staff members were also a part of the Great Lakes Integrated Sciences and Assessments (GLISA) program (described in Box 1), thus bringing a great deal of quality climate data and information to the project.

Throughout 2011, much of the project work consisted of establishing project activities and priorities, and creating a survey aimed to better understand the public's perceptions and opinions on climate change in the Great Lakes region (the Public Perception Survey). The project team decided to hire a project manager who began in the summer of 2012. That same year, the public perception survey was administered and completed by over 2,000 participants. In November of 2012, Graham and the Institute for Sustainable Communities co-hosted a three day workshop titled "Sustainable Communities Leadership Academy: Forwarding Adaptation in the Great Lakes Region." Thirteen city teams from across the region gathered in Ann Arbor, Michigan to participate in the workshop. During the meeting, the GLAA-C project team presented climate information while city participants shared their strategies and best practices for working on climate adaptation. Following the workshop, mid-size cities in the Great Lakes region were invited to apply to be a part of an in-depth partnership through the GLAA-C project which included customized climate information and adaptation support (from both GLAA-C staff and faculty researchers). Seven cities in the region applied and six cities in the region (all whom participated in the 2012 workshop) were accepted. In order to be eligible, applicants had to demonstrate through a letter of commitment from their mayor

GLISA

The Great Lakes Integrated Sciences and Assessments program (GLISA) is a U.S. National Oceanic and Atmospheric Administration funded partnership between the University of Michigan and Michigan State University. The program is dedicated to collaborative research that connects the producers and users of climate information in order to improve decisions in the Great Lakes region. The GLISA program, which is housed at the Graham Sustainability Institute, began in 2010. Due to their similar start dates and shared staff, a great deal of simultaneous and mutually beneficial learning occurred across the GLISA program and the GLAA-C project.

Box 1

Timeline of GLAA-C Project Events and Efforts

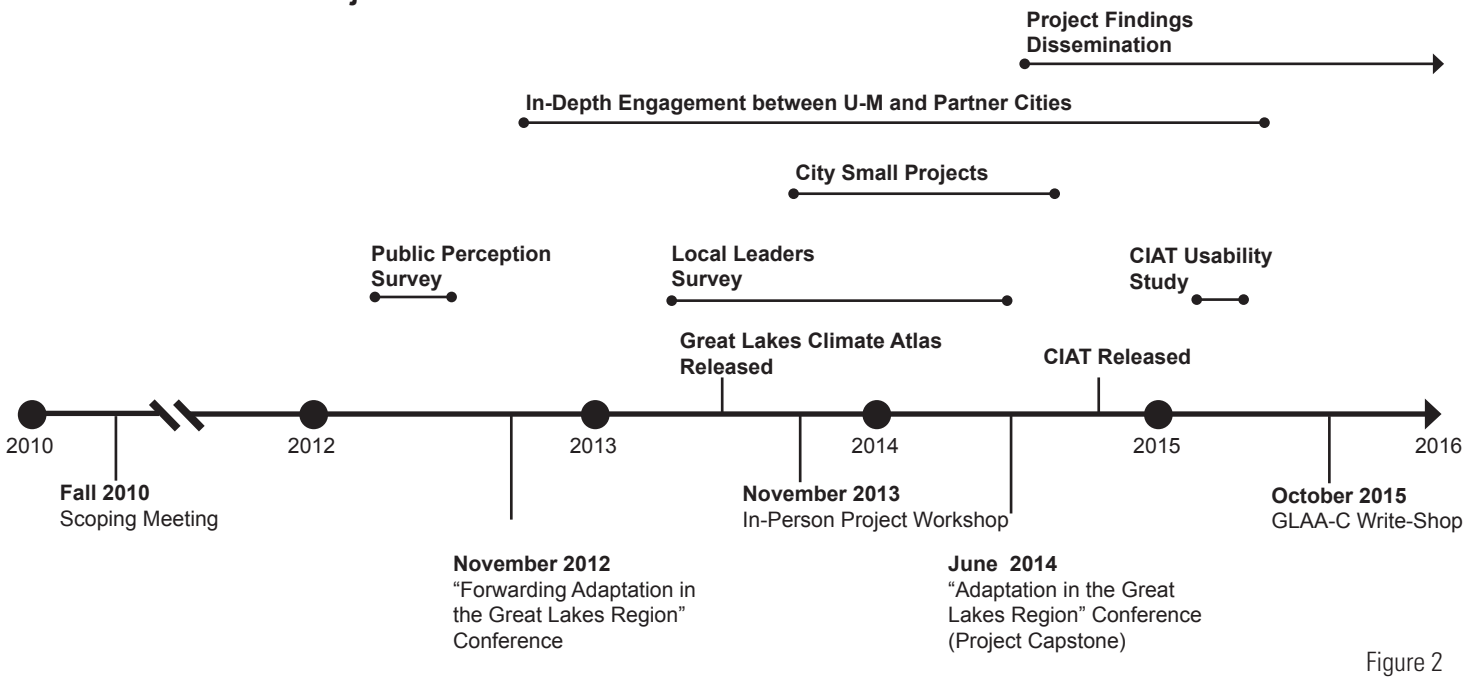

Figure 2

or city manager that they would be committed to GLAA-C project and would provide a city staff member for the GLAA-C project team to liaison with. All six cities that applied were selected for the in-depth engagement. These included: Ann Arbor and Flint, Michigan, Dayton and Toledo, Ohio, and Thunder Bay and Kingston, Ontario

Throughout 2013 and into 2014, the selected partner cities received adaptation-related support from the GLAA-C team, including local climate data which contained historical climate trend data (climatologies), summary documents regarding projected changes, guidance identifying leading climate related vulnerabilities, and staff support in organizing and hosting adaptation-related workshops. Over the course of the project, representatives from these partner cities were identified by the GLAA-C team as the Urban Council on Sustainability and Adaptation (UCSA), assuming the role of the Great Lakes network that was proposed in the original application to the Kresge Foundation. In the fall of 2013, partner cities were invited back to Ann Arbor for a one-day workshop intended to serve as an in-person meeting for the UCSA. Prior to the workshop, partner cities were invited to submit a proposal for a small adaptation project in their respective cities. During the in-person UCSA meeting, city teams worked with the GLAA-C team to refine these projects. All six cities were awarded $12,500 each to support their project which took place during the first half of 2014.[2]

In June of 2014, the GLAA-C team organized and hosted a major regional conference (considered a Capstone event for the project) titled "Adaptation in the Great Lakes Region." Over 175 researchers and practitioners attended, including teams from all six partner cities. Participants learned from one another about climate adaptation efforts in various sectors and across various scales, and discussed the next steps towards building a more resilient Great Lakes region. Most of the direct support the GLAA-C project provided to cities wrapped up in December of 2014 when the project team held its last meeting. However, Graham staff who were a part of the project have continued to provide support to city practitioners on a limited, as-needed basis.

Throughout the course of the project, faculty researchers on the team organized and advised a variety of graduate student teams who worked on research and projects related to GLAA-C. These included two School of Natural Resource and Environmental Management Master's Projects; one titled "Adaptive Capacity in Ohio" and a second titled "Adaptive Capacity in Michigan." Two teams of Urban Planning students at the Taubman School of Architecture and Urban Planning also carried out Capstone Projects related to the GLAA-C project. The first project resulted in a vulnerability assessment for the City of Detroit, Michigan and was produced for the Detroit Climate Action Collaborative. The second project provided an analysis of the City of Toledo's existing stormwater credit program and provided recommended updates to the program.

The GLAA-C project team also created two online tools for adaptation practitioners. The first was the Great Lakes Climate and Demographic Atlas (the Climate Atlas), which was the result of a design charrette that included the GLAA-C team, city partners, and project partner Headwater Economics. Headwater Economics built the tool for the GLAA-C project with additional support from the Kresge Foundation. The Climate Atlas is an interactive map available on the Graham website at: http://graham.umich.edu/glaac/great-lakes-atlas. The Climate Atlas provides social, economic, and demographic statistics on 225 counties across the Great Lakes region. The second tool that was produced as part of the GLAA-C project, called the Cities Impacts and Adaptation Tool (CIAT), was launched towards the end of 2014.

CIAT is an online climate adaptation planning support tool for decision-makers at the municipal level in the Great Lakes region (available at: graham.umich.edu/climate/ciat). The tool provides locally relevant climate data, including current and projected climate trends, demographic and socioeconomic data, and descriptions of adaptation strategies pulled from existing planning documents from municipalities across North America. CIAT also has an interactive map which it uses to identify a custom network of "climate peers" or cities whose current climate reflects the selected city's projected climate in 2041-2070.

In 2015, several GLAA-C team members carried out two more project-related efforts. The first was a usability study that took place in early May of 2015. The study was aimed at better understanding the usability of a GLAA-C climate tool. The second effort took place in October 2015 and was a writeshop in which academic researchers from across the region were invited to participate and contribute research related to urban adaptation in the Great Lakes region and beyond (Figure 2 provides an overview of GLAA-C activities).

In many ways, GLAA-C served as a pilot project for Graham, helping to lay the groundwork for an urban adaptation program within the newly formed Climate Center which began to form in 2014 as GLAA-C was coming to a close. The Climate Center is currently facilitating the establishment of a formal Great Lakes Climate Adaptation Network that includes the six GLAA-C partner cities in addition to other partner cities that are a part of the Urban Sustainability Directors Network.

GLAA-C EVALUATION

Beginning in the fall of 2014 and coming to a close in the summer of 2015, Graham conducted an internal evaluation of GLAA-C's IA process. This evaluation effort served two primary purposes: 1) to evaluate how well the IA process helped GLAA-C meet its project goals (goals that were put forth in the original funding proposal submitted to the Kresge Foundation), and 2) to help Graham continue to reflect upon and learn from the IA process in order to improve future IA projects. The evaluation focused on the perspectives of all key stakeholders directly involved in the project, including the GLAA-C team (University of Michigan faculty researchers and Graham staff members who contributed to the project) and practitioners in the project's six partner cities.

Evaluation Background

The evaluation framework (See Box 2) was based on a previous Graham evaluation effort conducted in 2012 of the Campus Sustainability Integrated Assessment, and the recommended evaluation plan outlined in Graham's "Integrated Assessment: Stakeholder Perspective Evaluation Guide." While the first three goals addressed in this GLAA-C evaluation examine how well the IA process helped the project achieve its specific goals, the fourth goal addresses both a GLAA-C specific as well as an overarching IA goal. The fifth goal's three-part evaluation addresses criteria that have been identified as important for successful IAs (salience, effectiveness, credibility, and legitimacy) as was determined through a review of IA literature and through discussions with Graham staff.[3,4,5,6]

EVALUATION GOALS

The evaluation sought to assess the following five key goals related to the IA project:

1. The project's ability to **strengthen science and decision-making** necessary for more effective urban climate adaptation in the Great Lakes region (U.S. and Canada).
2. The project's ability to **increase resilience** in Great Lakes communities.
3. The project's ability to create a **networked community** of Great Lakes practitioners and decision-makers.
4. The **salience (relevance and usefulness) of project activities and outcomes** for project stakeholders and the overall field of urban climate adaptation.
5. Whether or not the IA **process** was considered:

   Effective in meeting participant's expectations while doing so in a cost effective and efficient manner.

   Legitimate by creating balanced representation, building trust, and ensuring participants were satisfied with their engagement.

   Credible according to participants who view the process as appropriate and carried out in such a way that it helped build social, political, and creative capital.

Box 2

Methods

In addition to reviewing documents and GLAA-C produced materials, the evaluation process included in-person interviews and a survey.

Interviews

17 in-person or telephone interviews with 21 project stakeholders.

- 6 Faculty Researchers
- 10 City Practitioners
- 5 Staff Members

Survey

A survey was also included in this process which was completed by 7 city practitioners and 33 people who were associated with the project in some way (Summary provided in Box 3).

ANONYMITY OF EVALUATION

In both the survey and interviews, participants were informed that their identity would be protected in order to allow for open and honest feedback. For the purposes of this evaluation, respondents will be referred to as "s/he" rather than "he" or "she" in order to protect their identity.

OF 7 CITY PRACTITIONERS...

6 responded that they consider project staff expertise and support "Very Useful"

5 refer to project data or information in documents or educational/promotional materials at least once a month

4 refer to project data or information in discussions, presentations and meetings at least once a month

Box 3

Findings

Goal ranking indicators:

- Highly successful
- Less successful

The evaluation process aimed to better understand how well the key process-related goals of GLAA-C IA project were achieved. The findings from the evaluation process are discussed according to the goal to which they most closely relate.

GOAL #1: STRENGTHEN SCIENCE AND DECISION MAKING

The majority of practitioners, staff and faculty researchers interviewed agreed that the overall project strengthened climate literacy and related decision making throughout the Great Lakes region. Project resources, staff expertise, and an overall introduction to climate and adaptation language were considered to be key factors in reaching this goal. The online project tools that were developed to help reach this goal however, were not perceived to be as useful in strengthening scientific decision making.

Climate Information and Expertise

The historical climatologies and specific climate summary resources that were created by the GLAA-C project team were cited by many city practitioners as one of the most useful outcomes of participating in the project. Many practitioners said that being given climate data from a trusted source (the University of Michigan) provided them and their superiors the confidence needed to feel comfortable using the data for decision making purposes. Furthermore, having an established relationship with specific GLAA-C team members, particularly the staff climatologist, made the data even easier to use because practitioners felt comfortable reaching out to ask questions about the meaning of the data, including the more technical components. The back and forth process between practitioners and staff that led to the creation of the climatologies and summary documents ensured the information was presented in a digestible way, making it easier to get important decision makers such as city managers on board with the climate adaptation work practitioners were pursuing.

It is important to note that the GLAA-C project team was unable to create as detailed of historical documents for the two Canadian cities as they did for their U.S. cities. This is because Canadian climate data was not as readily available nor was there sufficient data to create the same type of documents with a consistent level of confidence. Thus, the Canadian practitioners were not able to speak to the utility of the climatologies.

Enhanced Ability to Communicate Climate Change and Adaptation

In addition to establishing a broader understanding and awareness of climate change and specifically adaptation (expanding on cities' prior, more narrow mitigation-focused view of sustainability See Box 4), GLAA-C provided practitioners with the language needed to foster more productive interactions among staff, decision makers, and the broader public. While many cities had at least begun to work on "green" or "sustainability" efforts, they had not fully understood the difference between the concepts of mitigation and adaptation. In hindsight, most practitioners admit that they were primarily focused on mitigation (reducing their greenhouse gas emissions) prior to working with GLAA-C and had not really begun to address adaptation (enhancing the city's ability to cope with climate changes). However, as will be discussed in even greater detail in Goal #4, their partnership with GLAA-C helped to expand their understanding of sustainability to include mitigation and adaptation while making clear the important distinctions between the two. This more nuanced vocabulary facilitated more specific discussions, particularly on possible actions that could be taken by the city to enhance resiliency in the face of a changing climate. The climatologies, in-person workshops, and customized support from the GLAA-C team were all cited as important factors in introducing practitioners to this more complex terminology.

Working with the GLAA-C project meant that other city staff members, community partners, and local stakeholders beyond the primary project contacts were also exposed to the concept and language of climate change and adaptation. Nearly every city that participated held some sort of workshop in which staff members from other city departments and/or local stakeholders and community members participated.

Cities were also invited (and funded) to bring teams of diverse staff members to attend numerous in-person GLAA-C workshops and meetings. In one case, a city brought staff from their division of environmental services as well as public health staff to the 2014 regional adaptation forum. They deliberately did so in order to expose these staff members to the relationship between climate change and public health. As one practitioner said, working with the GLAA-C project helped "expand knowledge beyond a core group to a much larger set of staff" and another stated that the GLAA-C workshop helped "get folks on the same page … speaking the same language."

> "[I] regularly reference climate data in meetings with the public and internally with staff. We have found that referencing historical data leads more productive climate impact discussions. [I] also regularly reference the staff workshop… specifically, potential impacts that other service areas brought up."
>
> *City practitioner in response to question about how often s/he references GLAA-C provided climate data and info.*

Practitioners also said that these gatherings, particularly the gatherings that brought together practitioners from several different cities, helped them articulate what adaptation has looked like in other cities. Practitioners mention that being exposed to real world examples helped them understand adaptation not just as a theory but as a reality.

Ultimately, the combination of having credible climate information, a broader staff awareness about climate change, and being able to articulate what resiliency is, especially in other cities, was cited by several practitioners as reasons for why they have been able to get more buy-in from work and strengthen overall decision making efforts. There was one city that was an exception to this which is a city that felt the climate information was useful but due to their own challenges in attempting to engage a diverse group of city staff members, s/he felt the climate adaptation efforts would likely end after their involvement with GLAA-C and the city would instead focus most of its efforts on corporate mitigation.

Online Decision Support Tools

One area in which the project may have fallen somewhat short of its objective to assist with science based decision making was in the creation of online climate support tools. As was stated in the original funding proposal to the Kresge Foundation, the project aimed to create a "Community of Practice portal [that] will give participating municipalities easy access to essential adaptation resources, such as weather data, risk assessment methodologies, case studies, training webinars and adaptation strategies." While the GLAA-C team did end up creating two online tools, most project participants agreed (but for varying reasons) that the tools did not have the ultimate utility that participants had hoped for (Box 5 provides summary metrics for both tools).

The Great Lakes Climate and Demographic Atlas: In 2012, the GLAA-C project team had the unanticipated opportunity to partner with Headwaters Economics (HE) to build a decision-support tool called the Great Lakes Climate and Demographic Atlas (the Climate Atlas). The partnership match was made possible by the Kresge Foundation which, in addition to funding the GLAA-C project, also funded work by HE. The GLAA-C project provided design ideas and practitioner feedback while HE's team took on the responsibility of building the tool. The tool, which was released in the fall of 2013, provides climate and demographic information at the county scale. Although project staff and faculty researchers were pleased with the development of the tool and the partnership with HE that was established, most indicate some disappointment in practitioner uptake of the tool. City practitioners pointed the fact that most of the data in the tools is presented at the county scale which did not always align with their city-scale and focus. GLAA-C team members also mentioned that while it is a quality tool, the GLAA-C project may have not been the most useful vehicle for promoting the tool to the proper audience (those operating at the county scale). Ultimately, the Climate Atlas was not originally part of the proposed GLAA-C project but what some considered "an added bonus" to the project.

CIAT: The second decision-support tool that was created through the project is called the Cities Impacts and Adaptation Tool (CIAT). This is the tool that most closely aimed to be the "Community of Practice Portal" described in the original project proposal; however the final version of the CIAT does not fully include all of the many components originally envisioned for the tool. While the CIAT contains climate data and adaptation strategy information, it does not include risk assessment methodologies, case studies, and training webinars. More importantly, practitioners do not see it as the "Community of Practice" tool that GLAA-C set out to originally build. Reasons for the tool falling short of its originally stated description and uptake include that, like many project components, understanding of the field and what was possible evolved over the course of the project; the original description was very ambitious; and finally, packaging customized technical scientific information into a single practitioner-friendly tool is extremely challenging. These reasons are described in greater detail below:

- *Evolving understanding of the field and the needs of practitioners:* As one project staff member pointed out, the field of adaptation resource providers continued to grow over the course of the project, as did the team"s understanding of what was truly needed to support practitioners in pursuing adaptation efforts. New organizations emerged that were carrying out similar and sometimes, competing

MITIGATION VS. ADAPTATION

Mitigation: refers to actions that reduce the human contribution to the planetary greenhouse effect (such as lowering greenhouse gas emissions).

Adaptation: refers to actions taken to prepare for and adjust to new conditions, thereby reducing harm or taking advantage of new opportunities.

(Source: National Climate Assessment, 2014)

Box 4

TOOL METRICS

The following metrics reflect tool use from September 2014 to August 2015.

Great Lakes Atlas*

8,000 Unique Users

CIAT

5,400 Unique Users

These metrics indicate that there is a broad awareness of the CIAT (likely due to the tool's placement on the U.S. Climate Resiliency Toolkit website and numerous efforts by staff to demo the tool to large audiences).

Box 5

- activities, to what GLAA-C intended to do. These included the creation of a sustainability-focused Great Lakes network for city leaders, and inventories and websites designed to provide practitioners with adaptation resources and ideas. As a result, elements of the GLAA-C project, most notably parts of the CIAT, responded to this by refining its scope and/or intended offerings in order not to duplicate efforts. The project team's understanding of the types of resources that would be most beneficial to practitioners also improved over time and shaped the ultimate composition of the CIAT. For example, several staff and faculty researchers recall that when they began the project, many people in the field were calling for "down-scaled data", yet over the course of the project it became clear that a more comprehensive set of climate data and adaptation resources was most beneficial for supporting practitioner efforts. This is reflected in the scientific and adaptation strategy content that is included in the tool. Despite this, several project staff members still felt the CIAT ultimately fell short in terms of what they had hoped to achieve by creating the tool. This disappointment is largely centered on the final content included in the tool and practitioner uptake of the tool. Several ideas of why this occurred were put forth and are described in the following two bullets.

- *Concept for the tool was ambitious:* Due to the original proposal's lengthy and all-encompassing description of the proposed tool, one staff member said that s/he was not surprised the final product does not fully capture all that it was intended to. S/he went on to suggest that perhaps part of the issue with CIAT is that when creating the tool, there was a notion that the tool should be "everything to everyone" which is why, in the opinion of the staff member, the tool "wasn't able to do anything all that well." S/he also suggested that the GLAA-C project team may have originally underestimated how much time, energy and information would be needed to create such a comprehensive tool. Given that adaptation at the municipal level was still a nascent concept when GLAA-C was just beginning, defining and populating each category in the tool with the academic rigor GLAA-C set out to achieve could have easily have taken the entire length of the project and more. Adding to that, the GLAA-C project team also underestimated how difficult it would be to find a tool developer with the skills needed to build this portal. The team quickly learned that the developer position was extremely difficult to staff and took nearly 6-8 months to fill.

- *Information Presented in Tool is Difficult for Practitioners to Use:* In relation to the tool's uptake by practitioners, feedback from GLAA-C project city partners indicates that while they think the overall idea of the tool is interesting, they find the tool itself does not provide them with information they can readily use. Beginning with the climate data portion of the tool, city practitioners, as well as a small group of graduate students who participated in a 2015 pilot study of CIAT usability and uptake pointed out that the way the climate data is presented makes it difficult for untrained users to interpret climate trends and key information. GLAA-C city practitioner partners also pointed out that they specifically had little to no need to access the climate data in the tool due to the fact that they were already given very customized versions of the same climate data through the course of the project. In terms of usability for a broader audience, two further issues exist with the tool: 1) the data in the tool is confined to the Great Lakes basin and 2) the climate data in the tool does not change and there is currently no plan in place to update the data. Thus, even if practitioners were to use the tool for the climate data, once they obtained the information they needed there would be no reason to return to the tool for climate data purposes.

In regard to the second two components of the tool, the interactive map and the adaptation strategy database, practitioners expressed great interest in the concept for each component but found minimal utility when actually interacting with them. While many find the peer-networking map an intriguing idea and the map

CIAT USABILITY STUDY

In the spring of 2015, a GLAA-C faculty researcher conducted a brief study to gain a better sense of whether or not users could interpret the climate data presented in the tool. The study tested three different training approaches to help users understand the climate science: in-person group training, group webinar, and self-directed training. Participants in the study were primarily graduate students in urban planning and the natural resource management programs at the University of Michigan. Although the sample size was too small to draw any statistically significant conclusions, the results indicated that in-person trainings and group webinars were more effective than self-directed trainings. Many participants commented that although they felt they understood the climate data in the tool, they were unclear about how to apply it in a city practitioner setting.

Box 6

"fun to play around with," the lack of contact information and/or ability to see if "peer" cities have carried out any adaptation strategies are reasons practitioners said they do not see themselves spending much time on this part of the tool. The third part of the tool, the adaptation strategy database, is a component that many practitioners are also very excited about however, the actual user interface of this portion of the tool was cited by most practitioners as a primary reason they likely will not use the tool in the future. The search function, including the numerous filters and their titles, is confusing and if more than one or two filters are used, the results are significantly reduced in number. On the other hand, if too few filters are used, then a long list of text-heavy strategies that are hard to sort is the result. One practitioner made clear that because of this complexity, they think they may be able get useful results quicker by using Google. Thus, although there is great interest in the content in this portion of the tool, the current interface had limited utility to city practitioners (Box 6 provides an overview of the CIAT usability study).

GOAL #2: INCREASED RESILIENCE IN GREAT LAKES COMMUNITIES

The GLAA-C project also set out to increase climate resilience within communities across the Great Lakes region. While it may be too soon to tell whether or not the project resulted in increased long term physical resilience to climate change, practitioners and project staff were able to speak to short term impacts and whether or not internal city operational resilience was enhanced.

Physical Resilience

Many practitioners believe their work with GLAA-C will eventually increase their city's physical ability to better cope with climate change impacts, citing the success of the small, short-term projects GLAA-C supported as initial signs that their cities are already becoming better adapted to climate change. For instance in one city, GLAA-C helped fund a project that repaired a culvert that serves as an important piece of stormwater infrastructure for the city. Since its repair, the city has already noticed an improvement in how well water now drains from the site where the repaired culvert is following recent major storm events.

Other practitioners point to more indirect reasons for why they believe their involvement with GLAA-C will improve their city's long-term physical resiliency. Many discussed that working with GLAA-C helped them to better incorporate climate data, concerns, and adaptation information into infrastructure and capital project policies and practices. One city practitioner said that their involvement with GLAA-C was a key reason why public works staff, especially those working with the stormwater utility, began to intentionally ensure that policies, projects, and plans moving forward include climate considerations before they are approved. Similarly, since beginning its engagement with GLAA-C, another city has begun to embed the consideration of future climate conditions into a variety of its practices and policies, including in the review of capital improvement projects. Practitioners believe this will be very important in helping ensure the city is better equipped to handle the more severe storms and larger quantities of annual precipitation that are anticipated for the region. Practitioners from yet another partner city mentioned that the support and climate information GLAA-C provided was very helpful in carrying out a recent vulnerability and risk assessment, a process that is directly informing the city's climate adaptation plan and strategies, many of which will include infrastructure and capital improvement type projects.

Internal City Resilience

As is discussed in great detail in Goals #1 and #4, one of the greatest strengths of the GLAA-C project was its ability to spread a broader awareness about climate change to teams of city staff and stakeholders. Several practitioners said that they believe working with the GLAA-C project has ensured that the institutional knowledge of climate change and adaptation is spread among numerous employees and thus as a whole, the atmosphere of continued acceptance and action on climate issues among city employees will be more resilient to administrative changes in the future. There were however practitioners from two different cities who mentioned that this was not necessarily the case. Both practitioners described that due to budget and staff limitations, only a limited number of city staff were and continue to be able to give their time and attention to sustainability-related efforts. Thus, while they feel working with GLAA-C helped spread awareness among other staff members about climate and adaptation, they feel that they may be the only ones who are able to truly drive adaptation-related actions forward. Without their continued presence, they are unsure that climate adaptation will continue to be addressed. One practitioner did point out though that they were able to involve their city's mayor in part of a workshop GLAA-C helped organize and is therefore hopeful that the mayor will continue to support and advocate for climate resiliency efforts regardless of changes in staff.

GOAL #3: NETWORKED COMMUNITY

Another key objective of the GLAA-C project was to "build a network of decision makers and scientists invested in urban sustainability and adaptation that is guided by an Urban Council on Sustainability and Adaptation (UCSA)." Ultimately, there was some confusion over whether or not this objective was truly met. While there was general agreement that a broad, informal network was established through the project, many expressed that they felt a formal network, especially one informed by "a UCSA was never truly established.

Formal "Network" Never Really Established

The confusion regarding whether or not this objective was truly achieved is partially due to the fact that the intended "network" was constantly evolving. The intended network members shifted from "multi-sector actors" to what most agree ended being the six city practitioners that were a part of the project. According to one staff member, the intent was that network members would meet regularly. In the end, meetings were held typically on an as needed basis instead of on a consistent schedule, and most meetings were with just the six city practitioners with just a few being folded into larger workshops and conferences. A testament to the flexibility of the IA process, this irregular meeting schedule is a reflection of feedback from practitioners that they did not necessarily have the time or interest to meet unless there was a clear need and purpose. An additional factor that contributed to the constantly changing network definition was that over the course of the GLAA-C project, several other local, regional, and even national adaptation practitioner networks began to form. In effort to separate itself and avoid competing

with these efforts, the GLAA-C team found itself continually revisiting and refining the vision for the network. Over time it seems the idea for the network changed from more robust and comprehensive network to a more close-knit and exclusive group of practitioners. This constant evolution of the vision for the network led many project participants to admit they were not sure if the original network goal had been achieved as it was initially conceived.

Another confusing element to evaluating whether or not this objective was achieved was the idea of the UCSA. Many participants were not clear about whether the UCSA was supposed to be separate from the network or if it was the network, which was further complicated by the constantly evolving idea of a network (as discussed in the previous paragraph). A few faculty researchers and project staff identified the main city contacts as the people they believed to be the UCSA members but none of the city practitioners identified themselves as such. Initial interviews with city practitioners included several questions that asked about their perceived utility of the UCSA. After the first two interviews with city practitioners, it became evident that none of the practitioners knew what was meant by the term UCSA and were not able to speak to the UCSA's effectiveness. Several faculty researchers and staff were equally confused regarding who the UCSA was supposed to be and if the council was ever actually formed during the course of project.

For the few faculty members that had a vision for the UCSA and who defined the UCSA as the participating project cities, they felt the UCSA fell short of the original vision. Reasons cited for this include the initial lack of a staff person to help cement this UCSA in the early stages of the project (prior to the project manager coming on board), no platform or strategy in place for helping the UCSA connect on a regular basis, and importantly, an unrealistic expectation that the UCSA members would have the time and interest to meet regularly. According to several faculty and staff, they felt they significantly underestimated the time it would take to build relationships with city practitioners especially since this involved proving to practitioners that the project would be valuable and worth investing their time and energy. Thus, although some expressed disappointment that the UCSA did not accomplish more, the majority of staff and faculty researchers stated that they learned a great deal about how to better adjust their expectations for working with busy city practitioners in the future.

Informal Connections Laid the Groundwork for a Great Lakes Climate Network

On the other hand, almost all project participants felt that an informal network had been established through the project, leading several participants to say they believe this objective was in fact successfully met. The in-person opportunities that brought together practitioners and researchers on numerous occasions helped establish this undefined, more informal network in the region. Repeated interactions built trust and more sincere relationships among the various project stakeholders. Additionally, many practitioners felt that the GLAA-C project enabled them to connect with other cities that were similarly situated financially, geographically, and/or in terms of general city-wide understanding and acceptance of climate issues. Combined, these aspects of the GLAA-C project resulted in stakeholders feeling more genuinely comfortable in reaching out to other project participants for guidance and advice on policies or projects, thus establishing an informal network of climate adaptation practitioners and researchers across the region.

As many practitioners, researchers, and project staff mentioned, time was another critical ingredient. Building trusting relationships took time and thus, several practitioners said that it would have felt awkward and likely would have been less valuable if a network had been forced into creation at the early stages of the project. Allowing connections to be made in person and over several years meant that practitioners felt more comfortable trusting each other and the resources they were being provided, and ultimately contributing their time and ideas to the project. As a result of this more natural growth, an end product of the GLAA-C project has been a regional interest by both practitioners and researchers to establish a Great Lakes Climate Network, an effort that is currently underway. The desire to continue building upon the momentum that was created throughout the GLAA-C project was evident both in the interviews that were conducted for this evaluation as well as interest in the project's capstone conference that occurred in June, 2014. Over 175 practitioners and researchers gathered to discuss climate adaptation specifically in the Great Lakes region. The feedback following this conference was overwhelmingly positive and many attendees stated that they appreciated the opportunity to connect with and learn from each other about possible adaptation actions and strategies.

The current effort to create the Great Lakes Climate Network builds upon these partnerships that have solidified over the past several years while incorporating new cities who have demonstrated interest in a regional network. The proposed network also plans to include important lessons and resources that were generated through the GLAA-C project, including from the June 2014 capstone gathering. These include climate information and resources, in-person workshops, and adaptation support. A theme that was brought up in the capstone conference and made evident over the course of the GLAA-C project is that this new network should be inclusive, bringing in other universities, nonprofits/other resource providers, and possibly even including stakeholders from the private sector.

GOAL #4: SALIENCE OF PROJECT WORK

A key aim for the majority of IA processes and specifically for the GLAA-C project was to be relevant to decision-making processes and valuable for end users. There was strong consensus among researchers, city practitioners, and staff that the GLAA-C project was both timely and useful for all involved.

Practitioner Salience

Both city practitioners and project staff agreed that the urban adaptation focus of the GLAA-C project was incredibly salient at the municipal scale. While sustainability was a discussion practitioners were familiar with prior to working with GLAA-C, most cities were focused on mitigation or reducing their local greenhouse gas emissions. The GLAA-C project helped cities to start thinking about how, in addition to lowering their emissions, to better prepare residents, buildings, and infrastructure for the extreme weather events that accompany a changing climate, or their city's adaptation efforts. Particularly through the tailored climate resources, practitioners were provided with the evidence and vocabulary needed to translate what global warming means locally and what could be done to make their cities more resilient to these

impacts. This was especially useful in cities that had experienced recent major weather events and wanted to capitalize on the public's attention to implement action. For instance, one partner city was forced to declare a state of emergency after experiencing a major rain event that resulted in pervasive flooding. Being able to link this extreme event to climate data and also receiving support on how to cope with these events in the future was a major benefit to partner cities.

> "The data gathered and presented to [our city staff] has allowed our staff to actually have responsible dialogues on this topic, as opposed to the past discussions, with staff wondering what, if any, ramifications of change were going to happen in [our city]."
>
> -City Practioner

In addition to providing practitioners with awareness and language of climate adaptation, working with GLAA-C helped cities leverage ongoing or proposed sustainability initiatives to include adaptation efforts as well as mitigation efforts. Due to the flexibility of the GLAA-C approach, this played out in different forms, depending on the city and where it was at in terms of sustainability practices and awareness of climate change. For several cities, working with GLAA-C enabled them to take their sustainability efforts to a new, more proactive and adaptation-oriented level. For instance, one city already had a great deal of momentum behind sustainability in the form of greenhouse gas emission reduction efforts as a primary focus of its "Sustainability Framework" that was adopted in early 2013. Capitalizing on this momentum and taking advantage of the adaptation literacy and awareness GLAA-C helped provide, the city was able to introduce climate resiliency (adaptation) efforts under the same sustainability umbrella. In other words, GLAA-C played an important role in helping the city expand its definition of sustainability to include adaptation efforts alongside mitigation efforts.

In another city where sustainability efforts were not yet occurring, working with GLAA-C played a key role in helping city staff introduce mitigation and adaptation simultaneously into ongoing city planning efforts (all under the broader terms of green and sustainable). This city was working on updating its comprehensive master plan (the first since 1960, when it was originally released). Due to the relationship they had established through the GLAA-C workshops and projects, city practitioners asked the GLAA-C project manager to be a part of the review process for the master plan. As a result, sustainability (both in the form of adaptation and mitigation) played a prominent role in the plan's overall objectives and goals and was eventually embedded in the plan's accompanying land use plan. According to the city practitioners, this emphasis on both adaptation and mitigation likely would not have occurred if they had not been involved in the GLAA-C project.

Finally, nearly all cities that partnered with GLAA-C said that they were able to leverage their participation in the GLAA-C project to attract partnerships and funding from other local and national sources to take their sustainability and adaptation efforts to an even more impactful level. Through collaboration and support from GLAA-C, one city was able to extend specific funding for a climate adaptation planning position within the city. Another city was able to leverage the small project GLAA-C funded in order to receive a $75,000 grant from a local foundation to expand their adaptation project to be even more impactful. Yet another city took advantage of their efforts with GLAA-C (both the funding and information GLAA-C provided) to build bridges among the sustainability unit and numerous other units including public health, public schools, emergency planning, and public works.

Faculty Salience:

While faculty members mostly agreed that they would have liked to see more academic outcomes from this project (as will be discussed in Goal #5), nearly all agreed that being a part of the GLAA-C project increased their understanding of the very timely and important topic of municipal climate adaptation. Faculty members felt that their participation in the project helped them build a reality-based understanding (as opposed to a theoretical-based understanding) of what it takes to spread awareness, get buy-in, and implement a project within local jurisdictions. Simply meeting on a regular basis as part of this applied project helped many faculty members ground their understanding of just how difficult it is to engage busy and sometimes suspicious city practitioners and to provide them with resources they actually need. Faculty members also appreciated the in-person meetings with practitioners that took place throughout the project. One faculty member pointed out the advantages of having informal conversations with practitioners. Conversations that were not part of a formal study or specific research initiative gave better insight into the barriers and challenges those practitioners faced.

In addition, several faculty members carried out various research projects related to GLAA-C. While the topics and research covered were considered relevant by faculty, the final products themselves varied in terms of relevance to the broader field. This primarily depended on whether the work reached its target audience or users. For instance, two major surveys occurred in relation to the GLAA-C project. The first one, which sought to better understand public perception of climate change in the region, had great success with participation (over 2,000 participants). The second survey, which aimed to better understand the needs of local leaders in furthering adaptation, had a very low participation rate. This is despite repeated and varied attempts by the project team to boost participation. The low response rate meant that no conclusions of any statistical significance could be drawn from the survey and shared with a broader audience. The results from either survey have yet to be used in a formal research publication but have been widely shared via the project website and newsletters.

Likewise, two projects that sought to assess the adaptive capacity of cities in Michigan and in Ohio had similar resulting relevance. While the research was very timely, occurring during the GLAA-C project which is when city practitioners were working to understand what they could do further adaptation efforts, the ultimate products were not well circulated among practitioners and no peer-reviewed journal publications have resulted to inform the broader learning community.

Applied projects also occurred throughout the project with varying degrees of relevance. This can again be attributed to whether the work made its way to an appropriate user or not. For instance, one graduate student project involved a vulnerability assessment process and report for a Great Lakes city (not one of the six project cities). The idea for the project came out of a relationship

the GLAA-C project manager had built with the city's climate action group. The project involved a GLAA-C faculty researcher as the advisor and two GLAA-C student staff members who were a part of the student project team. While the faculty researcher and staff involved considered the project and end product valuable, the climate action group's focus shifted away from the project mid-way through which meant that the final assessment itself was never applied.

However, another applied project did result in a final product that was implemented. This was likely due to the strongly engaged end users throughout the entirety of the project. This project assessed a stormwater credit program of one of the GLAA-C partner cities. The idea for this project came out of a workshop session that was facilitated by the GLAA-C project manager during which stormwater management and thecity's outdated stormwater credit program were identified as among the biggest challenges for the city. Subsequent conversations between project staff and city practitioners resulted in the creation of the graduate student project that provided an in-depth analysis of the city's existing program as well as an inventory of best practices from around the country, resulting in several recommended revisions to the city's stormwater credit program. A little over a year later, the city incorporated many of these changes in the new credit program updates that were approved the spring of 2015.

Staff Salience

Staff members, especially those that were also GLISA program staff in addition to GLAA-C project staff, had numerous reasons for finding the GLAA-C project to be salient. A key reason cited by several staff was the co-production of climate resources that have since become standard products GLISA creates for different communities and groups it works with. The development and refinement of the "Historical Climatologies" and other climate resources were something city practitioners had a need for and that GLAA-C staff created in response. As they were being developed, city practitioners provided feedback regarding what they did and did not understand in the climatologies, what information was and was not useful, and what the information gaps were. As a result of this back and forth feedback process, the GLAA-C staff gained a much better sense of how to effectively communicate climate science information to non-scientists, which is something that more and more cities and groups across the country are in need of. Another benefit discussed was that through this project, staff learned a tremendous amount about how to interact and engage various stakeholders. This continues to be useful, particularly for GLISA staff who work with communities throughout the region on climate adaptation issues.

Cross-Pollination

Finally, nearly all project participants mentioned or alluded to the fact that the work they did with the GLAA-C project complemented and/or enhanced related efforts. For city practitioners, many mentioned that the climate data and resources they were given, mixed with the expanded city staff awareness, helped elevate a variety of projects to be more forward-thinking and comprehensive. Several staff and faculty researchers indicated that work with GLAA-C helped inform other related research initiatives and that likewise, those initiatives helped to inform the work they carried out with GLAA-C. In particular, there was a major research effort that examined how urban heat islands (UHIs) occur in cities and what can be done to identify vulnerabilities to UHIs. Three of the six GLAA-C faculty researchers were co-investigators on this project and, given that UHIs are often considered or related to a climate impact, there was a lot of information shared across these two projects.

GOAL #5: EFFECTIVE, LEGITIMATE, AND CREDIBLE PROCESS

Finally, given that Graham wishes to continue building on and learning from its IA projects, it is important to examine whether or not the overall GLAA-C process was considered effective, legitimate and credible in the eye of the project participants.

Effective

The key areas that were examined to determine whether or not the process was considered effective were how the project matched up with participant expectations and whether or not the cost and length of the project were suitable given the outcomes.

Faculty Expectations

For faculty researchers, a major outcome of the project that was missing was more academic research and project-related publications. Several faculty members attributed this result to not having enough time personally to devote to project-related research which they often blamed on their own busy research schedules. Others pointed to the fact that over time, the project became less focused on research and more focused on engagement with city practitioners and the creation of applied tools and projects. A few faculty members said that while they'd wished there had been more immediate research outcomes, they believe that many of the findings from the project are still forthcoming and that the project helped to plant a seed that will guide new projects and research efforts as they move forward.

Another common theme in terms of project expectations is that many did not know what to expect of or from the project when it initially began. For faculty researchers, many indicated they were unclear of the role they were expected to have in the project. One faculty member said s/he ultimately felt like more of a consultant than an involved researcher. Faculty researchers were also unclear what, if any, types of collaboration were expected among them. One faculty researcher said that this lack of clarity of her/his role and about the type of expected collaboration may have been one of the reasons little academic research resulted from the project. Several staff and faculty researchers speculated that the lack of clarity of faculty researcher expectations may have stemmed from the fact that none of the faculty truly assumed the role of the primary lead and thus the direction and expectations for project research remained unclear. It was also noted that by the time the project manager was hired, a precedent had been established that faculty were responsible for determining their own research initiatives in relation to the project.

Staff and Practitioner Expectations

Both staff and city practitioners admitted that they were unsure of what to expect from the project at its onset. One participant observed: "the aims of the project evolved over time," which they indicated was a great benefit because it allowed the project to respond to the needs of the practitioners and limitations of the work. Many staff and city practitioners said that because they were unsure of what to anticipate from the project, their expectations were exceeded. Overall, staff members and faculty were pleased

with the knowledge and resources the project generated as well as the relationships with city practitioners that were established. City practitioners were similarly pleased with the connections they made through the project as well as for the support (financial, expertise, and logistical coordination of workshops) they had received.

Cost

The project cost about $1.2 million over the four years of its existence. Nearly all participants agree that this amount seemed appropriate given what was achieved through the project yet all indicated that some of the benefits are very difficult to quantify. In addition to the specific grant-funded projects that GLAA-C supported within cities, participants cited student projects, high-quality relationships between city practitioners and researchers, useful urban adaptation products, and the numerous workshops and conferences as reasons why the project was worth $1.2 million.

One area where which lacked consensus was the cost of faculty compensation. Some faculty members felt the financial compensation was generous but did not necessarily influence what they contributed to the project. Others felt that the unequal and "sporadic" compensation made it even more unclear what was expected of them, and had a low impact on how and when they could engage with the project. One faculty member observed that in general, the different colleges that the faculty members are appointed to have different cultures when it comes to outside research projects like GLAA-C. Accordingly, some had more flexibility in their ability to engage with the project while others felt that if proper financial support wasn't being provided, it was difficult to justify to their respective colleges why they should be contributing their time to the project.

Timeframe

Similar to cost, the majority of participants that were interviewed felt that the approximately four year length of the project was appropriate. Numerous interviewees discussed the fact that while the first few years of the project may have seemed slow and did not result in many specific outcomes, that time was necessary to build the knowledge base needed to carry out the work of the project and to form relationships with city practitioners. During the initial years of the project, team meetings and efforts revealed that working in the realm of urban adaptation was complicated and that the project itself needed a project manager who could provide full-time support to meet the project goals. Once faculty had a better understanding of how challenging it would be to engage busy city practitioners and carve out a space of expertise, and once the project manager and other key staff were hired and on board, project productivity increased dramatically and many of the primary project outcomes were accomplished during that time.

Legitimate

To evaluate the project's legitimacy, three areas related to the project's overall goals were examined during the evaluation process: balanced representation among project participants, trust in the project process, and satisfaction with their engagement.

Balanced Representation of Faculty

The two main areas in which the project sought to have balanced representation were among faculty researchers acting as Co-PIs and among participating cities. Faculty involved in the project represented five different schools at the University of Michigan, representing the fields of natural resource and environmental management, urban planning, public health, public policy, and and engineering. Given urban adaptation's cross-cutting nature, many felt that the diversity of faculty expertise was well balanced and appropriate for the project. However, several staff and faculty members said that in hindsight, having six faculty researchers may have been too many for the project, especially given that there was little actual collaboration around research related to the GLAA-C project. One faculty member stated that perhaps the faculty team may have been too diverse which created more obstacles than benefits when it came to collaboration and group productivity. According to this faculty researcher, many of these referred to obstacles were disagreements about project aim and purpose and theories for how to carry certain efforts and initiatives forward.

Balanced Representation of Cities

The second type of representation that the project aimed to strike a balance was among the cities that participated in the in-depth engagement and the conditions they represented. Nearly all participants felt that the involved cities represented a balanced and wide-variety of climactic and social conditions within the defined scope of the project (working with mid-size cities in the Great Lakes region). More importantly, nearly all interviewees added that their ability to ensure balanced representation was dependent on which cities actually had interest in participating in the project. Climate-wise, this did not seem to generate much of an issue as staff and faculty felt the majority of major climate conditions of concern in the Great Lakes region were represented. Similarly, most participants felt that many social and economic conditions were also represented among the cities. The area of representation that one staff member did not feel was truly achieved was geographic diversity, pointing to the fact that no cities from the western or eastern edges of the basin were represented in the partner cities. Ultimately though, all agreed that they were happy with the diversity of teams that participated in the project and that it helped to expand the knowledge base of what urban adaptation looks like in a variety of settings and conditions within the Great Lakes region.

Trust of Climate Resources

Given that the city practitioners were the primary users of the resources and support generated by the GLAA-C project, the main criteria used for evaluating whether or not participants trusted the project was to ask if they trusted the climate resources, adaptation support, and overall expertise they were provided. In terms of climate resources and support, all city practitioners said they strongly trusted the climate information and resources they were provided. Most attribute this to the combination of the University of Michigan's reputation and their confidence in the NOAA funded Great Lakes Integrated Sciences and Assessments program that developed the climate resources. Several also mentioned that their relationship with GLAA-C project staff, including the climatologist, allowed them to ask questions when they didn't understand the climate data they were being provided which reinforced their confidence in the materials and information. Many city practitioners attributed their trust in the climate resources to the reason they felt confident in sharing this information and their

climate efforts with managers and other decision makers. One practitioner said that "knowing this information was coming from a source like the University of Michigan meant we felt it was reliable data we could use to inform policies and projects moving forward."

Trust of Adaptation Resources

City practitioners had less confidence in the adaptation resources they were provided through the project, although ultimately these resources were rather limited and varied from city to city based on their needs and project goals. Resources were not consistent for each city as their different needs did not always match up with the expertise of project staff and faculty members. For instance, one city wanted to work on wetland restoration and although they were provided some resources on invasive and native species and appropriate wetland vegetation for their general location, the resources were sparse and only somewhat helpful due to the fact that project staff did not necessarily have that specific expertise. However, that same city also wanted to incorporate more climate-related adaptation efforts in its recent master plan process and was able to get a great deal of document review and guidance from project staff who had a background in urban planning and expertise in how to weave adaptation efforts into municipal documents.

Engagement

Perhaps one of the most telling indicators related to the legitimacy of the project was the value stakeholders gave to their involvement with the project. To better understand this, stakeholderswere asked two questions: 1) Do you feel you contributed to the projects aims and purposes? And 2) Did you find your involvement with the GLAA-C project worthwhile for your own purposes? The first question tended to prompt a similar response among most participants which was something akin to "I think so." This was then typically followed by reasons why they think they contributed to the overall project, ranging from faculty contributing research expertise, to staff providing technical support and project management, to city practitioners adding real-world applicability to the project. Some participants linked this uncertainty in whether or not they contributed to the project to the uncertainty they felt in terms project expectations, as was discussed earlier.

The latter question, "Did you find your involvement with the GLAA-C project worthwhile for your own purposes?" was answered by nearly all participants with a resounding "Yes." For many faculty researchers, common reasons they felt the project was worthy of their time included the relationships they built with city practitioners and the fact that the project helped them gain a more grounded and nuanced understanding of the complicated the world of urban adaptation. Given that project staff tended to have very specific tasks related to the project, their reasons for finding the project worthwhile varied widely. Those that worked on tool development appreciated the opportunity to strengthen their technical skills and expand their ability to take something from a theoretical idea to a user-friendly and accessible online tool. For staff with background in the social science realm, they appreciated the opportunity to learn about the science involved in understanding climate data and producing relevant climate information and products. Similarly, staff with a stronger background in hard sciences were grateful that the project allowed them the space to learn how to translate technical science information into something municipal decision makers and the general public can comprehend.

For city practitioners, many indicated that although they were reluctant at first to contribute their time due to their demanding schedules and suspicion of the project's value, they ultimately felt the time they invested in the project was well spent. For many practitioners, working with the GLAA-C project gave them a much more in-depth understanding of what climate change means for their specific region and what adaptation actions can be taken to address these changes. Many highlighted the fact that due to the structure the GLAA-C project, they felt comfortable taking the time to ask clarifying questions which bolstered their confidence in working on these issues and talking to colleagues and decision makers about adaptation in their city. Furthermore, many practitioners mentioned that they truly appreciated the numerous opportunities the GLAA-C project created for practitioners to talk with one another and discuss common challenges and strategies. Several mentioned that being a staff member in a medium-sized city does not often allow them the time or financial capacity to attend conferences, workshops, and important networking events. Thus being a part of the GLAA-C project allowed them to form alliances that they may not have otherwise been able to achieve. In the end, having a more intimate understanding for what other similarly-situated cities are doing in the region provided practitioners with the motivation to encourage their managers and decision makers to join these other cities in implementing climate action.

Credible

A final point of consideration in evaluating the strength of the IA process was to look at whether or not the process was considered credible. To gauge this, the evaluation looked at whether or not the IA process was considered the appropriate process to implement in order to achieve the project's overall goals and objective, how well the project created social, political, and creative capital, and whether the project is considered replicable and scalable by project participants.

Appropriate Process

When asked whether or not the IA process was the appropriate approach for this project, nearly every person interviewed for this evaluation came back with a decisive "yes!" As is discussed throughout this report, the project evolved to match the needs of the city stakeholders as issues were identified and stronger relationships formed. While this may have taken away from the project's ability to succeed in obtaining every one of its original goals, most agreed that this flexibility

THREE TYPES OF CAPITAL

Social Capital: Were meaningful connections made around the subject of urban climate adaptation; Did this project influence the culture of urban climate adaptation?

Political Capital: Did this project result in more decision makers becoming involved/ focused on urban climate adaptation?

Creative Capital: Did this project result in new, innovative ideas, around urban climate adaptation?

Box 7

was more important than meeting the specific original goals and necessary to ensure uptake of the project, particularly among city partners. Working within the realm of urban adaptation was relatively new for most participants involved. Using the IA process, which was iterative and malleable, allowed the project focus to shift over time as both researchers and staff learned more about the field and practitioners helped reveal new, unanticipated challenges and needs. Many agree that even though the project was flexible, it still met the overarching project goal which was to assess and further the field of urban adaptation in the Great Lakes.

While most participants unanimously agreed that it was the appropriate process overall, one staff member stood out by saying that while s/he thought it was definitely the appropriate process for working with city practitioners, however s/he questioned how appropriate it was for faculty researchers. S/he explained that the lack of a well-defined central research question made it difficult for the faculty members to focus their efforts and collaborate with one another and that the constantly changing priorities of the project may have complicated their ability to engage with the project and each other.

Social Capital

Processes like an IA are often associated with generating three types of capital: social, political, and creative (See Box 7).[7] According to the majority of participants, social capital was definitely achieved through this process. As has already been discussed in this report, the numerous opportunities for in-person networking and workshops, among city teams, with teams from other cities, and with other researchers and adaptation experts across the region, helped generate many meaningful connections among various actors in the field of urban climate adaptation.

Political Capital

When evaluating political capital, it is important to be aware of scale. Staff and city practitioners indicated that for the most part, they felt the GLAA-C project helped strengthen overall understanding of climate issues as well as build political will among local decision makers and leaders (the extent to which this capital was created varied from city to city). However, moving up in scale, staff and city practitioners tended to agree that unfortunately, they do not feel that the GLAA-C project had as much of a far-reaching regional impact as they had hoped. While some pointed out the fact that although the GLAA-C project was able to connect with urban decision makers outside of the six primary GLAA-C cities, these were often decision makers that were already involved in adaptation efforts and thus, the GLAA-C project did not necessarily engage large numbers of new decision makers in urban adaptation work. Others felt the project fell short in helping to unify decision makers to bring urban adaptation in the region to higher level, such as a state or federal level. While that was never an explicit goal or objective for GLAA-C, many felt that in order to build true regional resilience, state and federal level decision makers need to be more involved.

Creative Capital

Participant perspectives about whether or not the project generated creative capital were mixed, with some indicating yes and others expressing they did not think so. Those that said yes, creative capital was created, cited several reasons for this. As one interviewee stated, "any time you get people from this many backgrounds and areas together to work on something, creative ideas are going to be an end result." Several city representatives said that the time, expertise, and grant support they were given provided them the freedom and flexibility to take on new projects that their mandates and budgets otherwise would not allow. On the other hand, reasons some felt the project didn't generate creative capital were primarily related to the fact that some of the cities were using the GLAA-C project to help "set the stage" for future urban adaptation projects that they assume will be more interesting and exciting. For them, GLAA-C played an important, but in their opinion, not necessarily creative role, in laying the foundation for future, more creative adaptation work to take place.

Replicable and/or Scalable

Responses varied when asked if the GLAA-C project is replicable and/or scalable. The one common thing that was discussed when this question was brought up was that the GLAA-C project was very time-intensive which may be hard to replicate without a great deal of financial support. Also, many people questioned which parts were worth replicating and which ones were not. For some staff and faculty, there was a sense that the tools could be scaled and that specific resources could be replicated and scaled to a reach a bigger audience; however the in-depth, one-to-one intensive support was neither scalable nor replicable without additional funding. Related to this, one staff member indicated that it may be difficult for an organization outside of the University to carry on similar efforts given that the GLAA-C project was uniquely situated to be able to benefit from direct staff support from the Great Lakes Integrated Sciences and Assessments program which is also housed within Graham.

> "Having an outside, but local source of climate information has been very useful. Small grant funding allowed the City to experiment with a new outreach tools that we would not have had funding to support."
>
> -City Practioner Survey

In an ideal world where financial support was not a challenge, city practitioners and some staff felt the project should be replicated and scaled up in order to build off the momentum, relationships and lessons learned throughout the project and to truly create regional resiliency. One city practitioner brought up the fact that any future efforts to provide urban adaptation support would need to replicate the flexible and dynamic process GLAA-C implemented because urban adaptation is not one-size-fits-all but instead needs specialized attention in order to be successful.

Emerging Themes

In addition to evaluating how well the GLAA-C project met its intended goals, several cross-cutting themes emerged during the evaluation process. These are noted below as important topic areas that can inform future IA projects and urban adaptation work.

IMPORTANCE OF A PROJECT MANAGER

Throughout the evaluation process, interviewees were often quick to point out the important role the project manager played in helping organize the project and ensure GLAA-C met its stated milestones and objectives. As has already been discussed, faculty struggled to find meaningful

ways to collaborate in order to further project interests. Initially, a post-doctoral student was hired to help coordinate and facilitate the project. However, due to a number of complications, it became clear that a dedicated project manager would be more useful than a post-doc in coordinating project efforts. Upon recognizing this, the faculty and project staff hired a project manager who played an instrumental role in defining the scope and activities of the project. This included seeking out and building relationships with city partners, establishing a vision for workshops and conferences, turning those visions into reality, and coordinating climate resource and adaptation information support. The project manager also helped identify several projects that faculty researchers could pursue in relation to the project. One faculty member stated that having the project manager helped "focus people" and nearly all agreed that the project manager was one of the primary reasons they consider the GLAA-C project a success.

BALANCING ACADEMIC INTERESTS AND PRACTITIONERS INTERESTS

It is important to note that once the project manager came on board, the focus of the project seemed to shift away from more theoretical, research-oriented efforts (such as surveys and research projects to assess the state of the field) to more practitioner-oriented work, including specific project support, gathering of best practices and coordinating workshops for city staff members. While the majority of people interviewed felt this was the right path for the project to take, faculty researchers and some staff felt this may have been a reason why so few academic publications resulted from this project. In effort to produce more academic publications related to the project, two faculty researchers used remaining project funds to organize a write-shop that occurred in October of 2015. The goal of this write-shop was to bring together researchers and practitioners in order to develop multiple publications about climate adaptation in the Great Lakes region. Outcomes of this workshop have not yet been identified.

According to many of the city practitioners, the shift towards more real-world issues, especially those that were identified based on the needs of their own city issues, is exactly why they were willing and interested in participating in the project. One practitioner said that normally, s/he is skeptical of getting involved with university researchers as they tend to have a reputation for asking practitioners to donate a great deal of time in order to study a specific issue and the practitioners receive very little, if any, benefit in exchange. Many of these efforts result in theoretical or jargon-filled research papers that are of little use to city practitioners. This practitioner said that the reason s/he ultimately got involved in the GLAA-C project is because the engagement approach was different and there was clear value to be gained from their continued participation in the project. Thus, this shift towards practitioner-oriented efforts seems to have played a key role in ensuring cities were involved and invested in the overall project.

ROLE OF SLOWER THAN ANTICIPATED PROCESSES AND A NASCENT FIELD

One key lesson to note for future IAs and adaptation work was that the original goals set for the project, particularly "implemented adaptation strategies" and establishing a "networked community" were, in hindsight, considered by many project participants to be somewhat unrealistic. There are two key reasons why participants cited this. The first is that when the team was conceptualizing the project, they underestimated the speed of academic and public processes. A good example of this was the initial General Public Perception Survey that took many more months to finalize than anticipated due to the process involved in getting all faculty researchers to agree on the survey format and wording. Once it was ready, it took even more time to solicit enough feedback from busy practitioners to make the findings useful. Similarly, the team found that the second survey, which was sent specifically to local decision makers, was even more difficult to get responses for, and took even more time to create and solicit results. (On a side note, there were not enough responses for the results of the second survey to be considered statistically significant.) Faculty researchers felt that if these survey results were less challenging to get off the ground and if they had the results earlier, they would have been able to use them to inform the process earlier on. The slow and often bureaucratic public process, combined with the time-intensive process of establishing relationships with city practitioners, was also cited by many as reasons why cities were unable to fully implement major adaptation strategies or projects during the short window of time that the project occurred.

A second and important reason several faculty researchers and staff said that their original goals were perhaps too ambitious in hindsight was that that the field of urban climate adaptation was relatively new when the project initially began. As a result, the team ended up spending more energy and time than originally anticipated on simply building a base of understanding around what urban adaptation means, particularly in the Great Lakes region, and what resources are most helpful for supporting city practitioners. Also, at the same time the GLAA-C project was developing, other urban adaptation resource providers were emerging. This continued to inform the project team about what was useful in the field and also forced the team to refine project offering in order to reduce redundancy while still providing useful resources. Thus, the fact that the field was new, combined with the sometimes lengthy public and academic processes that came with working with city practitioners and academic researchers, resulted in the project not quite meeting the goals that were originally conceived.

REMAINING GAPS IN THE FIELD OF URBAN ADAPTATION

Given that a key component to the overall purpose of the GLAA-C project was to provide an assessment of what is needed to bolster adaptation efforts throughout the region, as is to be expected, many remaining gaps were identified that may be helpful when thinking about next steps for urban adaptation work. City practitioners and project staff, especially those that work with practitioners on a regular basis, identified the following gaps.

More adaptation resources and tools

As practitioners dive into the relatively new world of urban adaptation, they recognize a need for more climate scenarios, case studies, and visual communication tools. As one practitioner discussed, climate scenarios help those who already "get it" when it comes to climate change think more strategically about their efforts. They also help other staff and decision makers

who aren't as climate literate become better informed by providing them with a more tangible understanding of what the future may actually look like. According to this practitioner, s/he has found that city staff is much better at identifying key issues and developing strategies when provided specific examples of future scenarios rather than undefined, future possibilities. Another common request among practitioners was for more case studies or examples of other similarly situated cities taking action to improve resiliency. Specifically, practitioners would like to see case studies that include information about costs, lives saved (or injured through lack of inaction), and other useful numbers that can be used to justify action. Building on this, one practitioner added that s/he'd like to see more information comparing pre- and post-intervention statistics and evaluation. Case studies also play an important role in providing political cover. One practitioner said it makes a big difference when s/he can come to her boss with a recommended adaptation action and is able to point to the numerous benefits another city has reaped by implementing the same or a similar action. Finally, as was evident with all the cities that participated in the GLAA-C project, awareness and education are an ongoing struggle for most cities and are key to successful implementation of adaptation efforts. Accordingly, several practitioners said they would like to see more visuals such as infographics that they could use to help explain to the public and their local leaders what climate change means for the region and what actions can be taken to help build local resiliency.

More technical expertise

One of the components of the GLAA-C project that many practitioners cited as a primary benefit to participating was access to a climate expert. Building on this, many practitioners said they'd appreciate the opportunity to work with even more experts. They indicated that being able to call on someone with specific expertise, such as civil engineers who have designed or implemented large public works projects or experts with more social science expertise in evaluating a project's success or failure would be a major asset to furthering adaptation projects and efforts. City staff are very aware of how limited their time and staff abilities are when it comes to adaptation of efforts and thus, the more they can rely on a specific experts to identify issues, design appropriate projects, or justify that the action is necessary, the more likely and able they will be to implement strategies.

More funding and staff time for adaptation work

Related to the need for more technical expertise, many practitioners indicated (and project staff observed) that regardless of how interested city staff may be in pursuing resiliency efforts, without time and funding (which are often tied together) to actually work on adaptation project, they have a hard time being fully implemented. Most of the practitioners who participated in the GLAA-C project said that they were volunteering their time to participate, and that much of the GLAA-C project-related work was in addition to their normal work load. Although the call for cities to be more green, more sustainable, more resilient continues to grow, the funding and staff time allowed to achieve these objectives lags far behind. Knowing that it can be tricky to fit urban adaptation into city budgets and that those funding sources can easily dry up or be redirected, several practitioners recommended that a major service the adaptation resource-provider community could provide would be to help cities find and apply for other funding opportunities, outside of their municipal budgets. One practitioner pointed out that with the little time s/he can devote to resiliency efforts, s/he finds her/himself balancing this time between looking for funding opportunities and trying to implement strategies. Splitting her/his time has resulted in not being able to do either as well as s/he would like to see them done.

Engaging the private sector

Finally, finding meaningful ways to engage the private sector is something that many city practitioners have identified as critical for moving urban adaptation forward in their cities and in the region. While one city worked to engage private partners during the course of the GLAA-C project, many admitted they were unsure on where to begin and feel guidance on how to do so would be a major gap that resource providers could help fill. It is clear that forming strong partnerships with large, non-residential companies is important for increasing resiliency. In addition to owning large parcels of land with impervious surface that contribute to many of the stormwater challenges cities face, large companies, especially those that employ members of the community, can help establish a model and set the tone for change towards a more resilient city. Furthermore, related to the above discussion about funding, forming strategic partnerships and utilizing effective incentives with the private sector may introduce a new and much-needed funding stream to a city's adaptation efforts.

Conclusion

Thanks to the iterative and constantly evolving approach of the IA process, participants unanimously agreed that that the project was successful in its aim to better understand and contribute to the field of urban adaptation in the Great Lakes region. The project helped expand urban adaptation dialogue across the region and among mid-size cities that otherwise may not have had the opportunity to gain such a strong understanding of climate change and its impacts at the local, urban level. Furthermore, lessons from the project were shared across the country during the fourth year of the project, ranging from webinar presentations to national conferences (Appendix E). Thus, although it is hard to quantify the success of the project, the largely positive feedback gathered through the evaluation process, accompanied by the large interest in learning about the project findings in its fourth year, demonstrate the project's success and contribution to the field of urban adaptation.

Please direct questions to:
grahaminstitute-ia@umich.edu

Endnotes

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Appendix A: List of Key Project Participants

Below includes a list of key GLAA-C project participants who contributed directly to the project. There were many other people who participated in the project through conferences, webinars, and by providing guidance that are not included below.
(Bold indicates the participant was interviewed for this evaluation)

U-M FACULTY RESEARCHERS (CO-PRINCIPAL-INVESTIGATORS)

Arun Agrawal (School of Natural Resources & Environment)
Maria Carmen Lemos (School of Natural Resources & Environment)
Elisabeth Gerber (Ford School of Public Policy)
Larissa Larsen (Taubman College of Architecture & Urban Planning)
Marie O'Neil (School of Public Health)
Richard Rood (College of Engineering)

CITY PRACTITIONERS

Patekka Bannister (City of Toledo, OH)
Brad Doff (City of Thunder Bay, Ontario)
Megan Hunter (City of Flint, MI)
Jamie Kidwell (City of Ann Arbor, MI)
Sarah Kerton (City of Thunder Bay, ON)
Curniss McGoldrick (City of Thunder Bay, ON)
Beatrice Miringu (City of Toledo, OH)
Timothy Murphy (City of Toledo, OH)
Matthew Naud (City of Ann Arbor, MI)
Kevin Schronce (City of Flint, MI)
Daniel Shipp (City of Kingston, ON)
Michele Simmons (City of Dayton, OH)

PROJECT STAFF (FULL TIME, PART TIME, AND STUDENT INTERNS)

Avik Basu
Daniel Brown
John Callewaert
Kathryn Conlon
Elizabeth Gibbons
Ashlee Grace
Kelly Gregg
Grace Hamilton
Dustin Hodge
Kristiane Huber
Scott Kalafatis
Kevin Kuo
Evan Mallen
Sarah Nesbitt
Srinivas Parinandi
Michael Perles
Ahmad Safi
Josh Sims
Missy Stults
Vaishnavi Chowdary Tripuraneni
Emma Tinsley
Benjamin VanGessel
Joan Wolf
Kim Wolske

Appendix B: Interview Questions

Depending on their role with the GLAA-C project, interview participants were asked a set of questions relevant to their participation. These questions are included below for reference.

CITY PRACTITIONER INTERVIEW QUESTIONS

1. Has your relationship with GLAA-C advanced your city's ability to communicate adaptation efforts? (not much, somewhat, very much)?
2. Have practitioners noticed an improvement in how physical city infrastructure is improving the city's resiliency as a result of engaging with GLAA-C? If yes, how so?
3. Have practitioners noticed a difference in how city staff work (together) towards building a more resilient city? (More collaboration? More systems in place to ensure effectiveness and reduce redundancy)
4. What resources/support do practitioners feel they still need to improve adaptation efforts & decision making at city level?
5. Did you find the Urban Council on Sustainability and Adaptation (UCSA) meetings useful? (no, somewhat, yes, very)
6. Do you feel comfortable reaching out to other members of the UCSA for advice, etc? (no, somewhat, yes, very)
7. Would you be interested in continuing to be a part of some sort of Great Lakes city practitioner network?
8. Did you find workshops effective in fostering conversations/collaborations between cities?
9. Have any partnerships/collaborations resulted from a GLAA-C workshop? (inter-office/municipality or with external partners)
10. Do you intend on using the Cities Impacts and Adaptation Tool or have you already? Why? Climate data, finding peer cities? Adaptation strategies?
11. Consistency of expectations: was it clear/consistent to you what was expected throughout GLAA-C project?
12. Comparison of personal expectations related to end results/outcomes: Did process fall short, match up, exceed?
13. Length of overall project timeline compared to utility of outcomes (quick, just right, longer than expected)
14. Do you trust/rely on GLAA-C provided climate science resources?
15. Do you trust/rely on GLAA-C provided adaptation resources?
16. Did you feel your participation contributed to the overall GLAA-C goals?
17. Did you feel your participation was worthwhile for your own purposes?
18. Did you feel the overall method (IA, iterative process, etc.) was appropriate/useful?
19. Did GLAA-C create social capital around adaptation in your city?
20. Did GLAA-C create political capital around adaptation in your city?
21. Did GLAA-C create creative capital around adaptation in your city?
22. Is the GLAA-C process replicable?
23. Is the GLAA-C process scalable?

Appendix B: Interview Questions Continued

FACULTY RESEARCHER INTERVIEW QUESTIONS

1. Did GLAA-C provide the resources/support do practitioners they needed to improve adaptation efforts & decision making at city level? Did GLAA-C fall short? What are the gaps?
2. Did the UCSA meet its intended purposes/how it was envisioned? If yes, how; If not, how not?
3. Consistency of expectations: was it clear/consistent to you what was expected throughout GLAA-C project?
4. Comparison of personal expectations related to end results/outcomes: Did process fall short, match up, exceed?
5. Length of overall project timeline compared to utility of outcomes (quick, just right, longer than expected)
6. Cost of GLAA-C project compared to utility of outcomes (cheaper than expected, just right, too expensive?
7. Was compensation received sufficient for work that was expected of you?
8. Did GLAA-C process engage cities from different geographic and socioeconomic/demographic conditions?
9. Do project outcomes represent a diversity of climate change impacts and adaptation efforts from across the region?

STAFF INTERVIEW QUESTIONS

1. How useful has GLAA-C resources/support been to you in relation to adaptation planning/decision making in your city (not very, somewhat, very)
2. How useful were the small grant project outcomes in relation to adaptation planning/decision making in your city (not very, somewhat, very)
3. Did GLAA-C advance each city's ability to evaluate adaptation efforts?
4. Were practitioners able to leverage GLAA-C support to garner other/outside support (funding or otherwise)?
5. How do these relate to what GLAA-C aimed to do? (Did GLAA-C fall short? What are the gaps?)
6. Did the UCSA meet the its intended purposes? If yes, how; If not, how not?
7. Length of overall project timeline compared to utility of outcomes (quick, just right, longer than expected)
8. Small grant timeline: too short, just right, too long?
9. Cost of GLAA-C project compared to utility of outcomes (cheaper than expected, just right, too expensive)?
10. Did GLAA-C process engage cities from different geographic and socioeconomic/demographic conditions?
11. Do project outcomes represent a diversity of climate change impacts and adaptation efforts from across the region?
12. Do project outcomes represent a diversity of climate change impacts and adaptation efforts from across the region?
13. Do stakeholders trust/rely on GLAA-C provided climate science resources?
14. Did stakeholders feel their participation contributed to the overall GLAA-C goals?
15. Did stakeholders feel their participation was worthwhile for their own purposes?
16. Did stakeholders feel the overall method (IA, iterative process, etc) was appropriate/useful?
17. Did GLAA-C create social/political/creative capital around adaptation in participating cities
18. Is the GLAA-C process replicable/scalable?

Appendix C: City Practitioner Survey Results

The below results are from a survey that was sent out the 6 teams of city practitioners the GLAA-C project engaged. Seven respondents began and completed the survey with results included below. In addition to the below questions, there were opportunities for respondents to add comments. These are included in the evaluation report when and where applicable.

Since you began working with GLAA-C, how often (on average) do you:	Less than once a year	A few times a year	Once a month	Once a week	Daily	Total Responses
Refer to data or information GLAA-C/GLISA has provided in documents or educational/promotional materials?	0	2	3	2	0	7
Refer to data or information GLAA-C/GLISA has provided in discussions, presentations, or meetings?	0	2	1	3	1	7
Contact GLAA-C/GLISA staff for climate information or resources?	2	2	3	0	0	7
Contact GLAA-C/GLISA staff for adaptation information or resources?	1	3	3	0	0	7

How would your rank the following resources in furthering adaptation planning and/or decision making efforts in your city:	Not At All Useful	Not Very Useful	Somewhat Useful	Useful	Very Useful	Total Responses
GLAA-C/GLISA staff expertise and support	0	0	1	0	6	7
GLAA-C/GLISA climate data and information	0	0	1	1	5	7
In-person workshops and conferences	0	0	2	0	5	7
Online decision support tools	0	1	4	0	2	7
Small grant project funding	0	0	0	1	6	7

Was your city able to leverage GLAA-C support to garner other/outside support (funding or otherwise)?	
Yes	6
No	1

Appendix D: General Public Survey

The below results are from the General Public Survey that was sent out as part of U-M Climate Center Newsletter. As such, not everyone who took the survey was directly involved in the project. 44 people began the survey and 33 finished the survey. In addition to the below questions, there were opportunities for respondents to add comments. These are included in the evaluation report when and where applicable.

Since engaging with GLAA-C, how often (on average) do you:	Less than once a year	A few times a year	Once a month	Once a week	Daily	Total Responses
Refer to data or information GLAA-C has provided in documents or educational/promotional materials?	5	16	6	2	2	31
Refer to data or information GLAA-C has provided in discussions, presentations, or meetings?	6	15	7	1	2	31
Contact GLAA-C staff for climate information or resources?	14	11	3	1	2	31
Contact GLAA-C staff for adaptation information or resources?	12	11	6	0	2	31

How useful do you find the following resources in supporting your climate adaptation work?	Not At All Useful	Not Very Useful	Somewhat Useful	Useful	Very Useful	Total Responses
GLAA-C staff expertise and support	1	2	3	10	11	27
GLAA-C climate data and information	1	1	5	8	10	25
In-person workshops and conferences	1	2	1	9	14	27
Online decision support tools	2	3	6	11	4	26

How has your understanding of the following topics changed, if at all, since engaging with GLAA-C?	Same Understanding	Slightly Better Understanding	Moderately Better Understanding	Better Understanding	Much Better Understanding	Total Responses
Regional impacts of climate change	4	2	8	8	7	29
Meaning of climate adaptation	5	1	6	12	5	29

Appendix E: List of Publications and Engagements

PUBLICATIONS:

- Bush, KF, Fossani, CL, Li, S, Mukherjee, B, Gronlund, CJ, O'Neill, MS. 2014. Extreme Precipitation and Beach Closures in the Great Lakes Region: Evaluating Risk among the Elderly. Int. J. Environ. Res. Public Health 2014, 11, 2014-2032; doi:10.3390/ijerph110202014

- Conlon KC, Sampson N, Rommel R, Jacquez G, O'Neill MS. Internet-Based Heat Evaluation and Assessment Tool (I-HEAT): Development of a Novel Visualization and Decision-support Tool for Extreme Heat Preparedness in Detroit, Michigan. Michigan Journal of Sustainability. 2014;2(DOI: http://dx.doi.org/10.3998/mjs.12333712.0002.007)

- Grace, A., E. Gibbons, and J. Callewaert. 2015. "Moving Urban Adaptation Forward in the Great Lakes Region: Lessons Learned from the Great Lakes Adaptation Assessment for Cities." Michigan Journal of Sustainability.

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ENGAGEMENTS:

Title of Event	Location	Date	Total participants (estimates)	Role
Project scoping meeting	Ann Arbor, MI	11/2010	40	Organizer/presenter/facilitator
Forwarding Adaptation in the Great Lakes conference	Ann Arbor, MI	11/7-11/9/2012	80	Co-organizer/presenter/facilitator
Sustainable Ann Arbor Forum	Ann Arbor, MI	1/9/2013	30	Presenter
Saint Paul Climate Resilience Workshop	Saint Paul, MN	5/21/2013	30	Co-organizer/presenter/facilitator
Twin Cities Climate Adaptation Meeting	Saint Paul, MN	5/22/2013	30	Co-organizer/presenter/facilitator
Minneapolis Climate Vulnerability Workshop	Minneapolis, MN	5/23/2013	30	Co-organizer/presenter/facilitator
Dayton Climate Change and Resiliency Workshop	Dayton, OH	6/5/2013	80	Co-organizer/presenter/facilitator
Ann Arbor Climate Adaptation Workshop	Ann Arbor, MI	9/24/2013	40	Co-organizer/presenter/facilitator
Preparing Stormwater Systems for Climate Change	Monroe, MI	10/10/2013	60	Co-organizer/presenter/facilitator

Urban Council on Sustainability and Adaptation	Ann Arbor, MI	11/8/2013	12	Organizer/facilitator
GLISA Symposium	Ann Arbor, MI	11/1/2013	100	Presenter
Ann Arbor Sustainability Townhall	Ann Arbor, MI	11/1/2013	60	Presenter
Flint Climate Adaptation Workshop	Flint, MI	2/18/2014	75	Co-organizer/presenter/facilitator
Adaptation in the Great Lakes Region Conference	Ann Arbor, MI	6/24-26/2014	175	Organizer/presenter/facilitator
Climate Preparedeness and Resilience in Northwestern Ohio	Toledo, OH	6/30/2014	57	Presenter
Kingston Adaptation Conference	Kingston, ON	9/1/2013	12	Presenter
Moving Climate Change Adaptation Forward: Key Lessons from GLAA-C	Webinar	10/7/2014	20	Presenter
New Partners for Smart Growth Conference	Baltimore, MD	1/30/2015	25	Presenter
American Planning Association National Conference	Seattle, WA	4/18/2015	Multiple sessions	Session organizer/presenter
Columbus Climate Working Group Meeting	Columbus, OH	4/29/2015	40	Co-organizer/presenter/facilitator
National Adaptation Forum	St. Louis, MO	5/12/2015	Multiple sessions	Session organizer/presenter
Climate Adaptation Writeshop	Ann Arbor, MI	10/23-24)2015	10	Organizer/presenter/facilitator

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The Great Lakes Adaptation Assessment for Cities increased understanding about the challenges and opportunities municipalities face when adapting to climate change. This effort was supported by the Kresge Foundation, and the University of Michigan's Graham Sustainability Institute which helped support the teams of scientists, decision-makers, and stakeholders to collectively define problems, include diverse perspectives, and analyze options for making positive change.

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