Climate Adaptation and Resilience – Project Summary

Submitted to the International Joint Commission by the Great Lakes Water Quality Board

September 2019

Over the course of the Water Quality Board's FY 2018-2019 work plan the Emerging Issues Work Group continued its exploration on ways to advance leadership and action toward binational cooperation on climate adaptation and resilience strategies. Our particular focus has been on approaches that can protect Great Lakes water quality in a rapidly changing climate. As a reminder, in the fall of 2016 we submitted three recommendations to the commission.

1. The Federal Governments of Canada and the United States should demonstrate global leadership by jointly developing, in cooperation with other governments and organizations across the Great Lakes basin, a Binational Approach to Climate Change Adaptation and Resilience in the Great Lakes. Such an approach would include a shared vision, coordinated action, creation of a network to share science, information and knowledge, including Métis, First Nations and Tribal traditional ecological knowledge if offered, and the commitment of adequate funding to carry out these objectives.
2. Investments in research, information sharing and knowledge management are needed to carry out a Vulnerability Assessment, to engage stakeholders and rights holders, and to identify priorities for responsive actions in the Great Lakes region.
3. The creation of a staff-supported Network of Networks (or augmentation of an existing network) to collect, aggregate and share information that can support climate adaptation response strategies at federal, regional, state/provincial, and local scales.

At this juncture, we recommend expanding on the original recommendation #3 above to also include tribes, First Nations and Métis in the proposed network.

The Commissioners included our first two recommendations in the 2017 Triennial Assessment of Progress (TAP) report. To the best of our knowledge, neither of the Parties has since engaged in a process to advance the scale of cooperation and coordination between the two governments on climate adaptation and resilience. We continue to believe that bi-national coordination and leadership is essential to a cohesive strategy for water quality protection in the Great Lakes.

Our recent work included hosting a workshop at the Latornell Conservation Symposium on November 15, 2018, that presented the findings that led to our previous recommendation and sought feedback and guidance on ways to move forward. We also were scheduled to present a workshop at the annual Healing Our Waters (HOW) Great Lakes Conference originally scheduled for October 18, 2018 in Detroit, MI. These workshops were designed to engage leaders in both nations in a deeper conversation about next steps. To our regret, the HOW conference was cancelled on short notice, and re-scheduled for dates that were beyond the budget-year of our project, and which also conflicted with the dates for the

204th Great Lakes Water Quality Board meeting. We did make an effort to capture responses from U.S. leaders to the same questions discussed at the Latornell workshop, but response was low from our electronic survey of HOW contacts. Even so, the findings from the workshop and those who did respond to the survey provide useful guidance going forward.

Participants identified the following as the most important areas for research related to climate change impacts and the strategies to address them in the Great Lakes:

- Storm water and runoff
- Habitat
- Biodiversity
- Safe drinking water
- Effects related to warming lake waters

Additional topics of concern included:

- Invasive species, species migration and water supply.

For bi-national coordination, watershed-scale planning (for resilience and adaptive capacity) was identified as the top priority for coordination at the local and watershed-scale. As noted in our previous work, if local and watershed-scale planning was part of a larger, bi-national ecosystem-level strategy for the Great Lakes, it would support both local solutions, and potentially address system-wide, or lake-wide challenges at the same time.

Participants identified priorities within watershed-scale planning. In priority order these were:

1. Agricultural practices
2. Storm water practices
3. Emergency preparedness
4. Coastal protection

These are all locally important needs, but also system-wide needs. Instead of isolated local efforts that may or may not comprise an adequate response to overall Great Lakes health, coordination across the basin offers the potential for additive and synergistic gains. With evidence of the rapid pace and the growing scale of climate disruption in the region, the need for planning and action is becoming even more urgent. Failing to work together has the potential to waste both time and resources, potentially produce counterproductive strategies, and further isolate communities with limited resources for planning and adaptation activities from those that have capacity to respond. None of these outcomes is in our best interest as people of the Great Lakes region, nor is it in the interest of the Great Lakes as a living system.

In this spirt, the Water Quality Board urges the IJC to again impress upon the Parties the urgent nature of developing a regional anticipatory and responsive approach to coordinate strategies for climate resilience and adaptation. This will optimize our chances to safeguard the water quality of the Great

Lakes upon which millions of people and the health of the lake ecosystems depend. The threats from warming waters, extreme weather, extreme fluctuations in lake levels, changing wind patterns, and negative synergies with invasive species are clear. Our nations need to act, and acting together will better serve the lakes, than acting in isolation.

Further, we stress these observations.

1. **We must accelerate strategies to address nutrient pollution from land-based sources**. Current best practices to control nutrient loadings and runoff are insufficient now and will be even less so in the future in large agricultural watersheds that are vulnerable to the increased runoff from extreme storms.
2. **Flooding** threatens human lives and property, and water infrastructure. Depending on what gets inundated, and the intensity and duration of the flooding event, floods can flush a wide range of pollutants into Great Lakes tributaries and near-shore waters. These pollutants may include nutrients, bacteria, pathogens, chemicals from industrial sites or exposed legacy contamination sites, debris, street oils and greases, suspended solids, etc., and can also disrupt, degrade or destroy habitat and threaten drinking water supplies.
3. **Extreme weather and warming waters in the Great Lakes region is a direct threat to both drinking water quality and habitat**.
4. Beyond emergency response capacity, **few communities have a long-term emergency *prevention* strategy**, and resources or regulatory incentives to compel precautionary planning are limited.
5. **Few communities in the Great Lakes region have the resources** (staffing or technical) **to rapidly scale-up responsive strategies** such as green infrastructure, wetland protection and restoration, re-location of flood prone homes or businesses, etc.
6. **Costs of disruptive climate events are often disproportionately borne** by communities in high-risk areas, those with little capacity to reduce risk, or those whose culture and sustenance is grounded in specific landscapes, including indigenous peoples, communities of color, and low income communities.

Areas of need for coordination**:**

- **Tools and technical assistance** in hydrology, risk assessment and watershed planning and management.
- **Protocols and criteria for setting priorities** for building resilience capacity, including an understanding of how and where investments in coastal, riparian, and headwater wetlands protection may provide significant buffering capacity for extreme events.
- Once again, a **climate change vulnerability assessment** for the Great Lakes would be a valuable tool in assessing risk, and establishing priorities for coordination (as well as identifying which opportunities and needs may best be addressed locally.)
- **We need to identify the vanguard of leadership** in this arena to **1) facilitate collaboration and strategy development**, and **2) identify where there may be emerging models that can help other communities.** Examples of leadership include the Clinton River Watershed and its

sophisticated hydrological analysis, resilience planning initiated by the Bad River Tribe and the Saginaw- Chippewa Tribe in response to significant flooding events, and the Milwaukee Metropolitan Sewerage District's watershed protection and green infrastructure efforts.

- **New "best" as well as "promising" practices need to be identified** to provide guidance for planners, local governments and regulatory agencies on practices that can improve resilience to extreme weather, lake level fluctuations, and warming water that can safeguard water quality. While these may be "best guesses" based on current impacts and expected trends, communities and watershed managers need guidance for decision-making, especially with limited resources. We welcome and encourage input from the Science Advisory Board, the International Association of Great Lakes Research (IAGLR) and others who may be able to develop this guidance.

The IJC has a unique role and can serve as a key convener to support and facilitate binational dialog and should do so.

- Whether through funding new projects for the Agreement Advisory Boards, the Great Lakes Regional Office or a special project, we urge the Commission to use the IJC's convening capacity to bring together leadership in the Great Lakes region to advance strategies. The research community is ahead of most other sectors in this arena, but regulatory agencies, policy-making bodies, local governments, nonprofit/NGOs and the private sector must all play a critical role in designing and implementing on-the-ground and in-the-water practices.

The summary report from the workshop and survey are attached for reference.

Climate Change Adaption and Resilience in the Great Lakes Basin Workshop: Latornell Conservation Symposium

November 15, 2018 Workshop - Summary Report

DATE OF SUBMISSION:

January 17, 2019

SUBMITTED TO:

John Wilson
International Joint Commission
100 Ouellette Ave., 8th Floor
Windsor, ON N9A 6T3

PREPARED BY:

Stratos Inc.
1404-1 Nicholas Street
Ottawa, Ontario
K1N 7B7
Tel: 613 241 1001
www.stratos-sts.com

Strategies to Sustainability

Our Vision

A healthy planet. An equitable world. A sustainable future.

Our Mission

We work together to empower organizations to take real steps towards sustainability.

Stratos runs its business in an environmentally and socially sustainable way, one that contributes to the well-being of our stakeholders – clients, employees and the communities in which we operate. Reflecting this commitment, we have an active Corporate Social Responsibility program. For more information about our commitments and initiatives, please visit our Web page: http://www.stratos-sts.com/aboutus/csr.html

We encourage you to print on recycled paper. Stratos uses 100% post-consumer content recycled paper.

Table of Contents

Overview **1**

Great Lakes Water Quality Board Presentation: Summary **1**

Survey Results **2**

Next Steps **6**

Appendix A – Survey Questions **7**

Overview

On November 15, 2018, the Emerging Issues Work Group (EIWG) of the International Joint Commission's (IJC) Great Lakes Water Quality Board (GLWQB) hosted a 75-minute session at the Latornell Conservation Symposium in Alliston, Ontario.

The session was designed to gather input from workshop participants that could inform the proposed recommendation that Canada and the United States could play a global leadership role developing a binational approach to climate change adaptation and resilience in the Great Lakes.

At the session, representatives from the IJC's GLWQB delivered an initial presentation followed by a question and answer period, after which targeted participant input was gathered through a combination of electronic polling, handwritten responses, and facilitated discussion. This report provides a summary of the workshop, with particular emphasis on the survey results.

Specifically, the session's objectives were articulated as follows:

- To identify specific needs and mechanisms for binational communication and coordination related to Great Lakes climate adaptation and resilience

- To identify the type of leadership needed, including key participant agencies and organizations in the "network of networks" concept recommended in the Board's previous work as well as operational models and priority needs for coordination, and

- To assess current capacities to move forward on communication and coordination and resource needs.

The session was attended by approximately 40 delegates from the Latornell Conservation Symposium, and was moderated by Barb Sweazey, from Stratos Inc.

Great Lakes Water Quality Board Presentation: Summary

Opening remarks to participants were initially offered by Christopher Hilkene, of the Emerging Issues Working Group. Following this welcome, Sandra Cooper (also of the Emerging Issues Working Group) joined Mr. Hilkene in delivering a presentation on the findings and recommendations from the Board's 2016 work related to developing climate change resilience and adaptation strategies for addressing water quality issues in the Great Lakes. The presenters highlighted that there is currently no binational adaptation or resilience plan in place for the Great Lakes, and that existing polices and strategies to protect the region's water supply may be inadequate to address the challenge of climate change. Key issues in need of a coordinated approach were identified, including storm-water management, nutrient pollution, shoreline erosion, and wetland loss.

As a result of these findings, the GLWQB recommended that the IJC advise the governments of United States and Canada to pursue a binational approach to climate change adaptation and resilience for the Great Lakes, including the development of a shared vision, coordinated action, and funding. The Board also recommended that the governments of Canada and the United States conduct a vulnerability assessment to better understand potential threats from climate change to the water quality of the Great Lakes overall, to coastal communities, to commerce, and to public health. This assessment, the Board emphasized, should be conducted at a scale that would be useful to communities and local decision-makers.

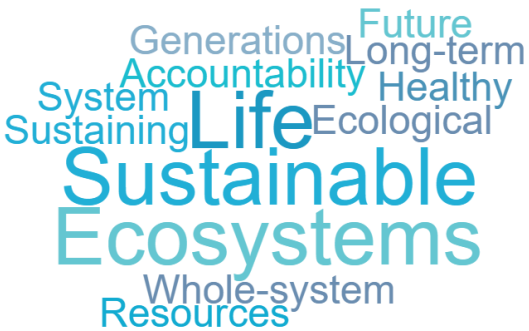
Following the presentation, one of the participants queried whether a communications plan is part of the recommended path forward. Board members acknowledged the importance of developing a communications plan to support the development of a binational approach, including ongoing communications, engagement and education with partners and stakeholders, beyond federal governments, including Provinces, States, First Nations, Metis, and Tribal governments. The Board representatives also noted that there is a plan to facilitate online surveys to gather additional input and advice on the concept of developing a binational approach to climate change adaptation and resilience in the Great Lakes.

Survey Results

The following section of the report presents the results generated for each question in the survey (refer to Appendix a for a copy of the questions). It should be noted that the participant input was gathered through a combination of electronic polling, handwritten responses, and facilitated discussion.

Meaning of water quality protection in the Great Lakes context

In the first survey question, participants indicated, in a couple of words or phrases, what 'protection of water quality' in the context of climate change adaption and resilience in the Great Lakes meant to them. The following word cloud represents some of the key phrases and terms that participants shared:



Areas of research most important in a binational approach

Participants were asked (in questions 2 and 3) to identify those areas of research on climate adaptation and resilience (as it relates to Great Lake water quality) that are most important for binational coordination. Drawing from a list of options provided in Question 2, participants **ranked** the following topics as the most important research priorities:

- Stormwater / run-off
- Habitats
- Biodiversity
- Safe drinking water, and
- Warming lake water.

When prompted to identify any **additional topics** that could be important research areas (question 3), participants offered the following suggestions:

- Invasive species
- Migration of species, and
- Water supply.

Coordination of activities at the local and watershed-scale

Participants were asked (in question 4) to rank which activities were the most important for coordination at the local and watershed-scale, in order to ensure resilience in the face of a changing climate and ensure that the water quality in the Great Lakes could continue to support a healthy ecosystem. Overall, participants indicated in their survey results and in related discussion that **watershed-scale planning should be top priority** for coordination efforts. One comment noted, however, that watershed-scale planning in general, if done correctly, should cover all of the other activities or factors that were identified as survey options.

With this in mind, the other activities were ranked and are **listed here in priority order**, as identified by participants:

- Agricultural practices
- Stormwater practices
- Emergency preparedness, and
- Coastal protection.

When prompted to identify **additional local and watershed scale activities** not mentioned in the survey (question 5), participants suggested several other activities including:

- Reduction of habitat loss
- Public engagement
- Protection of wastewater and drinking water infrastructure systems
- Large-scale water withdrawal
- Planning for ecological networks, particularly in connecting watersheds to the shoreline
- Monitoring industry standards and practices, and
- Regulating development.

Institutions and partnerships to foster binational coordination

When asked what institution or partnerships would be best placed to foster binational coordination (question 6) on water quality and climate change adaptation and resilience in the Great Lakes, participants identified the following groups:

- Parks Canada
- IJC
- Great Lakes-St. Lawrence River Adaptive Management (GLAM) Committee
- Working Group for COASTAL Act Support (WG/CAS)
- Great Lakes and St. Lawrence Cities Initiative
- Lakewide Action and Management Plans (LAMPs)
- Conservation Ontario
- Universities, and
- Non-governmental organizations (NGOs)

Participants noted that cooperation and shared research projects with universities and non-governmental organizations would be a useful way to engage with research that is outside of the normal boundaries of government priorities.

Opportunities for early action

Participants were asked to identify opportunities for early action (question 7), or potential 'quick-wins' that could be undertaken. Several suggestions emerged, as noted below:

- **Education**: The importance of early action in education was noted multiple times, particularly public engagement as it relates to better understanding science and the issues facing the Great Lakes. Several participants noted the importance of integrating more information about this issue into childhood education, for jurisdictions within the basin.
- **Best Management Practices for Farming**: Another suggestion for early action that was offered was to advocate for increased funding, education and communications support for farming Best Management Practices within the basin, to address the issue of run-off.
- **Communications**: The importance of clear communication as an opportunity for a 'quick-win' was noted, specifically related to public service announcements and replacing jargon with common language. On the communications front, increasing collaboration and information sharing on new technologies and approaches, including climate modelling, was also offered as an opportunity for future action. Participants noted that increasing information sharing and transparency on ongoing research and implementation activities could also help reduce duplication of efforts.
- **Low Impact Development**: Some participants suggested that taking a Low Impact Development (LID) approach to new developments, particularly in regard to establishing standards and protecting the ecosystems along shorelines, was another opportunity for early action.

Current demonstrations of leadership

When asked to identify leaders in the space of improving climate change adaptation and resilience in the Great Lakes region (question 8), particularly as it relates to water quality, several suggestions were offered:

- International Association for Great Lakes Research (IAGLR)
- Ouranos (Quebec's innovation cluster and consultation forum on climate change adaptation)
- Toronto and Region Conservation Authority (TRCA)
- Ontario Climate Consortium
- Credit Valley Conservation (CVC)
- Graham Saul's 2018 Metcalf Innovation Fellowship paper
- Great Lakes and St. Lawrence Cities Initiative
- COASTAL Act Support
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
- Indigenous peoples, and
- Region of Peel Office of Climate Change and Energy Management.

Specifically, participants identified that Toronto Region Conservation Authority (TRCA) and the Ontario Climate Consortium have demonstrated leadership in conducting vulnerability studies for agriculture and natural heritage. It was noted that Credit Valley Conservation (CVC) was also conducting a vulnerability study for water systems.

IJC support to a binational approach

Participants were asked to think about how the IJC could most effectively contribute its support to a binational approach (question 9), and rank in order the pre-determined contributions listed in the survey. Drawing from the list of options provided in Question 9, participants **ranked** the following topics as the most important ways for the IJC to support:

- Providing recommendations to governments
- Supporting a "network of networks" of organizations, agencies and researchers already engaged in this area
- Convening groups from around the Great Lakes Basin, and
- Assisting in binational coordination

In addition to the pre-populated recommendations, participants offered **additional ways** the IJC could support a binational approach (question 10), including through:

- **Education**: Participants noted that sharing climate data on the Great Lakes region and creating educational material packages, particularly to engage university students, would be an important way for the IJC to contribute.
- **Communications**: Participants indicated that creating a communications plan, focused on communicating the local impacts of climate change, would be a useful contribution. Products to help communicators share information effectively, such as templates and material for local advocacy groups and municipalities, were also suggested.
- **Information sharing:** Participants also believed that IJC could contribute by sharing information and offering policy advice. It was noted that the IJC could compare and contrast research methodologies and policies.
- **Implementation action plans**: It was noted that IJC may also be able to help move forward implementation action plans around the basin, and monitor progress on these plans.

Municipal and Conservation Authority participation

In the last question of the survey, participants were invited to identify what municipalities or conservation authorities most need to enable their participation in a binational approach to climate change resilience and adaptation in the Great Lakes, in relation to water quality.

Most participants identified **funding** as the greatest need, specifically noting that increased funding would enable the other two issues identified in the survey, **capacity** and **education**, to also be effectively addressed.

Participants also noted that **consistency from government**, in terms of policy direction and political support, would also go a long way to empower municipalities and conservation authorities to contribute to a binational approach.

Next Steps

Closing the workshop, Sandra Cooper (from the Emerging Issues Working Group) thanked the participants for the productive discussion and the wealth of information that emerged from it. She reiterated the importance of reaching out to federal, state, provincial, and local decision-makers and advocating for the support of policies and funding that advances cooperation and coordination, such as the recommended climate vulnerability assessment.

As next steps, the Emerging Issues Working Group is planning to use the information gathered from the session to inform and refine further work on this issue. This will include a further survey of key agencies and organizations in the United States and Canada that could play a role in shaping and informing the strategies discussed here. The Working Group will also be holding a final webinar to wrap up the project and present all of their findings from the past two years. A final report will be developed and presented to the full WQB and ultimately the IJC. It is expected that this work will be completed by March of 2019.

Appendix A – Survey Questions

1. **Warm up question:** What does protection of water quality, in the context of climate change adaption and resilience, in the Great Lakes mean to you? (in one - two words please!)
    a. Participants can type in short one-word answers and a "word cloud" will generate as ideas are entered (this will help their "comfort level" with the tool, and will be a good warm up)

2. What **areas of research** on climate adaptation and resilience (as it relates to Great Lake water quality) are most important for binational coordination? (Please upvote your **top 3**).
    a. Habitat
    b. Biodiversity
    c. Water supply / Hydrological systems
    d. Safe drinking water
    e. Stormwater / run-off
    f. Algal blooms
    g. Local flooding
    h. Warming lake water

3. What **other areas of research** are you aware of that are important for binational coordination?
    a. Participants can their list answers directly

4. What **activities at the local/watershed-scale** are most important to **coordinate** to ensure resilience in the face of a changing climate, such that we can maintain a level of water quality in the Great Lakes supportive of ecosystem health?
    a. Stormwater practices
    b. Coastal protection (e.g. in response to extreme fluctuations in lake levels)
    c. Agricultural practices (e.g. manure management, cover crops, etc.)
    d. Emergency preparedness
    e. Watershed-scale planning

5. What **other local activities** should be **coordinated across the Basin?**
    a. Participants can their list answers directly

6. What **institutions or partnerships** are best positioned to **foster binational coordination** as it relates to water quality and climate adaptation and resilience in the Great lakes?
    a. Participants can their list answers directly

7. What opportunities are there for **early action**? What are some of the **quick wins** that could be undertaken?
    a. Participants can their list answers directly

8. **Who** is showing **leadership** that we can learn from, as a binational approach emerges? How?
    a. Participants can their list answers directly

9. The **IJC can offer support** to a binational approach. How do you think the IJC could most effectively contribute its support? (Please rank in order).
    a. Supporting a “network of networks” of organizations, agencies and researchers already engaged in this area
    b. Assisting in binational coordination
    c. Providing recommendations to governments
    d. Convening groups from around the Great Lakes Basin

10. What **other support could the IJC offer?**
    a. Participants can their list answers directly

11. What one area should the **IJC focus on** in supporting binational climate efforts in the **next six months**?
    a. Participants can their list answers directly

12. What support do you think **municipalities / conservation authorities** need most to enable their participation in a binational approach to climate change resilience and adaptation in the Great Lakes, relating to water quality? (Please rank in order).
    a. Funding
    b. Capacity (human resources, technical and other expertise)
    c. Education / knowledge / tools

Great Lakes Water Quality Board
Emerging Issues Work Group

Climate Change Adaptation and Resilience in the Great Lakes Basin

Survey of Healing Our Waters Coalition Membership Summary

Introduction

As a follow-up to a previous engagement session held in November 2018, the Great Lakes Water Quality Board – Emerging Issues Workgroup (EIWG) conducted an online survey of additional Great Lakes leadership, targeting Healing Our Waters (HOW) Coalition membership.

The objectives of the survey were to:

1. Identify specific needs and mechanisms for binational communication and coordination related to Great Lakes climate adaptation and resilience.
2. Identify the type of leadership needed, including key participant agencies and organizations in the network of networks concept recommended in the board's previous work as well as operational models and priority needs for coordination, and
3. Assess current capacities to move forward on communication and coordination and resource needs.

The survey utilized the same questions that were asked of participants of the EIWG's Engagement Workshop that was held as part of the Latornell Conversation Symposium. A summary of that workshop was prepared by Statros Inc., includes the questions used as part of this survey (Appendix A) and can be accessed by clicking here.

Survey Results

An email invitation was sent to HOW membership on behalf of the EIWG on March 21st, 2019 and provided a brief summary of the purpose and objectives of the survey, as well as a link to the survey itself. Potential participants were asked to complete the survey by April 12, 2019.

A total of 8 participants responded to the work group's request to complete the survey. The majority of the participants were from the United States and their involvement with the Great Lakes was primarily through Non-Profit Organizations and local government.

While the response from participants represents a very small sample size and was not what the EIWG expected, the following is a summary of the survey results which may be useful in supporting the findings from the other engagement session held by the EIWG.

Meaning of water quality protection in the Great Lakes context

In the first survey question, participants indicated, in a couple of words or phrases, what 'protection of water quality' in the context of climate change adaption and resilience in the Great Lakes meant to them. The following is a list of the key phrases and terms that participants shared:

1 Social and environmental sustainability, community defined, equitable approaches, adaptive solutions.
2 Life, Essential to the survival of all living beings
3 Critical
4 Warmer temps will impact cold water streams
5 Eliminating Combined Sewer Overflows (CSOs) and preventing pollution of stormwater runoff
6 Pollution prevention
7 Prevent catastrophic erosion
8 More rain

Areas of research most important in a binational approach

Participants were asked to identify those areas of research on climate adaptation and resilience (as it relates to Great Lake water quality) that are most important for binational coordination. Drawing from a list of options provided in the question, participants ranked the following topics as the most important research priorities:

- Stormwater/Run-off
- Safe drinking water
- Biodiversity

Additional topics that could be important research areas were identified as:

- Great Lakes Blue Economy (tourism, outdoor recreation, etc.)
- Invasive species

Binational coordination of activities at the local and watershed-scale

Participants were asked to rank which activities were the most important for coordination at the local and watershed-scale, in order to ensure resilience in the face of a changing climate and ensure that the water quality in the Great Lakes could continue to support a healthy ecosystem. Overall, participants indicated in their survey results that **watershed-scale planning and agricultural practices should be top priorities** for coordination efforts.

With this in mind, the other activities were ranked and are listed here in priority order, as identified by participants:

- Stormwater practices
- Coastal protection (e.g. in response to extreme fluctuations in lake levels)
- Emergency preparedness

When prompted to identify additional local and watershed scale activities not mentioned in the survey , participants suggested several other activities including:

- Community resiliency / Environmental justice
- Approaches for watershed-scale hydrologic restoration to arrest/reverse hydrologic degradation

The next question of the survey, participants were invited to identify what municipalities or conservation authorities most need to enable their participation in a binational approach to climate change resilience and adaptation in the Great Lakes, in relation to water quality.

Most participants identified **funding** as the greatest need, followed by **capacity (human resources, technical and other expertise)**, and **education/knowledge/tools**.

Institutions and partnerships to foster binational coordination

When asked what institution or partnerships would be best placed to foster binational coordination on water quality and climate change adaptation and resilience in the Great Lakes, participants identified the following groups:

1 Bi-national Mayors and County Executives Major research institutions
2 Great Lakes Network coordinated by Freshwater Future
3 IJC

Opportunities for early action

Participants were asked to identify opportunities for early action, or potential 'quick-wins' that could be undertaken. Several suggestions emerged, as noted below:

- Regulatory measures
- Wetland protection and restoration
- Green Infrastructure, specifically stormwater infrastructure

Current demonstrations of leadership

When asked to identify leaders in the space of improving climate change adaptation and resilience in the Great Lakes region, particularly as it relates to water quality, several suggestions were offered:

- City of Milwaukee and Milwaukee Metropolitan Sewerage District
- Wisconsin and Michigan governors
- NGOs
- Wisconsin Wetlands Association
- Kresge Foundation
- Great Lakes Protection Fund

IJC support to a binational approach

Participants were asked to think about how the IJC could most effectively contribute its support to a binational approach, and rank in order the pre-determined contributions listed in the survey. Drawing

from the list of options provided, participants **ranked** the following topics as the most important ways for the IJC to support:

- Supporting a “network of networks” or organizations, agencies and researchers already working in these areas
- Providing recommendations to governments
- Convening groups from around the basin
- Assisting in binational coordination