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Plan 2014: A Case Study on Shared Water Governance

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Plan 2014: A Case Study on Shared Water Governance

by

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ABSTRACT

Coastal areas of the United States are highly populated due to their richness in natural resources and economic opportunity. With this opportunity comes increasing competition for development. This places intensive strains on natural resources and land along coasts, resulting in damage to ecosystem health. In addition to competitive development, climate change poses a major threat to coastal communities as they are vulnerable to a variety of environmental factors (EPA, 2016). Many coastal communities have formed coordinated approaches to manage water levels and build resilience along shorelines. However, many of these approaches result in a variety of problems and are not always successful in flood prevention. A current example is the International Joint Commission's (IJC) Plan 2014. Since its implementation, the IJC has faced significant backlash and accusations of not serving to the best interests of shoreline communities. In this thesis, I explore Plan 2014 and assess the manner in which it is designed and implemented. This is done by performing a literature review on successful coastal management plans to develop an assessment framework. Interviews were conducted with a variety of stakeholders, ranging from IJC commissioners to shoreline residents. In addition, a Rapid Automatic Keyword Extraction was performed to understand media portrayals of the floodings and policies. It was found that the IJC did a sufficient job throughout the design and implementation stages of Plan 2014. A variety of factors such as social media misinformation, local politics, misinterpretation of science and more were identified as major deterrents to the public image of the IJC and Plan 2014. Proposed recommendations encompass priorities the IJC should take to better design and implement policy.

CHAPTER 1: INTRODUCTION

Coastal areas of the United States are highly populated due to their richness in natural resources and economic opportunity. With this opportunity comes increasing competition for development. Currently, the coasts of the U.S. generate approximately 58% of national gross domestic product through fisheries, oil drilling, tourism and other activities (EPA, 2016). Clark (1991) presents an assessment of coastal land uses and finds that there are a wide range of competing interests. Coastal land uses include residency, agriculture, industry, tourism, recreation, fishing, and more. These uses place intensive strains on natural resources and land along coasts, resulting in damage to ecosystem health. In addition to competitive development, climate change poses a major threat to coastal communities as they are vulnerable to a variety of environmental factors (EPA, 2016). A report recently published by the Union of Concerned Scientists (2018)states that because ocean levels are rising nearly 13,000 miles of coastline in the US are threatened by chronic flooding. Homes, hospitals, schools and other critical infrastructure are part of the billions of dollars of property at high risk in the coming decades. In order to start adapting to increasing sea levels and chronic flooding, the Union of Concerned Scientists stress that efforts towards coastal management are critical in a narrowing window of opportunity for resiliency (2018).

To ensure a balance of competing interests in coastal development, a unified coastal management system is necessary. Coastal zones are very complex ecosystems, encompassing a diversity of natural resources and land uses. With dynamic and unique interactions between competing interests, coastal management can prove to be difficult (Misdorp, 2011). In particular, getting the general public to a consensus on a coastal management plan can be difficult. For any

regulation or plan to be effective, it must be embraced and accepted by a majority of involved stakeholders. In this case, coastal management practices often impose restrictions on land use for private properties, upsetting residents and business owners. At the same time,Stone (2009) discusses how common issues, coastal management in this instance, can also unify people and help form organized interest groups. If done well, implementation can help mobilize communities around policymaking.

In 2017, shores of Lake Ontario were devastated by significant flooding events. The result was an investment of more than $100 million of state funds towards rebuilding communities. After tremendous efforts, these communities were slammed yet again in 2019 with historic flood levels-leading to an additional $300 million investment. Since then, an investigation and lawsuit has been launched against the IJC, the agency behind Lake Ontario's water level management plan: Plan 2014.

Despite extensive stakeholder engagement and scientific research, Plan 2014 and the IJC are still under scrutiny. Thus, in this thesis I plan to investigate Plan 14 and ask the following questions:

1. ***Despite being strong on paper, Plan 2014 still faces major public and legal opposition.***
2. ***What factors are responsible for the lack of support?***
3. ***What was the role of science in development and implementation?***

I start with a literature review that compiles information from a variety of coastal zone management plans in order to understand common issues and effective implementation strategies. Case studies including U.S. and Canada federal policies, along with several state-level policies, revealed that there are in fact common issues faced. In the literature review, not all

major issues were addressed, including lack of scientific basis in decision making, varying federal support and lack of plan assessment/adaptation. The literature review also helped define success for coastal management plans through several different assessment frameworks.

With a clearer image of what a successful coastal zone management plan entails, patched design method to investigate the evolution and current state of Plan 14, including both semi-structured interviews and secondary data analysis. Using the framework from the literature review as a guide,I will assess the efficacy of Plan 2014's development and implementation. Finally, a set of policy recommendations are proposed to address the wide opposition to Plan 2014.

CHAPTER 2: LITERATURE REVIEW

The goal of this literature review is to understand best practices in governing and implementing coastal zone management plans. By reviewing six case studies of coastal zone management plans, a common set of goals and issues were combined into a general assessment framework for future case studies.

Plan Specific Research

Integrated Coastal Zone Management

Integrated Coastal Zone Management (ICZM) is a strategy used to monitor and oversee development and other human activities that affect economic and environmental wellbeing in coastal zones (Clark 1994). As its name suggests, ICZM is a resource management plan that calls for a more holistic approach through integration. By using the informed participation and cooperation of all stakeholders, ICZM aims to balance a variety of conflicting interests ranging from environmental and economic to social and recreational objectives. The distinctive factor of the ICZM strategy is the necessary integration of various policy areas, educational objectives, and goals from all levels of administration (United Nations 1992).

Coastal Zone Management Act

When it comes to coastal management, the overarching policy guidelines for the United States originates from the National Coastal Management Program. This program was initiated by the implementation of the Coastal Zone Management Act (CZMA) of 1972. The general goal of CZMA was to implement state led initiatives for coastal management that fit certain criteria deemed necessary by the federal government for sustainable development. The program focuses

on several key elements: "(1) protecting natural resources, (2) managing development in high hazard areas, (3) giving development priority to coastal-dependent uses, (4) providing public access for recreation, (5) prioritizing water-dependent uses, and (6) coordinating state and federal actions" (NOAA, 27). These key elements address issues such as coastal development, water quality, public access, habitat protection, ocean governance and more. Rather than taking a direct control approach, the federal government called upon individual coastal states to develop their own management programs that met predetermined requirements. CZMA was entirely voluntary, but provided substantial financial incentives for states that proposed adequate programs (NOAA, 2019) such as grants to fund programs or local businesses.

While CZMA implementation was generally successful, there were setbacks. First, there were issues with the implementation of the CZMA (Lowry, 1985). By referring to a preexisting analysis framework, Lowry (1985) was able to assess the implementation process of the CZMA and create a set of prescriptions for designing coastal planning processes. Matuszeski (1985) also studied CZMA. Rather than assessing its implementation, this article delved into the interactions between federal and state governments to understand the "practical limits to a federal role in implementing state land planning and regulatory controls" (Matuszeski, 266). This perspective is critical in understanding how a coastal management program succeeds as governmental dynamics have proven to be a determining factor.

California: Coastal Conservation Act

California's Coastal Program of 1981, a development of the Coastal Conservation Act (CCA) of 1976, was initiated by public concerns around mass increases in condominium development along the California coast. The CCA formed the first California Coastal

Commission by citizen initiative, which formed tight partnerships with a majority of the sixty-seven local governments along the coastline (Fischer, 317). Fishcer (1985) takes a look at California's Coastal Program and outlines the critical components that allow the plan to be so successful. At the time the article's publication, California's program was twelve years old and endured several hundred bills that tried to dismantle it. Not only did it survive, but it thrived by providing public access to the shores and advancing sustainable development in major areas of potential-proving to be an excellent model.

North Carolina: Coastal Area Management Act

In 1974, North Carolina implemented the Coastal Area Management Act (CAMA) which has successfully built its credibility, its political support, and its capability to take on critical management needs. CAMA required all coastal counties to design and implement comprehensive plans that followed standards enforced by CZMA and adopted by one of CAMA's governing bodies: the Coastal Resources Commission (CRC). The state allowed individual counties to have creative freedom in designs as long as it met requirements. However, if a county failed to propose a program, the CRC was required to implement one for them (Owens, 323). The significant program initiatives included: comprehensive land use planning, oceanfront development management, minimum oceanfront setback, oceanfront erosion control, and nonregulatory management tools (Owens 323-326). Owens (1985) takes a similar approach to Fischer's (year) article and studies what made the program so successful. Rather than focusing on the program as a whole, Owens targeted analysis with respect to how the program was able to build regional consensus on efforts that initially sparked public opposition.

New Jersey: Coastal Area Facility Review Act and patched policies

Along with California and North Carolina, New Jersey was one of the early developers of a coastal management plan that inspired efforts for other states. Rather than designing an entirely new program, the New Jersey Department of Environmental Protection took a different approach and built upon existing policies. The Coastal Area Facility Review Act (CAFRA) of 1973 already mandated permits for coastal land uses. By patching this together with preexisting shore/erosion control legislation and several other specific permit laws, an overarching coastal planning process was formed (Kinsey, 1985). By criticizing stages of planning as well as relations between different governmental bodies, Kinsey (1985) presents five unique lessons for planning.

Great Lakes

Lawrence (1997) studies five individual management plans in New York, Pennsylvania, Michigan, Wisconsin and Ontario, Canada with respect to the Great Lakes basin. New York's Waterfront Revitalization and Coastal Resources Act (WRCA), gives the state government the legal authority to establish a coastal program as well as an option for communities to restore waterfront economies. WRCA focuses on three specific components: "(1) local waterfront revitalization programs, (2) enforcement of the policies ensuring consistency of federal and state government actions, and (3) advocacy of activities which further the coastal policies" (Lawrence, 1997). The program has seen significant success, reviewing well over 5,000 submissions for development.

Pennsylvania's coastal zone management program includes oversight of over 63 miles of shoreline on Lake Erie, primarily focusing on coastal hazards, dredging, fisheries management,

wetlands, recreation, port activities, and intergovernmental coordination. Major successes include technical and scientific assistance in response to coastal threats.

Michigan's program was a strong leader for state implemented CZMA programs in that it was the first to target specific watersheds for concentrated planning. Balancing economic development and strong environmental values, Michigan was able to influence funding at the federal level for smaller construction projects on shorelines.

Wisconsin's geography along the shores of Lakes Superior and Michigan consists of unconsolidated glacial sediments, meaning that the coasts are particularly vulnerable to erosion. Wisconsin's management plan was tailored to have a heavy focus on this issue. By capitalizing on two main strategies: citizen participation and revitalization efforts, Wisconsin has continuously strived towards wider public access to shore amenities that were previously abandoned for decades.

The Canadian shores of Ontario are regulated by the Ontario Ministry of Natural Resources (OMNR). OMNR focuses on providing municipalities with information, funding and GIS databases so that each district can carry out individual management plans. The overall provincial shoreline management program focuses on preventing threats of flooding/erosion to new development, protecting existing properties and oversight of emergency response procedures.

Canada: Eastern Scotian Shelf Integrated Management

The Eastern Scotian Shelf Integrated Management (ESSIM) plan is led by the Federal Department of Fisheries and Oceans. Its goal is to "create an effective collaborative process that provides integrated and adaptive management plans, strategies and actions for ecosystem, social,

economic, institutional sustainability"(Kearney, 2007). ESSIM consists of two major structures: the ESSIM Forum and the ESSIM Stakeholders Roundtable. The Roundtable is the leading agency on planning, composed of government and stakeholders. Similar to many of the other programs in this literature review, ESSIM has had its successes, but still needs improvement.

Lessons Learned

I compiled information on six case studies of coastal management plans. The plans studied are the (1) U.S. federal CZMA, the state implemented plans for (2) California, (3) North Carolina, and (4) New Jersey, state programs surrounding the (5) Great Lakes Basin and (6) Canada. There was abundant literature on coastal management policies, but literature is limited on governance specifically-especially for lake coasts. I also utilized four additional references that provide general critiques of different aspects of ICZM, not focused on a particular case study.

Most of the literature summarized their respective case studies and presented a set of lessons learned from each one. Across all literature, I found strong similarities in issues and lessons learned. Lessons learned fall under four main categories listed in Table 2: Program Structure, Inter-Agency Communication, Relationship Building and Personnel. There was also a variety of literature that presented alternative perspectives from the federal and state levels. Other literature includes frameworks for assessment, which have proven to be beneficial in defining success for a coastal management plan. A full breakdown of literature reviewed and explicit mention of issues can be found below in Table 1.

Challenges

Table 1: Breakdown of reviewed cases, and what major challenges were explicitly mentioned.

Location	Source	Lack of relationship between implementing agency and local planning community	Inconsistent and/or unclear boundaries for responsibility	Lack of responsiveness from targets	Lack of scientific basis in decision making	Lack of assessment /program adaptation	Varying federal support
California	Fischer (1985)	X		X		X	X
Canada	Kearney et al (2007)	X	X	X		X	X
CZMA	Lowry (1985)		X	X		X	
	Maguszeski (1985)	X	X	X		X	X
	Kitsos (1985)	X	X				X
Great Lakes	Isley, Pebbles (2009)	X	X		X		
	Lawrence (1997)	X	X	X	X	X	
	Norton,		X	X	X	X	

	Meadows (2014)						
	Morton et al (2018)		X				
New Jersey	Kinsey (1985)	X	X	X		X	X
North Carolina	Owens (1985)	X	X	X		X	

A prominent issue that arose in most of the literature I reviewed was the lack of relationships between the implementing agency and the local planning community. A great example of this was in California (Fischer 1985). Upon implementation of their coastal management plan, California anticipated the need for complex strategies to reach local communities. Because of this, they established the California Coastal Commission. The California Coastal Commission would act as a bridge between the state and local governments. However, the California Coastal Commission still failed to build strong relationships with local communities. The lack of relationship between these two key parties can lead to miscommunication and tension. The result of this in California was the failure to tailor local plans to respective geographic landscapes and economies. Pressman & Wildavsky (1979) discuss the overarching issue of disconnects between policy design and implementation. One of the biggest fragments that can occur is the failure for key actors to follow through on expectations from the design stage. With weak relationships between different governing levels, actors often

pass off tasks and do not communicate the full scope of the work. This can result in a different product than anticipated.

Inconsistent and unclear boundaries were a very common issue in the cases studies. Particularly, the Great Lakes struggled with this issue (Lawrence, 1997). Along the Great Lakes, it was incredibly difficult for target populations/governments to understand what was in their scope of responsibility. When developing management plans, local planners did not know where to draw the boundaries for their regions. In addition, there were inconsistent communications sent out regarding what was within the responsibility of local planners. This creates confusion and barriers for planners to actually design and implement plans. In some cases, this can even discourage the start of planning.

Like many policies, coastal management plans also face the challenge of getting responses from target populations (Lowry 1985; Matuszeski 1985). A great example of this was in the implementation of the CZMA. On the federal level, government officials anticipated little issues in their plan to implement state-led policies. With proper financial incentives, the federal government believed states would follow through with plan implementations. Unfortunately, this was not the case. After the first window for plan deadlines, a majority of states failed to submit plans for review. This causes the overarching policy to crumble if not addressed. Without the full cooperation of targets, policy goals can be difficult to address.

The lack of scientific basis for decision making is another grand challenge. Surprisingly, there was not much mention of this in the literature, but it was apparent along the coasts of the Great Lakes (Isley, Pebbles 2009) (Lawrence 1997) (Norton, Meadows 2014). In ICZM, the focus is so heavily put on stakeholder engagement, that policymakers often neglect to include

science in decision making (McFadden 2007). Coastal dynamics and ecology are determined by scientific processes. Without a deep understanding and consideration for these processes, the natural dynamics of coastal properties will be neglected in planning. This will create issues for future residents and stakeholders as neglect will result in consequences such as erosion, deterioration of ecological services and flooding.

Coastal management requires attention over time, it is not something that can be addressed and left alone Lowry (1985). While coastal management plans may be able to address immediate concerns, ecosystem and economic dynamics are bound to change over time. In order to address these changes, it is imperative that monitoring and adaptation be incorporated into these plans (Lawrence 1997; Norton andMeadows 2014). Failure to do so may result in a plan that is effective now, but a failure in 5-10 years.

Matuszekski and Kitsos(1985) explicitly state that varying federal support is an issue for coastal management plans. Many management plans operate on funding and incentives for certain projects to be held. As politicians cycle through at the federal level, priority for coastal issues varies significantly. It is possible that certain states will get no funding certain years, making it incredibly difficult to follow through on parts of their plans. Kingdon (2011) discusses the importance of understanding different political streams and how they influence political agendas. In order for coastal management plans to receive funding, the different political streams (problems, proposals and political streams) need to converge in order for action to take place.

Lessons

Federal implementation of CZMA, and the state driven programs of California, North Carolina and New Jersey all brought valuable lessons. A unified list of lessons that were

common in all case studies can be found in Table 2. There are four major areas of program implementation that require extra thought and attention for success: program structure, inter-agency communication, relationship building and personnel.

Table 2: Set of summarized lessons and recommendations for program implementation synthesized from previous examples of coastal management programs.

Program Structure
1. The policy and implementation process must be designed to maximize response from targets
2. The program should establish credibility early on by prioritizing recognizable conflicts
3. The program should be framed in all communications as beneficial to the affected stakeholders
Inter-agency Communication
1. The imposing governance agency must explicitly state the goal and purpose of the policy to its target
2. The imposing governance agency must carefully plan expectations of its target before implementation, to avoid convolution
3. The imposing governance agency must suggest actions to reach the desired goal
Relationship Building
1. An open rapport must be established between all the involved parties-ranging from the federal government to the general public
2. Planning processes must be actively transparent throughout the entirety of implementation
3. Increasing awareness and knowledge of processes and the reasoning behind them
Personnel
1. Those overseeing implementation must have significant managerial, technical and political skills.

2. Those overseeing implementation must be committed to the process long-term
3. Those overseeing implementation must be of the affected constituency

➢ *Program Structure*

The structure of the program being implemented plays a major role in its potential success. The way a program is designed, and the implementation process is mapped out can truly define the outcome of a policy. First, the policy and implementation process must be designed to maximize the likelihood that targets will take action. As learned from the CZMA implementation, for a program to succeed-you need your target actors to respond and act accordingly (Matuszeski, 1985). Having a streamlined process with easy submission of ideas and plans is key for getting people on board for action.

Second, the program should establish credibility early on by prioritizing recognizable conflicts. This was a clear lesson from North Carolina's success at strategic prioritization. Often, coastal management programs will face early opposition when infringement on private property rights arise. To quickly override opposition and gain public support;a program must establish initial goals that address issues of wide concern and execute solutions that are visible (Owens, 1985). While urgent issues and concerns of the imposing agency may need solutions soon, they may not be of public concern. In order for a plan to have long-term survival, the plan needs the support of the public throughout implementation. By establishing credibility and support for the imposing agency early on, success in subsequent efforts is far more likely.

Third, the program should be framed in all communications as beneficial to the affected stakeholders. When a program is introduced to a community, it is of utter importance to remind

people that the program is to support the health of surrounding ecosystems and the community as a whole. Of course, there will be certain stakeholders that may have to roll back on future development plans. However, if this is the way in which it is framed, widespread opposition is almost guaranteed. Instead, it must be phrased in a way that resonates with each member of the constituency and reminds them of the larger picture. For example, instead of telling fisheries that they need to fish less-the imposing agency could explain how fishing less now will result in higher turnouts in the long run. The second major area of focus is inter-agency communication.

➢ *Inter-agency Communication*

In many coastal management programs, it is required that a central governing body coordinates efforts among state or local governments. The imposing government agency is the one that initiates the program and sets expectations for other agencies, the targets. First, the imposing agency must explicitly state the goal and purpose of the policy to its target. A lesson of CZMA implementation is that any kind of ambiguity in overarching goals can create mass confusion among communication channels (Lowry, 1985). In coastal management, there are extensive numbers of actors and players, and it is very easy for the goal to be miscommunicated between agencies and beyond. To avoid this, the imposing agency must deliver a clear cut goal of what the program is for. Clearly defining the goal and purpose to targets can also be used as an opportunity to thoroughly educate them on all supporting factors.

Second, the imposing governance agency must carefully plan expectations of its target before implementation, to avoid convolution. In both CZMA and CCA's implementation, an initial struggle was the back and forth arguments on what the exact role of targets were

(Matuszeski 1985). For any management program to succeed, the targets must do exactly what is needed and expected by the imposing agency (Matuszeski, Fischer, 1985). With mixed messaging throughout implementation on the specific roles of certain groups, political tensions can arise easily. This leads to further barriers in effective collaboration.

Lastly, the imposing agency must suggest explicit actions to reach the desired goals. This lesson derives from the recommendation to design the program in a way that maximizes the likelihood targets will take action in responding to policy demands. The timeliness and comprehensive requirements of a suggested management plan can be met by providing suggested actions. The CRC of North Carolina recognized that a mandatory plan adoption for counties would create political tension throughout the state, so CRC made this program voluntary. However, CRC did state that if counties did not adopt a plan, one would be adopted for them (Owens, 1985). This gave counties the opportunity to create their own agendas with guidance from the CRC. Without guidance, they may have not had the time and resources to create one-leaving them with no option but to follow CRC's orders.

➢ *Relationship Building*

An evident part of successful implementation is building and maintaining healthy relationships between all stakeholders. First, an open rapport must be established between all the involved parties-ranging from the federal government to the general public. As stated before, coastal management is a complex and evolving process. There should be direct lines of communication from the public to the government agencies. Communication can include anything from education to voicing concerns. Even if there is tension, open communication lines drive relationships positively. Lipsky (1980) highlights the importance of street-level

bureaucrats, and recognizing that they represent the image of the entire government. By focusing street level bureaucrats' efforts on being personable and present in communities, the overall image of the government/policy may be better received.

Second, planning processes must be actively transparent throughout the entirety of implementation. A major deterrent to the implementation of CZMA was lack of transparency throughout the entirety of the process (Lowry, 1985). There were several stages in planning where the federal government made decisions without consultation with other parties. This reinforced the feeling that the federal government was controlling states. To avoid this conflict, any kind of change or development should be publicly available and discussed before the change is made official.

Third, increasing awareness and knowledge of processes and the reasoning behind them is incredibly time and resource consuming, but even more so necessary. Education is a component that will be required throughout the entire implementation process. Without thoroughly explaining the reasoning behind certain regulations, parties can misinterpret something and not support the program. A common understanding between all parties helps keep everyone on the same page, preventing political tension. Education proved to be a central part of CZMA, CCA, CAMA and CAFRA. (Lowry, 1985) (Fischer, 1985) (Owens, 1985) (Kinsey 1985)

➢ *Personnel*

The central component of any program that unifies the structure, inter-agency communication and relationship building is the personnel behind the operation. Careful consideration of who leads certain charges has a major role in determining the outcome of a plan.

First, those overseeing implementation must have significant managerial, technical and political skills. Carrying out an effective coastal plan is a very delicate process that requires knowledge in the policy, the community, politicians and the science or economics. Therefore, those overseeing the implementation must have critical thinking skills that can see how all of these factors influence each other. Experts in this position are better suited to make strategic decisions and provide rationale.

Second, those overseeing implementation must be committed to the process long-term. A common threat identified in all programs was the ability for them to survive long periods of time. With frequent changes in administration and personnel, the integrity of communications and relationships are lost (Matuszeski, 1985;(Fischer, 1985;(Owens, 1985;Kinsey 1985). In order to ensure long term survival, personnel that are deeply committed and attached to the program must be recruited.

Third, those overseeing implementation must be of the affected constituency. A very prominent lesson of the CAMA stemmed from the success of establishing the CRC, a citizen appointed board that led implementation. Having people from the affected community serve and advise decisions not only provided agencies with local experts, but also played a major role in putting political tensions to bed (Owens, 1985).

Discussion

Table 3: Outline of what issues are addressed by suggestions. Xs represent the intersections in which a specific goal/recommendation addresses one of the common issues faced in ICZM. The issue and recommendation names correlate directly with those in Tables 1 and 2

	Lack of Relationships	Inconsistent boundaries	Lack of Responsiveness	Lack of science	Lack of assessment/ adaptation	Varying federal support
Program Structure 1			X			
Program Structure 2						
Program Structure 3	X					
Inter-Agency Communication 1		X	X			
Inter-Agency Communication 2	X	X	X			
Inter-Agency Communication 3			X			
Relationship Building 1	X		X			
Relationship Building 2	X					
Relationship Building 3	X		X			
Personnel 1						
Personnel 2					X	
Personnel 3	X					

After reviewing the literature on the identified case studies for this review, 12 major recommendations were identified, along with 6 common issues in ICZM programs. Oddly enough, only three out of the six main issues were addressed by the overarching recommendations I identified in the literature review. As seen in table three, there were no clear strategies to address the lack of science or varying federal support behind ICZM. There was only one recommendation that addressed the lack of adaptation/assessment. The overwhelming majority of recommendations focused on addressing the lack of relationships between different acting groups, and the lack of responsiveness from targets. This was surprising, considering some of the other issues were frequently mentioned in the literature. One possibility for this is that these two issues are the most visible throughout the policy process, and can cause direct halts to development. For example, the lack of responsiveness from targets needs to be addressed before the policy can even be fully implemented. In order to have a good idea of what a successful ICZM program is, these concepts will be merged with assessment frameworks from the literature.

All reviewed papers followed a similar methodology in analyzing the implementation and quality of coastal management programs. By studying testimonies and timelines of implementation, the authors were able to pinpoint critical moments of success and/or failure However, there were three particular methods that stuck out in terms of structure and feasibility. First, Lowry (1985) introduced the assessment framework for the implementation of federal coastal policy designed by Mazmanian and Sabatier (1981) (289). The framework consisted of six specific conditions: (1) clear goals, (2) underlying causal theory, (3) structuring implementation processes, (4) commitment and skill of critical implementing officials, (5)

continued support from constituency groups and key political figures, and (6) changing socioeconomic conditions. This assessment framework played a major role in developing the set of recommended strategies and lessons of this literature review.

The second framework for analysis was found in an article pertaining to coastal management in Sweden. Although this was not applied directly to any of the programs carried out in the United States, it does offer a different approach to assessing programs. Karl Bruckmeier (2005) discusses Interdisciplinary conflict analysis and conflict mitigation in local resource management. The Swedish research program, Sustainable Coastal Zone Management (SUCOZOMA), carried out several conflict studies that combined stakeholder and conflict analysis. Bruckmeier (year, 65) summarizes it in four points: "(1) to map the stakeholders and their interests, (2) to analyse the conflicts, (3) to develop methods for conflict mitigation and cooperation with stakeholders, and (4) to integrate these components in a system for the management of natural resources." This framework is different from the one presented by Mazmanian and Sabatier (1981) in that it is far more proactive. Combined conflict and stakeholder analysis may be an essential tool for consideration in the planning stages of management policies. This, in consideration with the other literature, presents a prime opportunity for imposing agencies to work closely with targets to set up rapport before implementation begins.

Ehler (2003) presents a third assessment framework: a set of indicators to measure governance performance in integrated coastal management. Ehler's indicators are organized by phase/stage of governance performance: initiation, planning, adoption, implementation, environmental and socioeconomic outcomes, monitoring and evaluation and finally adaptation

and reformulation, allowing for a thorough assessment at any point during the policy process. Indicators include specific events that are clearly identifiable. Some examples are increased awareness of coastal issues, baseline studies completed and improvements in water quality over time.

Utilizing some of these assessment frameworks will have serious policy implications. As mentioned earlier in this review, coastal management is a complex practice that requires a lot of attention and detail over long periods of time. If policy actors take the time to consider previous lessons and definitions of success for coastal management plans, there may be more success in future plan implementations. However, this literature review also reviews that much research is still needed. As seen in table three, there are major ICZM issues that do not have a clearly defined strategy to address it. Additional research is needed to better understand how to address the lack of science, lack of assessment/adaptation and varying federal support behind coastal management plans. In addition, much of the literature I found was very outdated. In the past couple of decades, the state of governance and science has changed drastically. In addition, there are certain factors about the Plan 14 implementation process that are unique, such as the influence of social media as a tool. While there was literature found on Great lakes, there is extremely limited research on coastal management along the shores of lakes, calling for more detailed research in this area.

Conclusion

In conclusion, there have been 12 recommendations formed in the areas of program structure, inter-agency communication, relationship building and personnel. However, it is

apparent that these common recommendations do not address all of the common issues found in coastal management governance. This literature review will be used to develop an assessment framework related to the development/implementation process for Ontario's lake management plan with a particular focus on the common issues that did not have direct recommendations (lack of science, lack of adaptation and varying federal support).

CHAPTER 3: PLAN 2014 BACKGROUND

The Story of Plan 2014

Information about the dates, processes and events leading to Plan 2014 were gathered from the International Joint Commission's Lake Ontario - St. Lawrence River Plan 2014 Public Report.

Historical Context

The first piece of historic context that led to Plan 2014 was the Boundary Waters Treaty of Canada of 1909. Signed to prevent and resolve disputes over shared water by the United States and Canada, the Treaty established the International Joint Commission. Later in the century, the United States and Canada proposed a hydroelectric project to the International Joint Commission. Known as the 1952 Order of Approval, this project would serve as a means to regulate the outflow from Lake Ontario, affecting the water levels downstream on the St. Lawrence River and Lake St. Louis.

While all shores of Lake Ontario are susceptible to flooding, the south shore is more vulnerable. The south shore is more vulnerable because of hydrologic flows coming from downstream in the Great Lakes Basin (Morgan, 2003). In the early 1950s, Lake Ontario was flooded. The United States and Canadian governments requested that the IJC regulate the level of Lake Ontario for the benefits of lakeshore property owners. This led to the 1956 Order of Approval. The 1956 Order of Approval was a combination of criteria, a regulation plan and designs for controlled water levels. While the Order did take measures to lessen the flooding effects on shoreline residents, it would continue to provide no less protection for shipping and

riparian interests downstream. As this was a new project at the time, the IJC continued to establish rules in determining the outflow from Lake Ontario on a week-to-week basis. This set of rules was known as Plan 1958. The IJC made further revisions to the plan as they learned more about the hydrology of the Lake Ontario-St. Louis River System, leading to Plan 1958-A, B, C and finally D. Plan 1958-D was constructed on the basis of hydrological conditions from 1860-1954. In the late 1950s, the IJC recognized that the water was rising to unprecedented levels along the riparian shores. In 1960, the Control Board for the Moses-Saunders Dam was granted approval from the UC to deviate from Plan 1958-D to deal with high levels on Lake Ontario. In 1961, the IJC granted the Control Board discretionary authority over the Dam to make deviations from 1958-D when deemed fit. 1958-D with deviations is known as 1958-DD. 1958-DD had been the water level management plan for the Lake Ontario-St. Louis River System all the way until the implementation of Plan 2014 in 2016.

The Creation of Plan 2014

Once again in 1986, the Great Lakes faced record water levels. At the requests of both governments, the IJC investigated methods to alleviate the impacts of high water levels. The IJC Levels Reference Study Board was formed, and they recommended that the "Orders of Approval for Lake Ontario be revised to better reflect the current needs of the users and interests of the system" (IJC 11). In 1999, the IJC brought this concern back into the spotlight with anticipation that climate change would exacerbate any effects they had seen. The IJC launched the Lake Ontario-St. Lawrence River Study, appointing a binational Study Board to complete it. The purpose of this study was to "assess the impacts of fluctuating water levels on the affected uses

and interests and present the IJC with options for regulating the lake." A critical part of the Study was an independent Public Interest Advisory Group (PIAG) created by the IJC. The PIAG served as an independent group to represent public interests, working with the Study Board to ensure transparency for all. The study spanned over 5 years and consisted of technical workgroups focusing on research, navigation, municipal water use, hydropower, recreation, coastal impacts and the environment.

The Study Board came to several findings:

1. Regulation would significantly benefit economic interests around the basin
2. If Lake Ontario was regulated only for the benefit of shoreline property owners, reduction in damage would only amount to ~5% compared to 1958-DD
3. Regulation was not an ultimate solution for shoreline erosion
4. The compression on the range of Lake Ontario levels imposed by 1958-DD resulted in a more narrow transition zone, causing environmental damages

Based on these findings, the Study Board drafted three regulation plans: A+. B+ and D+. Each plan provided net economic and environmental improvements compared to 1958DD, but with specific tradeoffs among the uses and interests on the lake and river. The IJC and Study Board held public hearings to invite feedback on the proposed plans. In 2008, the IJC drafted a new Order of Approval and regulation plan named Plan 2007. Computer models showed that Plan 2007 had several pros when compared to Plan 1958-DD. Based on feedback, the IJC decided that Plan 2007 was not the right choice. The IJC highlighted that the regulation of water flows should be based on a revised set of goals, objectives and criteria. Specifically, it should move towards more natural flows to benefit the environment while respecting other interests.

In 2009, the IJC called upon both governments to appoint a working group. This working group modified Plan B+ to manage water levels and flows in Lake Ontario-St. Lawrence River System, and better define and adequately protect all interests. The working group resulted in an alternative B+, Bv7 along with a more detailed strategy to respond to climate change. In 2012, the IJC held public information sessions and invited comments on Bv7. The IJC then developed Plan 2014, including modifications to Bv7 to better balance Lake Ontario and river levels.

Additional hearings were held in 2013 for the proposed Plan 2014. Generally, support for Plan 2014 was strong and widespread. The majority of comments in opposition to the plan were from south shore property owners and transportation stakeholders. South shore property owners were concerned that Plan 2014 would result in higher water levels, increasing the risk of additional flooding damages. On the other hand, stakeholders in the transportation industry were concerned that lower water levels would force ships to carry lighter loads. Editorial boards, the business community, boaters, birders, environmental organizations, and hunting and fishing interests supported Plan 2014 for balancing stakeholder interests and aspiring to reverse environmental damages. With general support from the public, the IJC proposed Plan 2014 to the federal government for approval. It took almost two years, but the Obama administration approved Plan 2014 in December of 2016. Plan 2014 was implemented January of 2017. New York representatives were still determined to protect their residents from flooding.

Outlining Plan 2014

In order to understand the complex political scene behind the Lake Ontario floodings, we must first understand what Plan 2014 is, and the key players behind it.

The People Behind Plan 2014

Plan 2014 was implemented by the International Joint Commission (IJC). The IJC was established in 1909 after the Boundary Waters Treaty was signed by Canada and the United States. Made up of representatives from both countries, the IJC's priority is preventing and resolving disputes over shared waters. The IJC is guided by two main responsibilities:approving projects that have an impact on water levels and flows across the U.S./Canadian boundary, as well as offering solutions to transboundary issues.

Why was Plan 2014 Implemented?

Plan 2014 was the result of approximatly15 years of studies, hearings and deliberations. In the late 1900s, communities around Lake Ontario were faced with riparian damage and high water levels. The water level management plan in effect at the time was 1958-DD, meaning it had been half a century since management was updated. The IJC decided to launch the Lake Ontario-St. Lawrence River Study Board to investigate best methods to address these issues.

Updating Plan 1958-DD to Plan 2014 aspired to meet several goals:

1. Maintain a more natural variation in water levels
2. Provide stable Lake releases
3. Enhance environmental conditions, while maintaining coastal interests, recreational boating, commercial navigation, hydropower and municipal water intake
4. Reach inter-annual highs and lows of water levels for healthy vegetation habitats

5. Enhance diversity, productivity and sustainability of species affected by water level fluctuations
6. Provide flood and low water protection to the Lower St. Lawrence River comparable to Plan 1958-DD

How Plan 2014 Works

Figure 1 illustrates Lake Ontario-St. Lawrence River Drainage Basin. It is important to note the gray dotted line through Lake Ontario, and up the St. Lawrence River. This is the transboundary line for the United States and Canada, leaving IJC responsible for disputes among these waters. Water enters the Lake Ontario basin through rainfall, snow melt and direct inflow from the Niagara River. The only way for water to leave Lake Ontario is through the St. Lawrence River. Lake Ontario outflow is controlled by the Moses Saunders Dam, detailed by the red arrow. The Moses Saunders Dam is the mechanical piece where action is taken under Plan 2014.

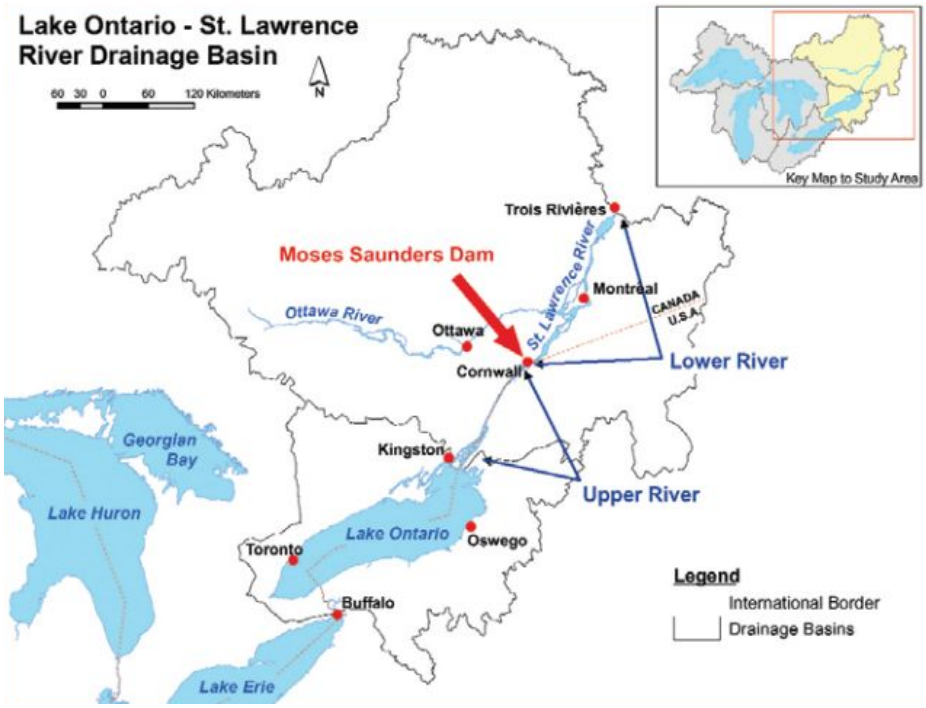


Figure 1: Lake Ontario-St. Lawrence River Drainage Basin (IJC, 2014, page)

Plan 2014 is a combination of a variety of rules along with human decision-making led by the Lake Ontario-St. Lawrence River Board to make deviations. Bv7 is a previously defined set of rules and guidelines around how to mechanically operate the Moses Saunders Dam, and ultimately the outflow of Lake Ontario. The mechanical workings of Bv7 were designed to return the Lake Ontario-St. Lawrence River water levels to a more natural hydrological pattern. By restoring a more natural flow, the riparian ecosystem will become healthier. Riparian ecosystems depend on a frequent fluctuation between exposure to water, oxygen and sunlight. A more natural flow provides this variation, leading to biodiversity on the shore and beyond (Merritt 2009). Under Plan 1958-DD, water levels were tightly constricted. Over the course of time, water levels rise and drop. Under Bv7, the range in which the water varies is wider than

1958-DD. Coupled with Bv7, human decision making from the Lake Ontario-St. Lawrence River Board is what makes Plan 2014. The River Board, with approval from the IJC, has the discretion to deviate from the rules of Bv7 within reason at extreme times.

The Bv7 equations are a function of pre-project outflows as follows:

$$outflow_t = preprojectrelease - [\frac{FNTS - ANTS_{avg}}{ANTS_{max} - ANTS_{avg}}]^{p_1} x(C_1)$$

$$outflow_t = preprojectrelease - [\frac{ANTS_{avg} - FNTS}{ANTS_{avg} - ANTS_{min}}]^{p_2} x(C_2)$$

FNTS is the supply index of the total water from the past year, which is the use of previous flows for forecasting. ANTS represents the maximum, minimum and average statistics of total annual water supplies. C1 and C2 are constants that represent the rate of flow adjustment from the previous plan (1958DD). Lastly, P1 and P2 are constants that accelerate or decelerate the rate of flow adjustment. When the water level is higher than usual, the first equation is used. When it is lower than the average, the second equation ises.

By using forecasts, both short and long term, and pre-project outflows Bv7 determines lake release rules. These rules are defined as flow limits. There are 5 major flow limits: J, M, I, L and F. These limits are summarized in Table 4

Table 4: Description of Flow Limits

Flow Limit	Description
J	The maximum change in outflow from one week to the next, unless another limit takes precedence.
M	The minimum outflow to balance low levels for Lake Ontario and Lake St. Louis. This is primarily for navigation interests.
I	The maximum outflow for ice formation and stability. This prevents lower levels that may impact municipal water intake.
L	The maximum outflow to maintain safe levels and velocities for navigation in the International Section of the River. This is the overall maximum outflow.
F	The maximum outflow to limit flooding on Lake St. Louis and near Montreal in consideration of Lake Ontario Level. This attempts to balance upstream and downstream flooding damages by keeping the level of Lake St. Louis below a given stage.

Floodings and Response

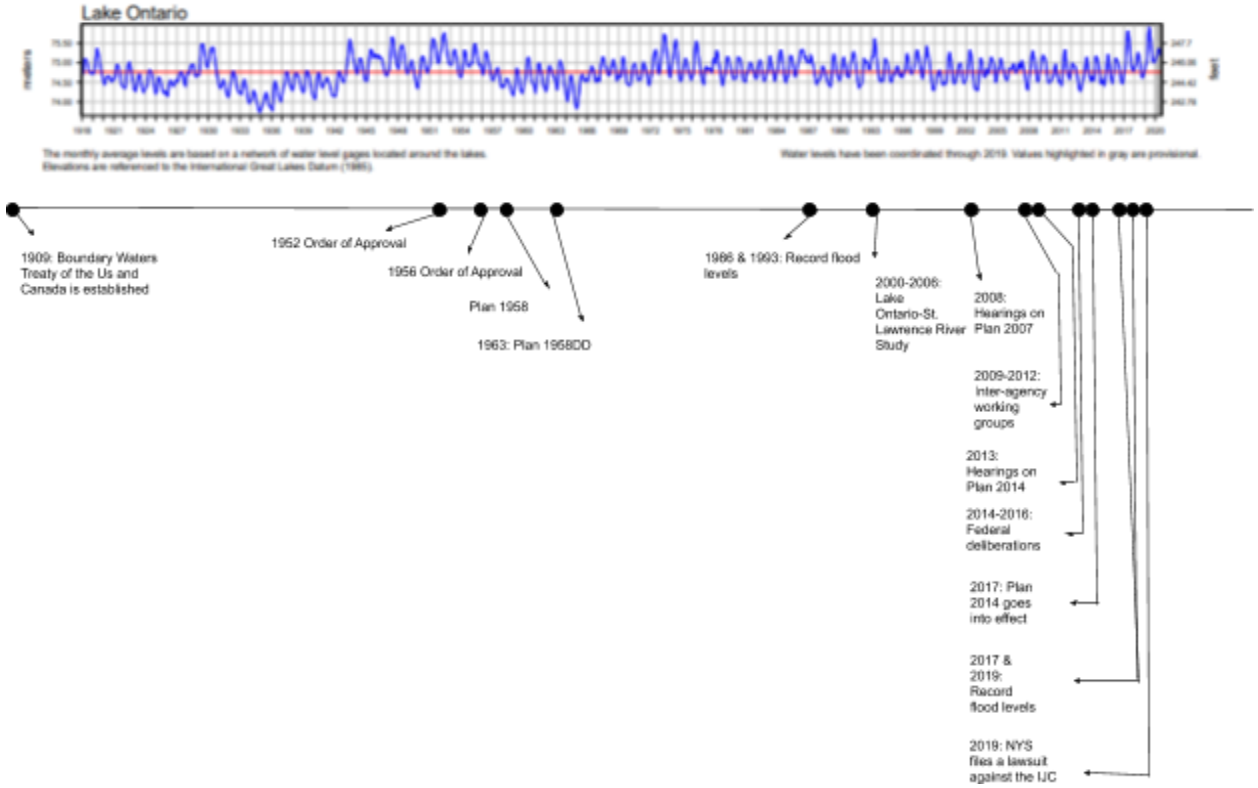
In 2017, Lake Ontario shores were flooded with unprecedented levels. Causing damage to homes and businesses, the shoreline residents of Lake Ontario became very vocal very quickly. Social media platforms such as Facebook and Twitter were flooded with comments and pushback against Plan 2014. It was very clear that the vocal shoreline property owners and their elected officials blamed Plan 2014 for the flooding that took place. Social media wildfire brought a significant amount of attention to the Plan. It was not long before additional state representatives entered the fight against Plan 2014, including Senators Chuck Schumer and Kitsten Gillibrand as well as Governor Andrew Cuomo. Cuomo agreed to invest >$100 million of state funding towards rebuilding communities. After tremendous efforts, these communities

were slammed yet again in 2019 with historic flood levels-leading to an additional $300 million investment and the creation of the Lake Ontario Resilience and Economic Development Initiative (REDI) commission.

According to Howard Zemsky, the Empire State Development President, “the REDI Commission will make strategic recommendations in partnership with local stakeholders, creating economic development opportunities while rebuilding more resilient communities in the face of this new environmental reality” (NYS 2019). Outraged by the consequences for residents of NYS, in month, year Cuomo announced that NYS was suing the IJC for compensation because the IJC was responsible for $1 billion in damage to the shoreline. Since this announcement, the Government Accountability Office (GAO) and IJC have both launched investigations into the Plan.

Figure 2: Timeline of events leading up to Plan 2014. The R&D period for Plan 2014 lasted over a decade, while action is being taken against the Plan in a much shorter span of time.

Figure 2: Timeline of Plan 2014 events lined up with the Lake Ontario hydrograph (IJC, 2014)



CHAPTER 4: METHODS

In order to answer my research questions, I utilized a combination of two methods: secondary data analysis and semi-structured interviews. Plan 2014 is a complex issue that is best understood through a variety of approaches. First, I compiled literature and information on the development/implementation of Plan 2014. This included news articles, public hearing testimonies, government publications, social media posts and more. This information was used to construct an overarching timeline of everything that went into Plan 2014. Secondary data analysis also included the use of Rapid Automatic Keyword Extraction (RAKE). With support from Sri Sahiti Velamuri, the RAKE algorithm was used to identify important keywords in media articles across Canada and the United States. Media articles were selected from the United States, Toronto and Montreal. Articles were reviewed to ensure they were relevant to flooding in Lake Ontario-St. Lawrence River Basin. A random sample size of above 20 articles was provided for each location.

Second, I conducted interviews with twelve key stakeholders that were involved throughout the process of Plan 2014's development and implementation. Interviewees were recruited through direct contact via email. No interested candidates were excluded from the process, and I took recommendations from interviewees for potential candidates. Unfortunately, I was not able to find any interested candidates downstream of the Moses Saunders Dam, so all interviewees are upstream stakeholders. Interviewees included: IJC commissioners, an IJC Public Information Officer, members of the Study Board and River Control Board, shoreline property owners, presidents of local citizen groups and Plan 2014's watchdog reporter. See Table

5 for a breakdown of individual interviewee roles. Table 5 will serve as a reference code when quoting interviews in this paper. The interviews were semi-structured, allowing interviewees to discuss anything they would like while including specific questions developed by lessons learned in the literature review. A qualitative analysis was performed on interview transcripts and collected literature, resulting in a comprehensive understanding of political dynamics behind Plan 2014. The analysis framework was developed from my literature review, consisting of distinct lessons for coastal zone management governance. Goals from the assessment framework were used to identify specific instances where the IJC met, or failed to meet, specific criteria.

Table 5: Stakeholder List

Name	Code	Group(s)	Role	Support for Plan 2014?
Pierre Beland	*IJC 1	IJC	Current IJC Commissioner (Canada)	YES
Lana Pollack	*IJC 2	IJC	Former IJC Commissioner (US)	YES
Jane Corwin	*IJC 3	IJC	Current IJC Commissioner (US)	YES
Frank Bevacqua	*IJC 4	IJC	IJC Public Information Officer	YES
Dan Barletta	*SB 1	Study Board Shoreline Property Owner	Member of the Study Board	NO
Frank Sciremammano	*SB 2	Study Board Shoreline	Member of Study Board,	NO

		Property Owner	former member of the River Control Board	
Jim Howe	*NC 1	Nature Conservancy	Member of the Study Board Technical Working Groups, Head of The Nature Conservancy	YES
Henry Stewart	*PIAG 1	PIAG Shoreline Property Owner	Member of PIAG and shoreline property owner	NO
Sarah Delicate	*SPO 1	Shoreline Property Owner	President of United Shoreline Ontario	NO
Jim Shea	*SPO 2	Shoreline Property Owner	President of Lake Ontario-St. Lawrence River Alliance	NO
Bernd Gigas	*SPO 3	Shoreline Property Owner	Expert in engineering and fluid dynamics	NO
Steve Orr	*Reporter 1	Reporter	Plan 14 Watchdog Reporter	YES

CHAPTER 5: FINDINGS

By interviewing a variety of stakeholders and studying available literature on Plan 2014, a great deal of information was brought to the surface. As discussed, the formation and implementation of Plan 2014 is an incredibly complex story. Spanning over 50 years of history and 15 years of research and consultation, the process behind Plan 2014 presents an array of tricky dynamics and battling perspectives.

Interview Themes

Each interviewee brought forward clarity to the overwhelming story of Plan 2014. Through interviews, I was able to identify several themes:

1. Opposition to Plan 2014 mainly comes from residents of the Lake Ontario shoreline
2. Social media has played a critical role in shaping public attitudes towards Plan 2014
3. Stakeholders were quick to blame the International Joint Commission for several reasons
4. There is a noted cultural difference between Canadian and American attitudes

1. Opposition to Plan 2014 mainly comes from residents of the Lake Ontario shoreline

Throughout the engagement processes of Plan 2014, it was very clear that (southern) shoreline residents were the main opponents of the plan. This became a very prominent theme during interviews. All interviewees, at some point, referenced that opposition came strongly from shoreline residents of Lake Ontario. Members of the IJC and various citizen groups validated the opposition from this stakeholder group. The transportation industry expressed

opposition at stages throughout development, but was not mentioned as a vocal opponent in interviews. South shore residents of Lake Ontario suffer from a significant amount of damage as a result of floodings. Angered by flooding damages, residents searched for an outlet to express their emotions. For most residents, this outlet was Plan 2014. Interviews suggested that the Lake Ontario floodings of 2017 and 2019 acted as focus events for residents and community organizations. Henry Stewart, a shoreline resident and former member of the Public Interest Advisory Group, stated that "The involvement in the public ebbs and flows as to high and low waters, and when high waters are experienced, the public is very involved. When very low waters are experienced... then the public is very involved as well. But when the Lake levels are reasonable and at the levels where they're supposed to be maintained, not so much." (*PIAG 1). This quote further supports the idea that extreme water levels are the source of opposition for residents. When their property is flooded, residents are much more active in speaking out against the Plan. "As long as they're high water remains or we get in a period of very low water, those people (shoreline residents) will be interested again and they'll try and lobby." (*SB 2) stated Frank Sciremammano, a former member of the International Lake Ontario-St. Lawrence River Board and Study Board.

2. *Social media has played a critical role in shaping public attitudes towards Plan 2014*

Social media was another consistent theme throughout interviews. Interviewees cited social media as a major contributor to public perceptions of Plan 2014, particularly when it comes to misinformation. Information shared on social media tended to frame flooding as a failure of the IJC and Plan 2014. By only partially framing the floodings, a wide majority of

users failed to recognize the full scope of Plan 2014. Following the implementation of Plan 2014, shoreline residents used different social media platforms, Facebook and Twitter being the most commonly mentioned platforms. Serving as a public place to disseminate information and build a larger consensus, social media was, and continues to be, a valued tool for many in building opposition. Interviewees recalled that members of the public shared posts that directly referenced Plan 2014 and the IJC as being responsible for the flooding. These social media posts quickly spread.

Aside from the heavy use of social media to build opposition, interviews suggested that the news media was often behind the lack of truth and information behind Plan 2014 social media posts. Steve Orr, the Plan 2014 watchdog reporter for the Democrat & Chronicle, stated:

> "when the flooding began, the other media-- TV primarily-- were even more focused on the complaints of the shoreline people and the impact of the flooding, which was legitimate too...there was an enormous amount of misinformation, of these sort of hollow accusations that were floating around. A lot of the local politicians got involved in that, the governor got involved in it. There was a lot of stuff that was just demonstrably not true that was being parroted by people on the shoreline." (*Reporter 1)

Orr noted that many media outlets failed to recognize the truths in this situation, and that he made every effort he could to report facts. Sarah Delicate, the President of United Shoreline Ontario, is an active opponent of Plan 2014. However, she agrees that a wide variety of social media users do not think carefully about what they share on social media. Coupled with Bernd

Gigas, an expert in engineering and fluid dynamics, Delicate builds opposition to the Plan on a scientific and informed basis. Gigas admitted that

> "there was some social media presence in 2017 (after floodings), but there was not a whole lot of science behind it, and I think the blame game was probably the best way to phrase it. You don't fall into the echo chamber that these social media platforms often fall into. So when you see groups repeal plan 2014, there are an awful lot of people on there that respond emotionally, understandably so, but refuse to acknowledge the signs. And then there are other groups that actually look to educate and to formulate real stacked and data-driven analysis." (*SPO 3)

As found in a study around perceptions of Lake Ontario Flooding in 2019, "82% of Rochester-are lakeshore residents believe that Plan 2014 is to blame for recent flooding along Lake Ontario" (Bureau 2019). However, there is a general consensus outside of the Rochester lakeshore stakeholder group that floods are a result of increased rainfall, which is something that is out of the IJC's control. Interviews revealed that some shoreline property owner groups were understanding that no plan would have prevented flooding, and that rainfall was a cause of flooding. Frank Bevacqua, the current Canadian Chair for the IJC thinks that "among the general public there's just a feeling that it's a failure of regulation and it's the IJC's fault." (*IJC4).

3. *Stakeholders were quick to blame the International Joint Commission for several reasons*

The same study conducted on perceptions of flooding in 2019 revealed that "People seemed to focus on the International Joint Commission and national politics, but there was very little blame on local governments, and do not fully understand how the plan works" (Bureau

2019). An overwhelming theme in interviews was that stakeholders had many reasons to directly blame the IJC for floodings. Interviewees mentioned distinct reasons why the found IJC to be at fault for floodings:

1. Historical mistrust of the IJC, and feelings that the IJC is biased
2. Feelings of exclusion throughout the engagement process, particularly after federal deliberation

3.1. Historical mistrust of the IJC, and feelings that the IJC is biased

It was found that bad relations between the public and the IJC go back several generations. Orr noted that "You can find people on the shoreline whose homes have been in the family for two or three generations who will tell you that their grandfather would badmouth the IJC to them when they were little kids. The distrust goes back at least to the middle of the 20th century and I think probably before that… maybe just cemented opinions that the IJC and the Corps were incompetent and were deceitful and couldn't be trusted. But certainly, since that time, that has been the prevailing opinion on the south shore in the Rochester area." (*Reporter 1) Several interview candidates referred to promises made by the IJC that flooding issues would be solved and prevented in the future. The public held on to these promises, and when floodings occurred again they pointed right at the IJC. Many feel that the IJC cannot be trusted, and that they are not dutiful in respecting transboundary issues fairly. Lana Pollack, the IJC United States Chair at the time of implementation, stated that some "were convinced that if we just changed the IJC membership, we could change the plan. And by changing the plan, there would be no more flooding for the people. That is wrong on several points. It's wrong because the primary

cause of high water is rainfall. You can change the people on the commission, but unless the commission has a direct line to Mother Nature, there's only limited controls you have to consider." (*IJC2) Feelings of mistrust stem from several places, not just failed promises. A strong consensus was found among citizen groups and shoreline residents that the IJC is biased against opposing interests.

Water level management along Lake Ontario and downstream along the St. Lawrence River is incredibly difficult because of competing interests. Water levels affect many different groups including shoreline residents, recreational boaters, the shipping industry and hydropower generation. Shoreline residents were adamant that the IJC is biased towards opposing interests-particularly those downstream in Montreal and the shipping industry. First, it is important to recognize that these feelings are coming primarily from shoreline residents. The Department of Transportation issued the following statement on their website prior to implementation. "environmental groups and shipping industry representatives have expressed support for the new water regulation plan. The only group at this point that has expressed concerns or opposition to Plan 2014 are landowners on the south shore of Lake Ontario whose homes will likely be flooded as a result of the new plan" (DOT, 2017). Shoreline residents, as expected, have not been satisfied with the Plan since. Among all affected stakeholders, environmentalism, hydropower, shipping and Montreal were cited as favorites of the IJC. Stewart noted that

> "They (the IJC) could have proposed plans that would ensure greater protection for the South shore, but they did not and have not....We think that shipping is very much behind this (floodings). Withholding of water through the dams at times, letting the waters be

> stored up and built up in Lake Ontario behind the dams, and then rushing it through at certain points. That rush of water generates more dollars with the creation of hydro-power energy. We hear that Lake Ontario is being treated like a reservoir. From which that onslaught of water can be released at times and held back at times." (*PIAG 1)

Based on hearsay and theories, shoreline residents have been able to defend their beliefs that the IJC is simply biased towards competing interests. Sciremammano even believes that favoritism went as far back as the study, stating that "we just felt that the entire study had been hijacked by a small group of environmental advocates that wanted to have more extreme water levels higher and lower." (*SB 2) While many believe different interests have IJC in the palms of their hand, Montreal was cited by interviewees as the one that truly benefited from this plan. Located downstream, Montreal and Lake St. Louis lie behind the dam, meaning that any water released from Lake Ontario will end up in Montreal. People such as Sciremammano believe that the IJC cut a deal with Canada to protect them from damages. In discussing federal deliberations, Sciremammano believes the discussion to have been: "Quebec said we will accept no less protection for our citizens than we have under the previous plan, so all of the damages were shifted to Lake Ontario…because Lake Ontario communities were the weakest political group." (*SB 2). Individuals such as Delicate and Gigas also share this concern, and took the steps to investigate if this was really reflected in the workings of the plan. Delicate believes "the trigger levels had nothing to do with the environment. It's everything to do with shipping. So although the marketing around the plan was that it's an environmental plan, the actual bones of the plan were really structured firstly for shipping." (*SPO 1). Gigas, a strong advocate for evidence

based results, noted that the limits of the plan explicitly favored Montreal since they had a hard upper-limit on levels. However, Gigas and Stewart admitted that you could not relieve the burden on shoreline residents without causing damages elsewhere.

> "If you do that (redistribute water), you can't just remove it from the system without causing consequences for somebody else. If we get relief, somebody else loses. And in this particular case, it's finding the right balance between lower river protection, navigation protection. It's a question of what is in the best interest of all the interested parties so that everybody shares the pain equally." (*SPO 3).

Stewart agreed with this stating "We just don't want to be the stakeholder interest group that's singled out for such pain while other areas are benefiting as they are from such a plan" (*PIAG 1).

3.2 Feelings of exclusion throughout the engagement process, particularly after federal deliberation

The IJC and Study Board spent years conducting public outreach to inform and receive comments from different stakeholders. Between years of public outreach and extensive consultation with the Public Interest Advisory Group, feelings of exclusion still remain prominent. Stewart, a member of the PIAG, felt "welcomed and very much involved and included. I felt very good about it in terms of that inclusion for a long time." (*PIAG 1). However, he started to question the process as plans came forth to the public. Stewart was "beginning to see that we weren't going to be given our due respect to how the process was working, and I almost began to feel that we were being co-opted into just being perhaps puppets." (*PIAG 1) Several interviewees also pointed to federal deliberations as a major

deterrent to feeling included. After final plans were proposed, the federal governments of the United States and Canada were required to review and unanimously agree on a plan. As shown in the following quotes, similar terms and feelings were used by interviewees to describe this deliberation period.

> Plan 2014 did not come out of the study. The IJC likes to create that **illusion**, but it was not. Instead, it went to a **secret** working committee **dominated** by environmental people, and they came up with Plan 2014. (*SB 2)

> The IJC created a working group that met behind **closed doors** without public involvement and was **stacked** with members of environmental concerns in it. They did not involve the Public Interest Advisory Group any longer, it did not involve the public and came up behind **closed doors** with Plan 2014. (*PIAG 1)

> It's completely **lacking in transparency**. The new plan was created behind **closed doors** with a membership that was not made public. It was **rushed** through as Obama was leaving office. (*SPO 1)

3. Canada & cultural differences

A finding that was interesting in terms of blaming the IJC was a cited difference in cultural differences between the United States and Canada. Commissioners of the IJC noted that Canadians are more accepting of damages and the plan. Pollack states that "Canadians tend to have a bit of a different tone and relationship with their government. They tend, I have observed,

to be a little more trusting of their government. And in the United States, we'd hear people saying, no, it's a government's fault." (*IJC 2) Similarly, Frank Bevacuava, the IJC Public Information Officer noted that it "may be a cultural thing, but folks downstream seem to be more accepting of the fact that we can't eliminate floods. It's not really an organized opposition to the plan 2014 the way there is here, which is very interesting." (*IJC4).

3. 1 RAKE Results

Another set of interesting findings came from the Rapid Automatic Keyword Extraction. Shown in figures 3 and 4. The top keywords for Montreal and Toronto newspaper articles about local flooding were 'climate change,' 'flood zones', 'insurance company' and 'global warming'. ('Great Lakes' was the top result, but is a common term due to the location of this issue).The top terms for articles from the United States were 'property owner', 'water level', 'new normal'. Other top terms included 'legal action', 'federal government', 'local official' and 'canadian government'. 'Heavy participation' was the only climate-related term, coming in as the ninth most important keyword.

Figure 3: Rapid Automatic Keyword Extraction for Canadian News Articles

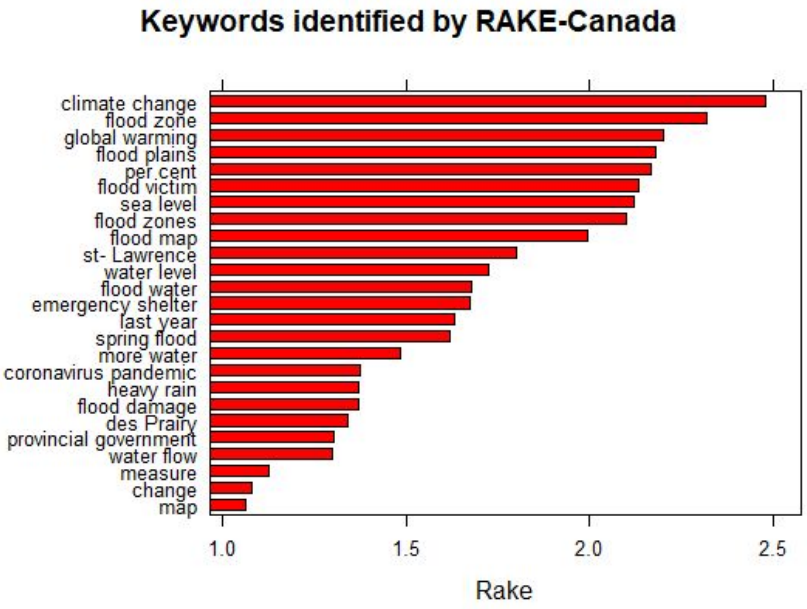
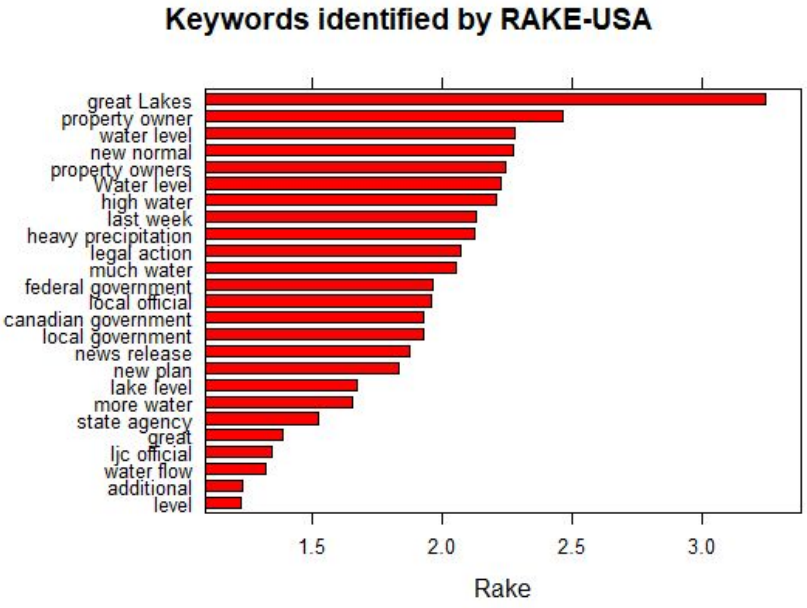


Figure 4: Rapid Automatic Keyword Extraction for American News Articles



CHAPTER 6: DISCUSSION

Framework analysis

As a result of the literature review performed on Coastal Zone Management governance lessons, a framework for assessment was developed. It should be noted that Plan 2014 is not a coastal zone management plan. There is limited literature on bi-national governance for shared water disputes. Both Plan 2014 and coastal zone management plans require extensive consultation with competing stakeholders regarding the management of shared waters and land. It is assumed that political dynamics and implications are similar between the different styles of management plans.

The assessment framework was developed from a series of comprehensive lessons, both positive and negative, from coastal zone management case studies. The four major categories in assessment points are: program structure, inter-agency communication, relationship building, and personnel. Some of these assessment points do not translate over to Plan 2014, but can still be used as a guiding factor. While improvements can be made in all three areas, the largest weaknesses lie in relationship building.

Program Structure

The three goals under program structure are (1) the policy and implementation process must be designed to maximize response from targets, (2) the program should establish credibility early on by prioritizing recognizable conflicts and (3) the program should be framed in all communications as beneficial to the affected stakeholders. The IJC made efforts to address all

three of these goals. First, the IJC ensured that the implementation and feedback process was accessible to stakeholders from all over the affected basin. Held virtually and in locations all over the basin, it was not a challenge for target populations to get involved. Second, the IJC has been around for over a century. During their existence, the IJC has built credibility by preventing international disputes over water. However, credibility was lacking when it came to shoreline flooding. This had a significant impact on the shoreline property owners' perceptions of the IJC. Lastly, the IJC was sure to frame all communications as beneficial to the affected stakeholders. It was known that shoreline property owners along Lake Ontario would experience slightly less protection than before. Rather than saying this, the IJC used the language "a reduction in shoreline benefits" and made sure to focus on the net benefits across the system.

Inter-Agency Communication

The three major lessons learned under inter-agency communication are that (1) the imposing governance agency must explicitly state the goal and purpose of the policy to its target, (2) the imposing governance agency must carefully plan expectations of its target before implementation and (3) the imposing governance agency must suggest actions to reach the desired goal. Of the three areas of my framework, inter-agency communication is the one that distinguishes Plan 2014 from coastal zone management plans the most. While the IJC did need cooperation and involvement of stakeholders, local communities were not required to fulfill tasks. However, lessons can still be carried over. Starting with the first lesson, the IJC was successful in explicitly stating the goal and purpose of a new plan (Plan 2014). Throughout the research and public involvement processes, the IJC was clear in the overarching goal of restoring ecological health to the basin while balancing interests. The second lesson, that the IJC is to

carefully plan expectations of its target before implementation, was accomplished. Even with stakeholders that are vocally opposed, the IJC made clear efforts to define expectations for all stakeholders before implementation. The floodings of Lake Ontario were declared inevitable from the very start. The IJC was direct in that they admitted Lake Ontario would "receive a reduction in benefits" (*PIAG 1). This was not received well by shoreline property owners, but the IJC had no control over floodings otherwise. Lastly, the IJC was to suggest actions to meet the desired goal. Between the Study Board and public hearings, the IJC was successful in proposing plans and various alternatives to the public. As discussed, the Public Interest Advisory Group was not able to come to a consensus on any alternatives-including those prepared.

Relationship Building

Relationship building is a necessity for the success of imposing agencies. In this case, it is necessary for the IJC to have strong relations with elected officials, the public and various stakeholders. Without strong relations, the integrity of the organization and any plans may be threatened. The first lesson under relationship building is to establish an open rapport between all involved parties. Through years of public hearings, the IJC did make efforts to open communication between them and public interests. However, interviewees expressed feelings that they could not reach the IJC. Orr stated that the IJC would sometimes hesitate to attend requests for public hearings as they knew they were disliked. In addition, there were no indications of continuous rapport between the IJC and elected officials. Without preexisting relationships and conversations, it can be incredibly difficult to onboard certain parties during a time of crisis. It is the duty of IJC to be proactive and inclusive of its stakeholders. The second

lesson is to ensure transparency for the entirety of the planning process. This was a major challenge discussed in interviews. The IJC was successful in ensuring transparency throughout planning until it reached the federal level. At this point, it was out of the IJC's hands. Although public perception of transparency was weak, the IJC did fulfill its responsibilities when possible. The final lesson under relationship building was to increase awareness and knowledge of processes. The IJC's communication with different levels of the government and public was cited as an issue by several interviewees. Interviewees felt that the communications regarding Plan 2014 were convoluted and did not cover the full scope of the Plan. Delicate is concerned that "all they (IJC) ever talk about is inflow. So they don't talk about Plan 2014. They talk about rain. They talk about snow. They talk about Lake Erie. Plan 2014 is not an inflow plan. It's an outflow plan. So the fact that the IJC doesn't even (mention outflow)-- it's very misleading how they even communicate to the public. It's to create confusion and doubt." (*SPO 1).

Personnel

Based on the literature review, personnel is a crucial component to success in implementation. The people behind implementation and planning are to have significant managerial, technical and political skills. Based on the backgrounds of IJC commissioners, all seem to have a place in the planning of Plan 2014. Coming from a wide variety of backgrounds, commissioners have served as active members in their local communities in respect to the environment. However, not all were technical experts. For the planning of Plan 2014, the IJC made the thoughtful decision to refer investigation to technical experts on the Study Board. While the IJC was able to compensate for the lack of technical expertise, they failed to meet the

expectations of the second lesson. The second lesson is that those overseeing implementation must be committed to the process long-term. The IJC has six commissioners, and the United States and Canada each appoint three of the six. Chosen by the President and the Cabinet in Canada, membership rotates with national reelections. Pollack, the U.S. Chair at the time of implementation, was fortunate as the former Chair served as a commissioner during Pollack's term. Pollack noted that her transition into the IJC was made easier with the former Chair present. Pollack did mention transition efforts with the new Chair, Jane Corwin. However, the transition was brief and consisted of 2 days of conversation. According to Pollack, Plan 2014 was not included in the transition. Coriwn noted having to learn on the job as she went. Stewart felt that lack of continuation in membership and personnel contributed to the Plan 2014 that exists today. Stewart stated: "Plan 2014 was not a plan that came from the study that was conducted for those five to seven or eight years. It was a plan that was created laterer, long after the study and not involving the people within this study. It didn't involve the same IJC commissioners." (*PIAG 1).

Having an in-depth understanding of the Plan, and being able to communicate it, is crucial to the IJC's success in implementing the Plan. Lastly, according to the framework, those overseeing implementation must be of the affected constituency. This is an incredibly difficult goal to fulfill for Plan 2014. Plan 2014 affects everyone along the Lake Ontario-St. Lawrence River Basin. While the IJC could not include commissioners of all affected parties, they did ensure involvement in some way. Between the Public Interest Advisory Group, Study Board, Control Board and information session-all stakeholders were involved with planning.

The Rational & Polis Models

The story of Plan 2014 is one driven by the roaring opposition of shoreline residents. Upon analyzing the processes that the IJC and stakeholders followed, it became clear that this story is a clash of decision-making models. In public policy, there are many different models for decision-making that influence outcomes and dynamics. Here, we see the rational and polis decision-making models in action. It is argued that public policy is centered around making decisions, and being able to analyze policy rationally. In the rational model, decisions are guided by evaluating alternatives and maximizing benefits. The polis model on the other hand, is ambiguous and very indecisive. The polis model also leads individuals to frame goals and issues incompletely, to their own benefit (Stone, 2002)

In the case of Plan 2014 the IJC can be observed following the rational model, while individual stakeholders and the Public Interest Advisory Group can be observed following the polis model. The rational model for decision-making follows four steps: "(1) defining the goal(s); (2) identifying the alternatives available for achieving the goal; (3) assessing the potential outcomes and implications of each alternative; and finally, (4) selecting the option that appears most feasible, viable, and likely to result in the attainment of the goal." (Stone, 2002). The IJC was explicit and public in following these steps. First they defined a set goal, primarily maintaining the balance of stakeholder interests while restoring the health of the lake. Second, they identified several alternatives as a result of the Lake Ontario-St. Lawrence Studies. Third, they assessed these outcomes with reviews and public information sessions. Lastly, the IJC recommended final options and Plan 2014 was delivered through federal discussion. While portions of the public may not agree with the outcomes of Plan 2014, it is undeniable that the IJC

followed the rational model. The majority of this discussion section will outline how various stakeholders followed the polis model. However, this is in no way instituting fault on either party. The rational and polis models are not right or wrong, they are ways of thinking and acting that affect policy dynamics.

Lake Ontario Floodings as Focus Events

As found in interviews, floodings played as a major focus event for shoreline residents. Focus events change the prioritization of issues on the public policy agenda. This leads to the mobilization of stakeholders and interest groups. In many situations, interest groups seek to exacerbate or limit issues following a focusing event (Birkland, 1998). With respect to Plan 2014, the Lake Ontario floodings in 2017 and 2019 certainly acted as focus events. Throughout the development process, shoreline residents did oppose damages to their property. However, the public involvement and opposition was far more visible at the times of flooding. Mobilization of interest groups is key to public involvement, but when it is centered around a focus event, it tends to distract from the bigger picture. With reason, shoreline residents responded to the floodings with emotion and urgency. At these times, stakeholders are so focused on alleviating the damages of flooding that they fail to recognize the bigger picture of Plan 2014. The floodings, viewed as a focus event, were instrumental in the rising of the polis in this case study. This can also be viewed in Figure 2. The period of time in which Plan 2014 was developed spanned over ~15 years, yet the major pushback only came at times of flooding.

Social Media: a Modern Factor in Policy Dynamics

Lake Ontario has flooded several times in the past, but public outcry was not as significant as this. Howe recalls conversations with Orr, the watchdog reporter for Lake issues: "It's flooded in the 70s. It flooded in the 90s. And he (Orr) said the difference between those earlier floods and this year is social media. And it's fake news. Misinformation is in this new era of modern politics." (*NC 1) Social media is a relatively new concept that has changed life as we know it. Following the floodings of 2017 and 2019, community organizations and individuals took to social media platforms such as Facebook and Twitter. Inundated with posts about floods and Plan 2014, social media feeds brought this issue to the forefront of the media. The exponential attention towards Plan 2014 and the IJC is a result of a new phenomenon: the Megaphone Effect. The Megaphone Effect refers to the newfound ability of individuals to reach new mass audiences (Mcquarrie et al, 2013). With social media as a tool, shoreline residents 'picked up the megaphone' and shouted to their followers. Thousands of people were quickly aware of the floodings.

In public policy, being aware of the policy streams is critical to identifying opportunity for change. The policy streams are: the problem stream, political stream and policy stream. The problem stream is opened when an issue arises-in this case, the floodings as a focus event opened this stream. The political stream is enacted when the problem is at the attention of experts, political leaders and the media. Finally, the policy stream is opened when there is an agreement that a certain alternative is needed. When all policy streams converge, there is a window of opportunity for change (Kingdon, 2014). Due to social media, the political stream was opened in a manner much different than usual. Unlike before, the floodings of Lake Ontario were able to

grab the attention of individuals and organizations far beyond the shoreline. The manner in which social media was used to get attention is something else entirely.

As Howe noted, “misinformation is in this new era of modern politics.” (*NC 1) It was found that many media outlets and social media users were not considering their own bias before sharing posts. Social media posts resembled an echo chamber in that they repetitively blamed Plan 2014 and the IJC for the floodings. Officially enacted in 2017, Plan 2014 did not even have a full year in effect before the first flood hit Lake Ontario. The coincidence of implementation and natural forces resulted in an unfortunate correlation made by the public. Facts can be used to indoctrinate the public, which is what occurred on social media. In policy, facts and knowledge are of the utmost importance in decision-making. Facts lead to informed decisions, but facts can also be misconstrued to alter the perception of an audience (Stone 2002). It is a fact that floodings would occur under Plan 2014, just as they would under any plan. It is a fact that Plan 2014 was implemented in 2017. It is a fact that floods occurred only months after implementation. The interpretation of these facts vary wildly, and the interpretation that was behind the megaphone on social media led the public to believe Plan 2014 and the IJC were to blame.

Misrepresentation of the Science

One of the most unique and interesting dynamics of Plan 2014 is the misrepresentation of science. Science is wielded as a tool by both the IJC and opposing interests. The IJC prides itself in creating Plan 2014 as a result of years of scientific research, and uses science to legitimize their claims and plan. Shoreline residents use and frame science in another way. Delicate is concerned that “all they (IJC) ever talk about is inflow. So they don't talk about Plan 2014. They

talk about rain. They talk about snow. They talk about Lake Erie. Plan 2014 is not an inflow plan. It's an outflow plan. So the fact that the IJC doesn't even (mention outflow)-- it's very misleading how they even communicate to the public. It's to create confusion and doubt." (*SPO 1). Other shoreline residents have made online claims that the IJC's science is false without evidence to invalidate their claims.

Another way in which science was misrepresented throughout this process was through the media. Many media outlets painted pictures of the IJC and Plan 2014 that were not entirely true. By talking with a variety of stakeholders, some media outlets were quick to publish articles that framed Plan 2014 incompletely. Many media articles cited flooding issues and the close proximity in time to the implementation of Plan 2014. As discussed in this paper, the social and ecological dynamics of Plan 2014 are complex and are not easily explained to the public. With the general public looking to news for information, many read these stories and did not do additional information. This led to the public knowing only one part of the bigger picture, and being outraged by it.

Finally, policies implemented by various locations also contribute to the scientific integrity of policy as a whole. Coastal flooding along the Lake Ontario basin has proven to be a historical issue that is not going away anytime soon. Various governments have taken different approaches. For example, NYS established the REDI Commission to strengthen shorelines and repair homes (NYS 2019). However, cities such as Quebec have attempted to buy out vulnerable properties and relocate residents (Bruemmer 2019). Policies themselves are part of science representation. By providing a short-term solution such as rebuilding, governments are telling their constituents that this problem is manageable and will go away. On the other hand,

governments offering buyouts and encouraging relocation are affirming the permanence of the situation. The way local governments react to the issue will, without a doubt, impact the way constituents react to it.

The Blame Game

Shoreline residents and businesses of Lake Ontario suffered damages in the amount of millions of dollars. It is absolutely reasonable for them to want compensation and find someone at fault. In the polis model, "cause is more about defining the story behind the politics. They fight about the possibility of control and assignment of responsibility." (Stone 1989). The IJC and Study Board reminded stakeholders that flooding would be inevitable under any plan, and that this was out of human control. However, the study of perceptions of shoreline residents show that "people seemed to focus on the International Joint Commission and national politics, but there was very little blame on local governments, and do not fully understand how the plan works." (Bureau 2019). The actors in this case study, shoreline residents, seek to eliminate the possibility of accidents, and to assign responsibility to the IJC on the basis that floodings were avoidable under human control. Stone (1989) refers to two causal stories that demonstrate how shoreline residents assign responsibility to the IJC in hope of reform.

Historical Causal Story

Stone's historical causal story is a model that shifts blame onto previous decisions and actions for current consequences (1989). Historical mistrust of the IJC was a prominent theme in

interviews with shoreline residents and other stakeholders. Going back to the mid 20th century, the IJC made a promise to residents along the shoreline that they would identify a way to stop flooding. It is unlikely that the IJC and its partners at the time were able to anticipate severe precipitation and floodings in the future. Unable to find a solution through water management, the IJC was not able to follow through on their promise. In the 1970s and 1990s when Lake Ontario was flooded, residents lost confidence in the IJC as they failed to follow through. This mistrust appears to have carried over to the present. “They did all the things that you should do on paper. Put out lots of information about it (the development of a new plan), had public meetings, public comment periods. But it wasn't really enough because this distrust made it such that people just didn't believe a lot of what they were saying.” (*Reporter 1). As determined in the literature review, this kind of mistrust can have a severe impact on how policy is developed and perceived.

Institutional Causal Story

The institutional casual story assigns responsibility to large organizations for issues based on their power and influence (Stone, 1989). The IJC, being at the forefront of water level management and Plan 2014, is perfectly positioned to be at fault under the institutional causal story. Findings from interviewing stakeholders showed that most of the blame towards the IJC was tied to institutional bias and exclusion. Shoreline stakeholders perceived that the IJC was biased towards competing interests such as downstream communities and the shipping industry. Gigas and the citizen group United Shoreline Ontario claim that the IJC could let more water out of the Moses Saunders Dam using the argument that flooding is longer and more severe in Lake

Ontario than in Lake St. Louis of Montreal. Gigas does acknowledge that releasing water does not come without consequences: “If you do that (redistribute water), you can't just remove it from the system without causing consequences for somebody else. If we get relief, somebody else loses. And in this particular case, it's finding the right balance between lower river protection, navigation protection. It's a question of what is in the best interest of all the interested parties so that everybody shares the pain equally.” (*SPO 3) On the other side of this argument are members of the IJC and stakeholders that are not of the shoreline community. Pollack, the previous chair of the IJC, described the mechanisms of Lake Ontario-St. Lawrence River System. In order to take one inch off the level of Lake Ontario, you must increase the level of the St. Lawrence River and Lake St. Louis by 11 inches. The perception of many Lake Ontario residents was that Montreal was not suffering any damages, and they could bear some of the burden. The Democrat and Chronicle conducted extensive reporting on damages to downstream communities. They reported that the same weather events that resulted in the floodings of Lake Ontario also hit the St. Lawrence River and Lake St. Louis hard. At these points in time, flooding in and around Montreal was the worst it had been in more than 20 years. The Democrat and Chronicle stressed that no shoreline residents presented the IJC with accurate data that Montreal could bear more of the burden. “Literature describes with words; painting describes with pigments; and measurement, with numbers. And just as there are infinite ways of describing an object in words or paint, so there are infinite ways of describing with numbers. Think of numbers as a form of poetry.” (Stone, 2002). Much like the distortion of facts in social media, numbers can be portrayed in many different ways. If the numbers behind the length and severity of flooding impacts in Lake Ontario are accurate, they do not accurately show what would be a

drastic increase of damages on downstream water systems. Becquava notes that “It's just very unrealistic to expect a major redistribution of balancing of upstream and downstream flooding impacts. In order to do that, you would really cause catastrophic impacts downstream” and Pollack adds to this by reminding us “This whole idea about the treaty is to balance (waters) fairly, so that the interests of both countries are equally protected or equally challenged. And it's easy to understand why people think, why can't we just dump more water into Montreal? That's not the way good neighbors do it. And the fact that we, the two countries have a good relationship is in no small part because of this treaty.” (*IJC 2) If more water was to be released from the dam, Montreal would suffer incredible damages for only minimal relief to Lake Ontario, which is incredibly unbalanced. “The decision was made that a slight reduction in benefits to some interests -- namely shipping and shoreline property -- was necessary to get a big increase in health of the Lake. There was a slight reduction in benefits to shoreline property In exchange for that, you're getting a healthier Lake, which benefits everyone.” (Howe) In the end, Plan 2014 still aims to achieve a higher net benefit for all parties.

Stakeholders also blamed the IJC on the basis that they were not inclusive throughout the engagement process. One thing that Stone points out is that “to make policy, governments need power. They need authority to act (make policy decisions) and they need the capacity to act (carry out policy decisions).” (2002). At the federal level for deliberation, the US and Canada had to come to an agreement for a united plan. It is justifiable that revisions would be made at this level as discussions were taking place between the two governments. A reason for exclusion at this point in the process points back to a key piece of the polis model. At every step in deliberation, those following the polis model for decision-making are incredibly indecisive.

Pollack recognized that the U.S. and Canada had to come to an agreement. According to the Boundary Waters Treaty, the IJC cannot act independently. Their judgment calls can be overwritten by the United States federal government, or the federal government-meaning that the IJC would not be at fault for any decisions made at this level. This aside, the IJC has shown to be exhaustive in public outreach efforts. As shown in the public outreach strategy, the IJC held close to 100 sessions across affected areas. At these sessions, they educated stakeholders on various plan proposals and collected public comments. The IJC also established the Public Interest Advisory Group in conjunction with the Study Board for the purpose of soliciting public feedback. As shown by the polis model, the PIAG was indecisive and could not come to a consensus on a plan. Under the rational model, it was important that the two national governments took some kind of action after 15+ years of work.

Implications of the Blame Game

The polis model's reaction to the floodings of Lake Ontario, while reasonable, resulted in serious policy implications. The misstatement of facts and causal blame on the IJC on social media made this a widely-viewed debate. It was not long before elected officials, such as NYS Governor Andrew Cuomo, jumped on board.Governor Cuomo of New York State publicly stated his opposition to the Plan. "The water level in Lake Ontario was unusually high last summer and the IJC didn't release extra water to account for it. That set the stage for this spring's floods." Cuomo told the public that he communicated this in "one of the nastiest letters he has ever sent" (Orr, McDermott 2012) to the IJC. Cuomo received a lot of applause and clout from the public after this. Certainly governor Cuomo and others have capitalized on that misperception and

repeated that up and down the shore. It was recognized that when water supplies were more extreme than there were in the past, we couldn't prevent flooding. But I think that's a reality that a lot of folks just aren't as willing to accept.". Cuomo's opposition not only riled up his constituents by speaking poorly of the IJC, but also spurred movement on the lawsuit filed against the IJC. Filed by the NYS Department of Environmental Conservation, a lawsuit of $50 million blamed the IJC for failing to prevent flooding. Cuomo expanded on this lawsuit and continued to speak to the public about the inefficacy of the Plan and IJC, demanding more money in reparations. The goals of elected officials like Cuomo here is to defend and stand for his constituents, gaining political clout and power, however he fails to see the bigger picture of what is occurring. "By labeling goals vaguely and ambiguously, leaders can draw support from different groups who otherwise might disagree on specifics. Ambiguity can unite people who might benefit from the same policy but for different reasons. Vague goals in statutes allow legislators to vote for a law and shunt the conflicts to an administrative agency for interpretation and implementation." (Stone 2002, page #). One major implication of this blame game is a deteriorating public view of the IJC. The public perception of the IJC has already been weak, and now it is being broadcasted as a villain that damaged millions of dollars in property. The IJC will continue to exist as an intermediary body. Without the confidence of the public, the IJC may not be able to maintain a healthy international relationship between the United States and Canada. A second implication of the blame game is the excuse to ignore personal responsibility. There's a purposeful misstatement of facts. It's just really unfortunate that some of the people that are misstating these facts know better and know that what they're saying is not true, but do it because it alleviates pressure on them to find solutions to the difficult challenge of public and private

infrastructure in vulnerable areas." It is impossible for the IJC to cater to all stakeholder interests and resolve disputes between competing stakeholder interests. Flooding is an issue that concerns the IJC, the federal government, state governments and local governments. No singular entity or organization has acknowledged the need for a coordinated effort between different stages of the government. Governor Cuomo did establish the Resilience and Economic Development Initiative (REDI) Commission to strengthen shoreline resilience, but still continues to advocate against the IJC. This portrays a conception that the problem will not go away until Plan 2014 goes away.

International Dynamics

It is incredibly important to recognize that this is a policy that concerns two different countries and two different governments. Interesting dynamics have been brought to the surface through my research. Interviewees noted a distinction in the attitudes of Amercians and Canadians. IJC Commissioners noted that Canadians are much more perceptive of this policy and recognize that floods are inevitable. Americans on the other hand, have not been nearly as accepting, and have been very combative of Plan 2014 and the IJC. The RAKE analysis also shows a distinction in how the two countries' media outlets portray the flooding issues. Canadian articles followed a trend of climate change and increased rainfall, while american articles were more focused on property owners, governments and assigning responsibility. It is without a doubt that culture holds some influence in this policy. Canada and the U.S. also differ in the way they have responded to floods. Canada has been much more receptive to government buyout programs and other measures that provide long-term solutions, whereas American local

governments are using expensive, short-term solutions. These are all factors that could contribute to the satisfaction of shoreline residents, shaping the way they respond to the IJC and Plan 2014.

The Role of Science

Throughout the development and implementation of Plan 2014, science has played a variety of roles. First off, science is a critical part of the Plan itself. Years of scientific studies and analysis went into the development of mechanical models behind Lake outflows. Plan 2014 is the result of engineering, ecological science, economics and social sciences. However, we know that misinformation also played a key in this story. As information was shared on social media, we began to see how numbers and facts were portrayed in different ways. The truth of the situation is that increased rainfall caused flooding along the Lake Ontario-St. Lawrence River Basin. Another truth is that downstream communities were significantly impacted by these floodings, in addition to upstream communities. The misinformation on social media that was shared is the idea that Plan 2014 caused these floodings, and that downstream communities were not affected. The findings from the RAKE analysis indicated a difference in media attitudes between the US and Canada. Canada's top key terms associated with this issue were focused on climate change, and there is no mention of that in the American key terms. This indicates that science did not have its deserved role in American news. News headlines and articles are easy to share on social media, and they carry a lot of influence. The absence of scientific ideas in the news is a major concern.

Another dimension of scientific interpretation was the criticism behind it. Several shoreline property owners used the scientific basis for Plan 2014 as an attacking point. Jim Shea,

President of Lake Ontario St. Lawrence River Alliance, is one of several community leaders that feel Plan 2014 is structurally flawed. Shea says "Plan 2014 is almost like a computer model that doesn't work and gives the River Board hardly any flexibility in terms of what they can do. They have to follow the plan and the plan is flawed." (*SPO 2). Gigas also criticizes the forecasting mechanisms for Plan 2014. By using previous data on water levels, Plan 2014 adjusts outflows each week. Gigas compares forecasting in Plan 2014 to using the rear view mirror: 'It's the equivalent of trying to drive a car on the highway. By looking in the rear view mirror and trying to aim between the lines that you see in the back. You don't, you don't anticipate turns coming in the future and you can't respond fast enough and you want them going off the road." (*SPO 3). On the other side of this issue, there are concerns about the intent of the science. As discussed before, citizen groups feel that the IJC favors downstream interests in Montreal. Gigas and Delicate released a series of videos hosted at United Shoreline Ontario's website. These videos present arguments against the integrity of Plan 2014's flow limits. The F limit is the maximum daily Lake St. Louis level as a function of Lake Ontario's level. However, the F limit has made no adjustments for water supplies higher than in the past. Gigas's concern is that Montreal has a hard upper-limit, while Lake Ontario does not. Delicate adds on to these findings stating that:

> "The (study board) dismissed the three original plans and created a new plan. When they use the damage estimates for Plan 2014, they were not done for that plan. They were the damage estimates that were done by the study group (for the original plans). They changed the variables. They added things like the trigger levels, but didn't re-study what

those damages would be. You can't change a variable and say that the conclusions are the same. It's flawed science, extremely flawed science." (*SPO 3).

When asked if the Plan has been successful thus far, shoreline residents feel it has failed because of the floodings. Jim Howe, the Director of The Nature Conservancy, which participated in two working groups during the Study, feels that the Plan has not fully taken effect yet "Plan 2014 hasn't really been allowed to be in effect because the water levels are so high. I think from 2017 to 2019, this plan has only been in effect, like 80% of the time. They're having to deviate from the plan." (*NC 1). Howe also touches on anecdotal evidence that there are sights of "large numbers of fish that are moving into the wetlands and spawning right now, but it's only been three years." (*NC 1), There is no official data yet that can confirm the health of the Lake is improving. The science behind Plan 2014 is the result of years of research, and has gone through peer-review. Unfortunately, those losing out on this issue are still determined the science is weak.

Science also plays a role in how different communities respond to floodings. As discussed, Governor Cuomo of NYS implemented the REDI Commission, and upwards of $400 million for resilience. Resilience measures include construction reakwalls and diversion tactics for water. Unfortunately, many of these resiliency structures have been destroyed in subsequent floodings. Ignoring the reality and impact of floodings has led to the waste of federal and state dollars. With climate change, flooding is anticipated to be a worsening issue over the years. Instead of investing dollars into temporary solutions, states and communities should be considering long-term solutions, such as breakwalls. It is the responsibility of all stakeholders to

question the validity of certain practices, and follow the science when it comes to ecological issues such as this one. The Canadian government has accepted the fact that flooding is a real threat that will persist. In terms of flood response, their government has initiated government buyout programs to move people away from the shore. If used properly, science can guide public policy decision making in a sustainable direction.

CHAPTER 6: CONCLUSION & POLICY RECOMMENDATIONS

Several factors of Plan 2014's development and implementation led to a lack of public support. It was found that opposition primarily comes from shoreline residents upstream of the Moses Saunders Dam. It was also found that social media played a critical role in shaping public attitudes towards Plan 2014, making this a unique case study for modern public policy. From the start, the IJC has been a strong proponent of developing Plan 2014 with consideration for science. Throughout the development and implementation of Plan 2014, science played a variety of roles. Science was a strong basis for the original plans proposed by the Study Board, but science was also used by shoreline residents to oppose Plan 2014.

Much of the current debate around Plan 2014 is whether it should remain in place. Plan 2014 is the result of over a decade of research and consultation, and has only been in effect for three years. While the Plan should not change, there are changes in governance practices that can be made. It quickly became apparent that this case study is different than any of those reviewed here. Social media and the access to science poses a new realm of dynamics and considerations for public policy. As a result of my research, I have come to several policy recommendations.

1. The IJC needs to focus on rebuilding trust with the public
2. In order to mitigate flooding damages, policy coordination at the different levels of government is necessary
3. The IJC should be more conscious of building relationships with elected officials
4. The IJC should continue strategic education and outreach over social media in an effort to better communicate science

It is very apparent that there is historical mistrust towards the IJC. As discussed in the literature review, any imposing agency must have the trust of the public in order to succeed. The IJC could focus future efforts on rebuilding relationships with shoreline property owners. If done strategically, the IJC could accomplish this in conjunction with recommendations 2 and 3. It is not recommended that Plan 2014 change. The Plan has not had enough time or opportunity to show results, and flooding is inevitable under any plan. In order to mitigate future flooding damages along the shore, the IJC should coordinate efforts with local governments to increase shoreline resilience. Governor Cuomo has already taken some steps towards this by forming the REDI Commission, but a unified effort may result in improved relations. Policy coordination may even be necessary at the federal and state level to consider government buyouts. With increasing rainfall trends, any property on the shoreline is at increased risk for damages. Relocating homes and businesses away from the shore may be best practice. By improving relations with the public and elected officials, the IJC may be more successful in future interventions. In addition, the IJC should continue strategic education and outreach on social media. This case study has shown the importance of recognizing social media as a player in the policy landscape. By engaging with communities on social media platforms, the IJC has better chances of reaching wider audiences. Educational sessions should focus on why Plan 2014 is still the best alternative, and what the IJC is doing to alleviate burdens.

This study did have some limitations. If done again, I would focus on addressing these to reach stronger findings. First off, the case against the IJC and Plan 2014 is still a developing issue. Throughout my research, I often had to shift gears and reconsider the scope of my project

as new information was coming out on a daily basis. While IJC Commissioners were still willing to discuss their perspectives with me, the lawsuit against them restricted a full dialogue. The findings of this research should be reviewed once the lawsuit has concluded. In addition, I was unable to identify any interested interview candidates downstream of the Moses Saunders Dam. The water level management of Lake Ontario-St. Lawrence River Basin is a wicked problem that stresses the relationships between upstream and downstream interests. My interview findings came solely from upstream interests, and downstream interests were represented by available literature online. While this worked, it is not ideal to only hear one side of the story. In an effort to compensate for the lack of interviewees, I sought out economic impact data from upstream and downstream. Unfortunately, there is no widely available data on impacts, making this another limitation.

As this thesis concludes, new questions have formed for future research areas. Research into the role of social media on public policy should be done qualitatively and quantitatively. In addition, research into how Canandian and American culture have influenced a unified policy would certainly reveal useful information for future case studies. Lastly, there is a lot of research yet to be done on Plan 2014 itself. There is a huge lack of post-assessment and monitoring of the lake's health being done. Moving forward, this case study of Plan 2014 can serve as a modern example of how social media, science and competing stakeholder interests can influence the development and implementation of natural resource management plans. Social media is still a relatively new concept that can alter the public policy landscape. Being aware of this can give imposing agencies the opportunity to strategize and be successful in their endeavors.

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