



Institutional Contexts and Policy Discourses: A Case of Water Quality Governance in Lake Erie Basin

RESEARCH ARTICLE

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ABSTRACT

There is growing recognition that the effects of discourse in shaping environmental policy are nested within broader institutional contexts. Consequently, over the last decade there have been increasing efforts by institutionalism scholars to theorize the link between discourses and institutions. This emerging ‘discursive institutionalism’ perspective considers discourse not only as an ensemble of ideas and their expression in language, but also takes into account the institutional contexts in which discourses emerge and are institutionalized in social practices. The application of this perspective in the context of resource governance has mainly focused on how dominant discourses become institutionalized into regulatory frameworks. However, the converse scenario, whereby the institutional context shapes the very nature of the discourse itself, has received much less attention in the scholarly literature. In this study, we employ the discursive institutional perspective to better understand the policy processes in the province of Ontario and the state of Ohio regarding the problem of eutrophication in Lake Erie, shared between Canada and the United States. Data collected through interviews, documentary sources, the news media and other relevant sources was analyzed with a process tracing approach. Results show that the federal and provincial/state level institutional arrangements in the two regions have influenced the nature of the ideational and interactive dimensions of discourse differently in the context of developing Domestic Action Plans (DAP) to address the eutrophication problem. Divergences in policy discourses revealed in the analysis show how different institutional contexts acted as filters for the varying cognitive and normative aspects of the policy discourses ultimately adopted in the DAPs. These differences may shape the relative effectiveness of achieving nutrient runoff reduction targets that initially set in motion the development of the DAPs themselves.

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1. INTRODUCTION

Over the last decade, there have been increasing efforts by some scholars to better understand environmental governance by theorizing the link between environmental discourses and institutions (Clement, 2010; Phillips, Lawrence, & Hardy, 2004; Schmidt, 2010). Discourse, as a shared way of interpreting information and constructing meaning, has been gradually receiving more attention in the field of neo-institutionalism. Within the broad area of institutionalism, the literature that focuses on the interaction between discourse and institutions – discursive institutionalism (DI) – is a relatively new field of study (Peters, 2012). This approach considers discourse not only as an ensemble of ideas and their expression in language, but also takes into account the institutional context in which discourses emerge and the ways in which discourses are institutionalized in social practices (Arts & Buizer, 2009; Raitio, 2012). DI is characterized by a relational two-way interaction between discourses and institutions. Thus, it enables researchers to theorize how and when some ideas and discourses may be enabled by particular institutional contexts while others may be constrained (Bosomworth, 2018; Fairbrass, 2011; Schmidt & Radaelli, 2004). In addition to its emphasis on ideas embedded within discourse, DI also engages directly with the interactive dimension of discourse focusing on the ‘coordinative’ aspect of policy making as well as the ‘communicative’ aspect of policy legitimacy. Thus, the DI approach helps us understand how, when, where and why certain policy relevant discourses succeed in gaining acceptance or become dominant while others fail or are marginalized in the context of power asymmetries (den Besten, Arts, & Verkooijen, 2014; Hope & Raudla, 2012; Lauber & Schenner, 2011).

Hajer suggests that the struggle among competing discourses in environmental policy processes takes place in the context of broader social practices, and thus “institutional arrangements are seen as the pre-conditions of the process of discourse-formation” (Hajer, 1995, p. 60). While Hajer did not provide further conceptual elaboration, attending to the institutional contexts of discourse is crucial especially in the context of environmental research, because the social system is linked with the ecological system primarily through institutions (Epstein et al., 2015; Folke, Lowell, Berkes, Colding, & Svedin, 2007; Ostrom, 2009). Some have even argued that the “fundamental problems regarding environmental governance have to do with institutional matters” (Young, 2008, p. 28).

Institutions influence decision making at individual and collective levels and can either hinder or promote sustainable resource and environmental management by affecting policy responses to environmental change (Ostrom, 2011).

However, we have limited understanding about how national and sub-national institutional arrangements affect the nature of the environmental discourse that ultimately produces policy (in)action (Johns, 2000). The significance of different institutional arrangements producing differences in discourses between countries collaboratively working to protect a shared natural resource is that it may potentially affect their relative effectiveness in achieving their shared policy goals. Countries with similar socio-economic characteristics and environmental value systems, such as Canada and the US, “may nevertheless differ greatly in policy outcomes because of differences in the locus of legitimization through discourse” (Schmidt, 2000, p. 305). In this paper, we contribute to this conversation by asking the question: how do the different institutional contexts in Ontario (Canada) and Ohio (the United States) affect the nature of policy discourse in the context of eutrophication problems in Lake Erie basin? We answer this question using a discursive-institutional perspective. Our findings demonstrate that the institutional contexts in the two regions have had significant implications for the nature of the interactive discourse associated with the policy commitment to achieve a commonly agreed nutrient-runoff reduction target. Such different influences on the interactive discourse between the two regions may affect the likelihood of each jurisdiction in achieving its set target, ultimately affecting the health of Lake Erie.

2. INSTITUTIONAL ARRANGEMENTS AND POLICY DISCOURSE

In the context of environmental management, an ‘institutional context’ refers to a broad array of formal and informal normative, regulative and cognitive structures that shape human conduct (North, 1990; Scott, 2014). It includes the constitutional frameworks, legislative structures, rules, conventions, habits, norms and values that guide the behavior of individuals and organizations in society (Ostrom, 1990, 2011). In this paper, we focus on just one component part of this very broad context – institutional arrangements – and how they relate to discourse in an environmental policy context. Following Hollingsworth, an ‘institutional arrangement’ refers to the organization of society through, and the relationships among, government sectors, political jurisdictions, administrative hierarchies, networks, associations, and communities (Hollingsworth, 2000). For example, federal systems tend to have a different form of institutional arrangement as reflected in their constellation of governance actors and decision-making procedures in comparison to unitary systems. Such differences can also be seen between parliamentary systems and

presidential systems (Schmidt, 2000). Thus, institutional arrangements relate to the system of decisions and rules that involve structural links between governance actors and the opportunities, obligations and constraints those institutional rules create regarding a specific issue domain (Kooiman, 2003).

Schmidt (2006) identifies the broad institutional and more specific policy contexts that mediate the effects of discourse on policy. At the national level, countries may fall along the continuum between simple polities and compound polities in their institutional arrangements. We find simple polities in countries such as the UK and France where majoritarian representation systems combine with statist policymaking processes and unitary states to channel most of the governing activity through a single authority (Schmidt, 2006). In such polities, governing authority is concentrated on the executive, and they are identified with strong cabinets, a relatively restrained (non-activist) judiciary, and a neutral and relatively centralized bureaucracy (Hope & Raudla, 2012). On the other hand, we see compound polities in countries such as Germany and Belgium where their proportional representation systems are combined with corporatist policymaking processes and federal or regionalized states so as to disperse power among multiple authorities (Schmidt, 2006). In these countries, the governing authority is relatively dispersed among multiple independent actors with separation of powers and decentralized bureaucracy (Hope & Raudla, 2012). Canada and the United States, where the federal systems in both countries apportion powers to various national and subnational bodies can be considered examples of compound polities. Such institutional arrangements at the national level may also be carried down to the subnational or sectoral policy levels. At the policy level, the policy process thus could be either a *single actor constellation* generally associated with processes in simple polities or a *multi actor constellation* generally associated with compound polities. Thus in single-actor policy systems policy formulation is the “purview of a restricted governmental elite” where as a large number of policy actors have input into the process in multi-actor systems (Schmidt & Radaelli, 2004, p. 197).

To better understand how such different institutional arrangements affect the nature of discourse with respect to environmental policy, it is necessary to first elaborate on the concept of discourse. Discourse consists of not only the substantive content of ideas that may have cognitive and normative aspects but it also has an interactive dimension involving actors at various levels (Hajer, 1995; Schmidt, 2008). This interactive dimension consists of a coordinative discourse in the ‘policy sphere’ as well as a communicative discourse in the ‘political sphere’. In the policy sphere, policy actors are engaged in coordinative discourse in their

efforts at formulating, deliberating, arguing and bargaining on policy alternatives (e.g. formulating fiscal austerity measures). In the political sphere policy actors are engaged in a communicative discourse as the formulated policy ideas are presented to the broader public to be deliberated and legitimated (e.g. persuading the public that austerity is good for the economy) (Hope & Raudla, 2012; Schmidt & Radaelli, 2004). The specific institutional arrangements within which societies conduct policy processes affect the nature of the interactive dimension of discourse. Thus, discourses about similar environmental issues may differ among countries not only because their peoples may have different value systems, but also “because different institutional contexts tend to frame the discursive process” differently (Schmidt, 2000, p. 232). In compound polities and multi-actor policy systems, there tends to be a rather elaborate coordinative discourse to bring various societal actors together to agree on a policy proposal, and after agreement is reached, there tends to be minimal need for legitimating communicative discourse aimed at the general public. In contrast, in simple polities and single actor policy systems, while the need for an extensive coordinative discourse is minimal, once decision is reached by the political elite there tends to be a need for an elaborate communicative discourse to convince the public of the need and appropriateness of the decisions taken (Schmidt, 2011). Thus, with respect to their complexity, we can view the institutional arrangements in a policy area along a continuum from the ‘single-actor’ to ‘multi-actor’ constellation associated with varying communicative and coordinative discourse (Fairbrass, 2011; Hope & Raudla, 2012; Kern, 2011; Schmidt, 2000, 2002; Schmidt & Radaelli, 2004).

Table 1 suggests general tendencies around how institutional arrangements may affect the nature of the discursive process. However, Schmidt (2006) cautions that some policy systems in specific sectors may show processes that may depart from that general tendency. Hence, certain sectors in polities that are closer to the simple end of the continuum may operate in a multi-actor constellation, as demonstrated in the contexts of agricultural policy and certain areas of labor policy in France, and selected aspects of environmental policy in both Britain and

DISCOURSE	INSTITUTIONAL CONTEXT	
	<i>Single-actor system</i>	<i>Multi-actor system</i>
<i>Coordinative discourse</i>	Thin	Elaborate
<i>Communicative discourse</i>	Elaborate	Thin

Table 1 Coordinative and communicative discourse in single and multi-actor systems.
Source: Schmidt (2002).

France. Conversely, some sectors may operate in a single actor constellation even though they are situated within compound polities, as was the case in such sectors as monetary policy and defense and security (Schmidt, 2006). Thus, while Canada and the United States may be regarded as compound polities due to their federal systems, the kind of discourse processes that a specific sector manifests in a sub national context becomes an empirical issue that needs to be explored. As the principal scale of interest in this study is the provincial and the state levels, and the institutional arrangement of immediate interest is the sectoral/policy system level, it is not certain to what extent both compound polities will show elaborate coordinative discourse and thin communicative discourse in the context of the subnational water quality policy processes. Assessing the influence of institutional arrangements in producing differences in interactive discourses between countries collaboratively working to protect a shared natural resource is important because it potentially affects their relative effectiveness in achieving their shared policy goals. Countries with similar socio-economic characteristics and environmental value

systems, such as Canada and the US, “may nevertheless differ greatly in policy outcomes because of differences in the locus of legitimization through discourse, whether at the coordinative or the communicative stage” (Schmidt, 2000, p. 305).

3. THE WATER QUALITY POLICY CONTEXT

The Great Lakes of North America, located between Canada and the United States (*Figure 1*), are a crucial binational resource for environmental, social and economic reasons. In the 1960s and 70s pollution from various sources had deteriorated water quality in the lakes so much that it became a concern at the highest political levels. Canada and the United States signed an agreement to protect water quality in the lakes by signing the Great Lakes Water Quality Agreement in 1972 (Botts & Muldoon, 2008). Despite progresses made in the 1980s and early 90s in cleaning up the lakes from the effects of household detergents, agricultural nutrient runoff and by-products from industrial

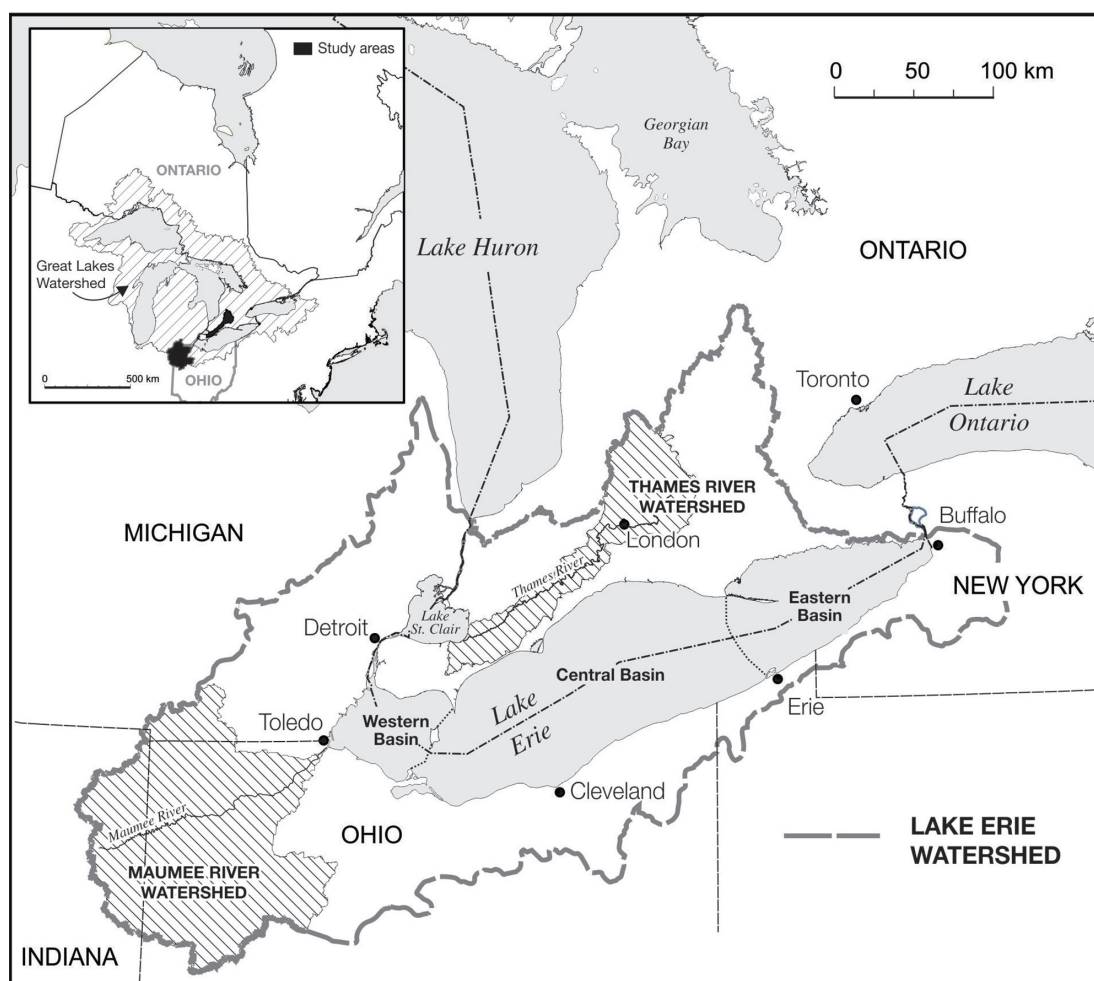


Figure 1 Western Lake Erie basin and key watersheds.

activities in the region, water quality issues, especially in Lake Erie have once again resurfaced as important environmental, social and political concerns (Grover & Krantzberg, 2012). In 2011, phosphorus loadings into Lake Erie in combination with other biophysical and climate-related factors resulted in an excessive growth of algae that extended more than 5,000 km², three times larger than any bloom previously recorded in the lake (IJC, 2014). Due to the resulting toxicity and other health problems, some cities and towns have had to shut off water supply from their plants such as the city of Toledo in 2014 and Carroll Township in 2013 (Hoornebeek, Filla, & Yalamanchili, 2017). There are many sources of phosphorus runoff to Lake Erie, such as municipal waste water systems, septic tanks and fertilizer use in homes and golf courses. However, the largest single contributor by far has been phosphorus runoffs from agricultural fields linked to manure and commercial fertilizer applications (Michalak et al., 2013; D. Smith, King, & Williams, 2015).

The Canadian side of Lake Erie basin accounts for about one-third of the basin's land area and supports approximately 2.7 million people, with 53% of them in eight urban areas with populations over 50,000, and the rest living in smaller towns and rural areas (ECCC & OMECC, 2018). In the period 2003 to 2013, the proportion of non-point sources for phosphorus loads to Lake Erie from Canadian sources averaged 71% percent for soluble reactive phosphorus and 78% for total phosphorus (ECCC & OMECC, 2018). The relative contribution from urban point sources that include municipal wastewater treatment plants, combined sewer overflows and industrial direct discharges is in the range of 10 to 15% for total phosphorus load across the Lake Erie basin (ECCC & OMECC, 2018). The Thames River watershed is the most significant source of nutrient loads to the western basin of Lake Erie (Lake Erie LaMP Work Group, 2011). With a population of approximately 600,000, the watershed covers an area of about 5,692 km² with land use characterized by agriculture (80%), urban areas (7.8%), deciduous tree cover (5.1%) and wetlands (4.6%) (Maaskant, 2015; Nürnberg & LaZerte, 2015). The watershed also includes many townships and municipalities with 30 wastewater treatment plants (UTCA, 2018), the major urban center being the city of London with a population of more than 380,000 (Statistics Canada, 2018). As the main land-use activity in the watershed is agriculture, loads from this sector comprise a significant portion from the total sources. Estimates are that in the Thames watershed agriculture may contribute 18–51% of the dissolved reactive phosphorus load, and 66–74% of the total phosphorus load from nonpoint sources (BluMetric Environmental Inc, 2017; Nürnberg & LaZerte, 2015).

On the US side, the Maumee watershed in northwest Ohio is the single largest source of dissolved reactive phosphorus

discharged to Lake Erie (IJC, 2014). Agriculture is the leading source of phosphorus runoffs as well as the dominant form of land use in the watershed with agricultural production dominated by corn-soybean rotations (Ohio Lake Erie Phosphorus Task Force, 2013). The 2018 Ohio Mass Balance study estimates that the watershed generated the highest annual total P load when averaged for the five water years in the study (2013–2017) – an average of 2,200 metric tons per annum (Ohio Environmental Protection Agency, 2018). This load consists of non-point sources (88%), National Pollutant Discharge Elimination System permit holders (8%) and Household Sewage Treatment Systems (4%). The Toledo metropolitan area is the largest urban area in the watershed with an estimated population of more than 640,000 in 2018 (US Census Bureau, 2020).

The International Joint Commission (IJC) notes that a growing body of research has provided “convincing evidence that the single most important solution for the restoration of Lake Erie water quality is the reduction of phosphorus inputs” (IJC, 2014, p. 26). The most recent revision of the GLWQA in 2012 mandates both countries to work towards reducing nutrient runoffs by setting numerical targets and developing plans for implementation. At the subnational level, the Province of Ontario and the states of Ohio and Michigan had also signed an agreement, in June 2015, to reduce phosphorus loadings from the waters entering the western Lake Erie basin by 40% from 2008 levels by 2025. In this paper, we consider the cases of Ontario and Ohio, both having watersheds –Thames and Maumee respectively– that are two of the most important contributors of nutrient runoffs to Western Lake Erie basin. This policy target to be implemented through developing Domestic Action Plans (DAPs) at both national and provincial/state levels is being pursued within different institutional contexts in the two countries. This process involves engaging a diverse array of stakeholders with varying views, interests and capacities such as the farming sector, municipalities, ENGOs, watershed organizations and others. The focus here is on the difference in institutional contexts in this policy process and its implications in differently affecting the nature of discourse around water quality policy, and eventually, the final policy outcome (the DAPs).

4. ANALYTICAL FRAMEWORK AND METHODS

The analytical framework guiding data collection and analysis is based on the Institutional Analysis and Development (IAD) framework (Ostrom, 2011). We build on the IAD framework by incorporating important

insights from the works of Clement (2010), Rydin (2003) and Cole, Epstein, and McGinnis (2019). At its roots, the IAD is a multi-tier conceptual map to identify the major types of structural variables present in many institutional arrangements (Ostrom, 2011). For researchers interested in understanding how different institutional arrangements enable actors to solve collective problems, the IAD framework provides diagnostic and prescriptive capabilities. Polski and Ostrom (1999) indicate that this framework is especially helpful as a systematic tool for organizing the study of a policy domain by incorporating a wide variety of specialized analytic techniques. The appeal of the IAD in the context of analyzing the influence of the institutional context on water quality policy discourse is because it enables a nested analysis of decision processes at multiple hierarchical institutional levels. This hierarchical structure (constitutional level, collective choice level, operational level) enables one to make explicit and clear links between institutional processes at multiple administrative levels such as the federal, provincial/state and local/watershed levels. The conceptual framework below shows institutions at multiple hierarchical levels, represented by the 'governance system', interacting with discourse, which is similarly operating at multiple levels.

While the modified IAD provides the overall framework to identify the main factors to be considered

in an institutional analysis of a policy, it provides limited insight into the actual interaction of discourse with the institutional context. While we use the IAD as the overarching framework to conceptually locate institutions and discourse, we adopt useful insights on how institutional arrangements actually affect the nature of policy discourse from the works of Schmidt (2008); Schmidt and Radaelli (2004); Hope and Raudla (2012) and Fairbrass (2011). The discursive institutional approach proposed by Schmidt posits that institutional arrangements affect the nature of the interactive discourse in policymaking consisting of the coordinative and communicative dimensions (Schmidt, 2006). The coordinative dimension of discourse is manifested in how a diverse set of actors come together in constructing and developing the cognitive elements of a policy program at the federal or provincial/state levels. By contrast, the communicative dimension is seen in how policy actors seek to legitimize their policy programs through invoking normative elements of policy, for example through appeals to broadly held values and ideals, in their consultation and engagement sessions with the public. Thus, the IAD helps us in identifying the relevant components of the institutional context as well as the actors involved in the policy discourse. We use the framework shown in [Figure 2](#) to explore the extent to which the compound polities in Canada and the United

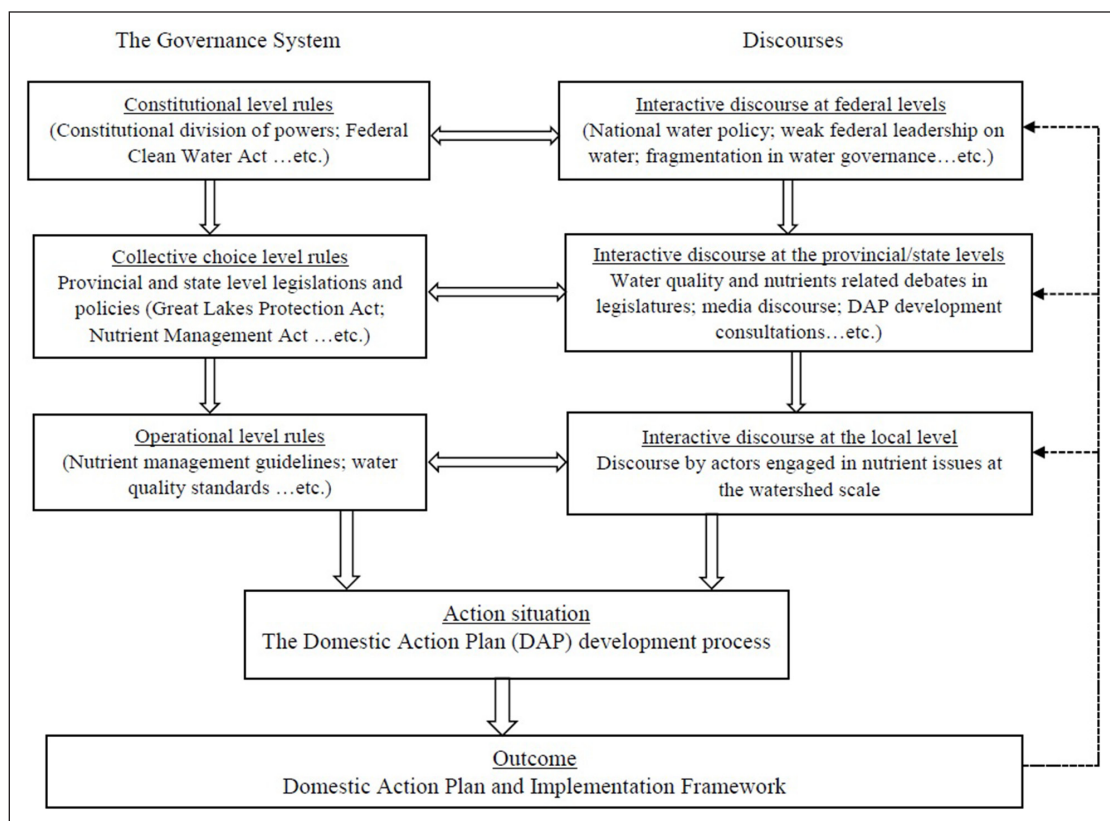


Figure 2 Conceptual framework: interacting institutions and discourses.

States influenced the nature of the interactive discourse at subnational levels. At the subnational level, the framework helps us assess the institutional arrangement in Ontario and how its unicameral parliamentary system led by the premier influences the nature of water quality discourse in the province. Similarly, this framework guides our analysis of Ohio's institutional context that mirrors the federal system characterized by separation of powers between the governor and the two chambers in the state assembly. Thus, the framework shows the interaction of discourses with institutions at multiple levels of the governance system (federal, provincial/state, local or watershed levels). Discourses and institutions interact both horizontally (on the same governance level) and vertically (along hierarchical governance level) in what den Besten et al. (2014) call the 'discursive-institutional spiral' (see also Clement, 2010). Their interaction cascades down from the federal levels to the local level in shaping the 'action situation', which is the actual arena for the development of the domestic action plans (DAPs). In time, the outcomes of such a process may in turn feed back into the higher scales. This framework thus enables us to characterize the policy systems in Ontario and Ohio along the continuum between single-actor constellation and multi-actor constellation and how these constellations may affect the nature of the interactive discourses related to water quality.

Data for this study came from documentary sources from governments at federal, provincial/state and municipal levels, non-government and civic organizations, as well as advocacy and lobbying groups. Data were also collected from relevant media sources (Toronto Star, Globe and Mail, CBC News, in Ontario; The New York Times, Columbus Dispatch and Toledo Blade in Ohio) and websites of relevant organizations. In addition to data from academic and grey literature, potential interviewees were identified with snowball sampling. Semi-structured interviews with government officials, members of the farming community, academic researchers as well as other knowledgeable members of local watershed bodies (33 interviewees in Ohio, 22 in Ontario) were then conducted. The design of the interview questions was guided by the conceptual framework and was designed to elicit relevant information to answer the research question. Direct observation through participation in meetings, workshops, forums, and webinars by relevant organizations were also valuable data sources. After interview transcriptions, data analysis was guided by the analytic framework and structured with the help of a method called 'process-tracing' (Villamayor-Tomas, Fleischman, Ibarra, Thiel, & van Laerhoven, 2014). The 'detailed narrative' form of process tracing (Beach & Pedersen, 2013) is suitable here in light of the research objective to provide "a general explanation rather than

a detailed tracing of a causal process" on the influence of the institutional context on policy discourse (George & Bennett, 2005, p. 211). The concepts from our analytical framework informed the themes that guided our coding process, serving as parent and child nodes. Such themes included institutions-related nodes such as 'constitutional level institutional arrangements-Canada/US'; 'collective choice level institutional arrangements-Ontario/Ohio; and 'laws/rules/regulations'. Similarly, discourse-related nodes included 'interactive discourses Canada/US'; 'coordinative dimensions Canada/US'; and 'key events'. Initial coding of interview data and documents identified recurring sub-themes in the general discourse relating to nutrients runoff, eutrophication and water quality in Lake Erie. The sub-themes identified (e.g., 'regulation' as an instrument to affect farmers' behavior) were then situated in their institutional contexts (e.g. Ohio State Assembly's decision on Senate Bill 1 regarding timing of fertilizer application) temporally in a process-tracing fashion (Beach & Pedersen, 2013; Verweij, 2000). This analysis was done by triangulating the text from the three major data sources (documentary sources, interviews and the media) with the use of the qualitative data analysis software QSRNvivo 10.

5. INSTITUTIONAL CONTEXTS IN LAKE ERIE BASIN AND WATER QUALITY POLICY DISCOURSES

5.1 ONTARIO'S CASE

The institutional context

The institutional arrangements at the constitutional level, collective choice level and operational level (*Figure 2*) all seem to have influenced the nature of the water quality policy discourse in Ontario. At the highest level, the source for specific institutional rules that structure how decisions regarding water issues can be made, and who has the authority to make those rules ultimately lies in the Canadian Constitution (Irvine, 2002). However, this authority is provided indirectly through the apportionments of powers and responsibilities between the federal and provincial levels of government. The governance structure in Canada at both the federal and provincial levels is modeled after the British parliamentary system, with no formal separation of powers between the executive and legislative branches of government (Library of Parliament, 2002). As such, the executive branch (the cabinet) draws its powers and personnel from the legislative branch. Horizontally, the system at the federal level is characterized by the potential for a dominant executive because the government is effectively the party with the majority of seats in the lower house of parliament (Radin & Boase, 2000). Even though the parliament is

bicameral with a House of Commons and a Senate, the members of the latter are not elected independently; the Prime Minister selects them. Hence, the House of Commons has been the dominant chamber in the legislative process, and the Prime Minister and the Cabinet can stay in office as long as they have the confidence of the House of Commons (Library of Parliament, 2002). The government in power typically does not face any stiff challenge from the Senate as the latter's role has been mostly to advise, "scrutinize legislation, suggest improvements and fix mistakes" (Senate of Canada, 2018). While some degree of executive control over the lower house is a prominent feature of parliamentary systems in general MacIvor indicates that often "control goes further in Canada than in any other Western democracy" (MacIvor, 2010, p. 211). At the provincial level, in Ontario, the legislative body is unicameral. The Cabinet of the current government, with the possible involvement of other Members of the Provincial Parliament, is primarily in charge of passing legislation and other legislative decisions (Legislative Research Service, 2011).

At the federal level, the Canada Water Act (1970), the Federal Fisheries Act and the Canadian Environmental Protection Act (1999) provide the overall institutional framework for surface water pollution and water quality protection. They include provisions for regulating the concentration of nutrients in cleaning agents, water conditioners and other pollutants that may adversely affect or degrade aquatic ecosystems (Babbie and Worsley, 2005). The Federal Fisheries Act, for example "makes it an offence for people to 'carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat'" (Estrin & Swaigen, 1993, p. 522). The Act enables the protection of fish populations and fish habitat from pollution through the prohibition of the deposition of harmful substances such as suspended solids, fertilizer, manure, fuel, and pesticides into fish-bearing waters. The Canada-United States Great Lakes Water Quality Agreement (GLWQA, 2012) is another institutional mechanism directly affecting water quality policy processes and rulemaking in Lake Erie basin.

At the collective choice level, where the focus is on who has the authority to coordinate and lead the design and development of the Domestic Action Plan (DAP) policy response, the Province of Ontario through the Ministry of Environment and Climate Change (OMECC) assumes the lead role. At the provincial level, there are a number of policies and regulatory frameworks that address freshwater resources in general and the Great Lakes waters more specifically. As Ontario's *12-Point Plan to Fight Algal Blooms* indicates, the main regulatory tools include the Ontario Great Lakes Strategy (2012), the Great Lakes Protection

Act (GLPA, 2015), and the Nutrient Management Act (for more details see Bakker and Cook (2011); Cook (2014); Sproule-Jones, Johns, and Heinmiller (2008)). In the period 2018–2025, the Province is discharging its commitments under those regulatory frameworks in Lake Erie basin, as well as its agreement with Ohio and Michigan, through the preparation and implementation of the DAP. Even though Canada does not have a national water policy, the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) serves as a coordinating framework for policy between the provincial and federal levels. This agreement has been renewed six times since its first signing in 1971, the latest renewal being in 2014. As this agreement is signed between seven federal ministries and three provincial ministries, it provides a potentially significant institutional mechanism for a cooperative approach to policy by linking provincial efforts to federal GLWQA commitments. The DAP thus simultaneously fulfills federal commitments under GLWQA and Ontario's own agreement with neighboring Ohio and Michigan to reduce phosphorus runoffs to western Lake Erie by 40% by 2025 from 2008 levels.

At the operational level, watershed based Conservation Authorities (CA) have acted as the institutional anchor to coordinating the policy discourse, often providing guidelines for best practices to the farming community, municipalities and other actors. Established by the Conservation Authorities Act (1946), and in many ways unique to Ontario, the special role of CAs as local institutions linking the province to municipalities, the farming community, and other local actors for environmental stewardship is notable (Conservation Ontario, 2003, 2012; Plummer, Spiers, FitzGibbon, & Imhof, 2005). There is a long tradition of the province and the federal government working in a more or less collaborative fashion through the coordinating role of Ontario's 36 Conservation Authorities. CAs help achieve provincial and federal level goals in flood management, green infrastructure, rural stewardship, monitoring, education and out research, and a host of other issues, working under the umbrella of the Ontario Ministry of Natural Resources and Forestry. The Upper Thames Conservation Authority and the Lower Thames Conservation Authority have thus been acting as two local or operational level institutional anchors in coordinating and leading various initiatives in nutrient management, especially working with municipalities and the farming community.

The institutional structures and relationships briefly presented above have had implications for the nature of the nutrients policy discourse in Ontario. More importantly, they highlight a noticeable and active involvement of government (affiliated) bodies working in the environmental field. As CI-25, a researcher and activist in southern Ontario notes:

you know, personally and I think I hear it around me among activists, there is a feeling that government ... I think we need to, as a society get stricter about how we manage environmental resources and goods, which means, coming to some fairly clear rules, as well as incentives and supports to make the transition ... because I don't think we are as vigorously opposed to government intervention as people are in the US for example (CI-25).

The effect of institutional context on interactive discourse

The record algal blooms in WLEB in 2011, and the simultaneous release of the revised Great Lakes Water Quality Agreement and Ontario Great Lakes Strategy in 2012 provided the nutrients discourse with greater political significance as it paved the way for policy action in addressing excessive nutrient runoffs and the associated eutrophication problem (Government of Ontario, 2012). The *Great Lakes Strategy* acknowledged that current pressures were overwhelming some of the successes recorded in previous decades to the extent that “scientists have warned that the Great Lakes are at a ‘tipping point’ of irreversible decline” (Government of Ontario, 2012, p. 5). This document provided the first province-level commitment to reduce excessive nutrient runoffs to Lake Erie. It also established the Great Lakes Guardians Community Fund aimed at helping finance local projects by grassroots community groups, non-profit organizations, and First Nations and Métis communities in their various environmental initiatives in the basin. A key milestone in the way of conducive institutional context for the nutrients discourse occurred in 2014 when the Ontario government renewed its agreement with the federal government to work on Great Lakes issues with the *Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health* (Environment Canada & Ontario Ministry of Environment and Climate Change, 2014). In this agreement, both parties recognized that they had a “shared jurisdiction over the Great Lakes, which makes coordination and cooperation essential to their restoration, protection and conservation” (COA, 2014, p.2). Another stipulation in the agreement with a normative dimension is that the parties agreed to engage the Great Lakes community “on a good governance basis”, defining good governance as “a decision-making process based on public participation, transparency and accountability” (COA, 2014, p.4). This provision anticipates a participatory approach to the development of the Domestic Action Plan, which is also the implementation mechanism for COA. Another significant stipulation of COA (2014) was the explicit commitment to engage First Nation and Metis communities as well as the

consideration of their traditional indigenous knowledges in dealing with Great Lakes issues (COA, 2014, p.75).

When the Great Lakes Protection Act received royal assent in November 2015, it enshrined into law many of the goals, principles and approaches that were initiated with the Great Lakes Strategy (2012) and the Canada-Ontario agreement (2014). Part IV subsection 9 (2) of the Act committed the Minister of the Environment and Climate Change to set at least one nutrient runoff reduction target by November 2017 so as to assist in the reduction of algal blooms in Lake Erie. This is a notable milestone in the nutrients discourse as it provided the province with the legal basis to take action on the issue. The act also reaffirmed the need for the province to adopt in its decision making processes the “precautionary approach” and “recognition of First Nations and Métis communities that have a historic relationship with the Great Lakes-St. Lawrence River Basin” (GLPA, 2015, p.7). Moreover, the Act provided civil society actors with the benchmarks needed to call on the province to fulfill its legislative mandates. The Great Lakes Protection Act Alliance, a coalition of more than ten ENGOs and other civil society actors, for example, had been working to encourage utilization, by governments, individuals, communities, and public bodies, of the tools enabled in the Act as well as monitor governments in their progress (Great Lakes Protection Act Alliance, 2016).

The Great Lakes Protection Act (GLPA, 2015) also established the Great Lakes Guardians Council to serve as a forum to facilitate communication and coordination among a diverse group of actors, as well as provide feedback on Great Lakes matters to the Minister of the Environment and Climate Change (Krantzberg, 2017). Members of the Council include representatives from municipalities, the farming community, conservation authorities, industry, environmental groups, the recreation and tourism sectors, academia, as well as First Nations and Métis peoples. In their meetings, participants discussed the importance of establishing a foundation of shared values and the importance of people's physical, emotional and spiritual connections with the Great Lakes and followed it up with establishing a knowledge-integration working group to facilitate those initiatives under the direction of the Council (Krantzberg, 2017). Eleven out of the 38 members of the inaugural meeting came from First Nations peoples representing Union of Ontario Indians, Chiefs of Ontario, and the Mississaugas of the New Credit First Nation.

In October 2016, the province of Ontario published a formal policy statement with a commitment by both the federal and provincial governments to act on reducing nutrient runoffs to Lake Erie by 40% by 2025 from 2008 levels. It was published in the Environmental Bill of Rights website (EBR: 012-8760) and comments and other input

was invited from the public on the policy brief. With this policy statement, the aim was to deliver on Canada's GLWQA (2012) commitment as well as Ontario's obligations under GLPA (2015) and its collaborative agreement with Ohio and Michigan (2015). From a coordinative discourse perspective, the OMECC coordinating office essentially became a 'one-stop shop' for any nutrient policy related matters in Lake Erie basin on the Canadian side for both federal and provincial levels (CI-06). In addition, the online posting of the policy statement marks the official start of the communicative discourse in Ontario with respect to the efforts by the provincial government to justify the need for action to the public at large. This was complemented with the DAP coordinating office working with a 'Lake Erie Nutrients Working Group' that was established as a platform for sharing perspectives among various sectors (agriculture, municipalities, ENGOs) and to provide advice on the development of the DAP. The engagement with the general public, however, was rather limited with only very few in-person sessions and webinars in 2017. In March 2017, the first draft of the Domestic Action Plan was released and comments were invited for a period of 60 days till May 2017, and after another draft was shared privately via email in preparation for a webinar discussion, the final DAP document was released in February 2018 (EC and OMECC, 2018). Thus, before the release of the final document, only one draft was made available to the general public. The final 'Canada-Ontario' DAP does not show apportionment of responsibilities between the federal and provincial governments, with programs and tasks collectively referred to as "commitments by Canada and Ontario". In the single federal-provincial plan, the phrase "Canada and Ontario" appears 60 times in the 66-page document. The plan further indicates "Canada and Ontario will lead the development of an implementation framework based on a collaborative governance model", reflecting the principle of "good governance" already stipulated in COA and in the spirit of the commitments outlined in the GLPA.

5.2 OHIO'S CASE

The institutional context

In the presidential system in the United States, political institutions at the federal, state and local levels tend to minimize the exertion of concentrated power by separating authority across the political landscape (Radin & Boase, 2000). Horizontally, separate institutions are charged with the executive, legislative, and judicial functions. The executive, represented by the president, and the legislature are separately chosen by the public and having been built on the ideal of the separation of powers the system pits the executive against the legislator (Verweij, 2000). As such, institutional fragmentation

and constitutionally created checks and balances shape the policy process (Kraft, 2011). Often, this institutional arrangement creates an environment where both the executive and the legislature are embroiled in a web of checks and balances that also involves the Courts (Hope & Raudla, 2012). Such fragmentation among centers of power is also carried on within institutions, as can be seen in separately elected bicameral legislatures (Radin & Boase, 2000). Due to the nature of such institutional arrangements many authors have characterized American politics as often involving 'gridlock' in the legislative and policy making process (Klyza & Sousa, 2013).

Similar to that of the federal level, the states also show a comparable separation of powers in their governance structures. Ohio has separately elected bicameral legislative body, the General Assembly, consisting of the Senate and House of Representatives, as well as a separately elected Governor (Sracic & Binning, 2016). The dominant two-party system in the legislative body has also been noted as a crucial factor in the analysis of federal and state-level policy processes (Kraft, 2011). This is especially significant in the case where one party (Republican or Democrat) dominates the House while the other dominates the Senate (Sussman, Daynes, & West, 2002). Another dimension is added to this dynamic with the governor's party affiliation. This is significant because as Sracic and Binning (2016, p. 53) note, in general, the Ohio governor's legislative success, or lack thereof, "is determined by whether there is divided government in the state".

The institutional context with direct and immediate relevance to water quality policy at the federal level include the three major regulatory frameworks administering water pollution in the United States: the Resource Conservation and Recovery Act (RCRA), the Clean Water Act, and the Safe Drinking Water Act (SDWA) (Z. Smith, 2013). The SDWA regulates drinking water produced by public water supply systems, and the main concern of RCRA is with hazardous waste. Hence, the main regulatory framework for safeguarding water quality from non-point source pollution at the national level is the Clean Water Act of 1972. However, unlike with point source pollution, for which it provides rules and regulatory standards, the Clean Water Act relies on planning and incentive programs when it comes to regulating non-point source pollution (Kilbert, Tisler, & Hohl, 2012). Nonetheless, it provides mechanisms that allow citizens to sue non-point source polluters in order to enforce the provisions contained in the Act (Kraft, 2011).

At the policy, or collective-choice level, the state of Ohio had the primary responsibility in preparing the Domestic Action Plan. The main authorities directly involved with nutrient runoff and water quality issues in relation to Lake

Erie in Ohio include the Ohio Environmental Protection Agency (OEPA), Ohio Department of Agriculture (ODA), Ohio Department of Natural Resources (ODNR), Ohio Department of Health and the Ohio Lake Erie Commission (OLEC). The Ohio Legislature has also been involved with the nutrients issue as attested with the passage of Senate Bill 150 in 2014 (requiring certification for fertilizer application), Senate Bill 1 in 2015 (restricting manure and fertilizer applications), and Senate Bill 2 in 2017 (expanding the mandates of OLEC) (EPA, 2017). The primary office charged with coordinating all nutrient runoff related efforts in Lake Erie basin is the Ohio Lake Erie Commission. However, OLEC is not only a small organization with limited staff and a limited budget, but it has served primarily on an advisory role to the Governor on the development of policy, and not to steer and guide policy implementation (Hoornbeek, Filla, Venkata, Kalla, & Chiyaka, 2016).

At the local and watershed scales, the state of Ohio, like many other states, provides the enabling legislation that supports operational level water management activities through water users organizations and special districts (Schlager & Blomquist, 2008). Special districts, where the government unit performs only one function or a very limited number of functions (e.g., irrigation districts), are a prominent feature of the government structure in the United States (Hogue 2013, Mullin 2008). Hence, there are 88 Soil and Water Conservation Districts (SWCD) in Ohio, which collectively aim to provide local solutions to water and other related issues through such activities as legislative advocacy, public outreach, grant support, etc. The Lucas County Soil and Water Conservation District on the Maumee watershed, for example, has been very active in the Toledo area in initiatives related to nutrient runoff and water quality. This institutional context at the local, state and federal levels briefly noted above has had an influence on the nature of the nutrients discourse, affecting the perceived urgency of the problem and appropriateness and need for action on nutrients runoffs. As a local researcher in the Toledo area (CI-28) notes:

...there has been some small incremental progress but our institutional arrangements on a lot of these issues don't respond very efficiently and very timely manner and as a result delayed action is still occurring as the problem continues to exist (CI-28).

The effect of institutional context on interactive discourse

Even before the August 2014 Toledo drinking water crisis, a sense of urgency and the desire to act was gradually increasing in the discourse among key actors, especially within Ohio EPA (OEPA 2010, 2013). Some actors intensified

calls for more bold actions by the government, emboldened by the recommendations spelled out in the IJC's landmark report: *A Balanced Diet for Lake Erie* (IJC, 2014). Released in February 2014, the report called upon responsible government authorities to declare Ohio's portion of Lake Erie "impaired" under the Clean Water Act. This would have put in place an overarching framework to dealing with nutrient runoffs starting from the sub-watershed scale all the way up to the basin level (Tuholske & Kilbert, 2015). Instead, only piecemeal actions were taken. The Ohio Legislature passed Senate Bill 150 that requires farmers to undergo certification procedures by the Ohio Department of Agriculture in order to apply fertilizers in farm fields above certain sizes (Farm Office, 2014). It was in the context of such limited state-level responses that in early August 2014 the intake pipes of the city of Toledo's water supply plant along Lake Erie took in algae-produced toxic microcystin that went untreated through the system, and reached people's tap water (Henry, 2014). Consequently, nearly half a million people were told they could not use their tap water for drinking and other domestic purposes for two days (Wines, 2014). This incident instantly made national headlines. On August 5, The New York Times published an article titled '*Behind Toledo's Water Crisis, a Long-Troubled Lake Erie*'. The local and regional papers also covered this story often juxtaposing the tragedy with failure by government officials to act and framing it as a public health issue.

Perceiving the government's responses insufficient to tackle the issue, several state-level lawmakers also joined the ENGO community in publicly voicing their call on the relevant state departments to act on Lake Erie. With the Toledo incident capturing media attention at the national level, Ohio State Rep. Teresa Fedor called upon the governor's office to declare the Maumee region a "distressed watershed" (Fraser, 2014). The editor of Toledo Blade, the largest newspaper by circulation in the city of Toledo, also made a similar call on the Kasich Government to declare the Maumee River watershed "in distress" (Kushma, 2014). Again, continuing with the piecemeal approach, the Ohio legislature passed Senate Bill 1 in early 2015 to regulate the timing of fertilizer or manure application during the non-growing season on frozen grounds and other weather and soil conditions (EPA, 2016). Such lack of an overarching strategy by the state government was criticized by lawmakers such as U.S. Rep. Marcy Kaptur who observed that "there's a state responsibility here that is very haphazard, very hit-or-miss" (Henry, 2016). For many, the Toledo incident brought the issue of Lake Erie eutrophication close to home as it was increasingly seen as being about people's basic livelihoods and an issue of public health (C-36). As such, the Toledo

incident provided many actors calling for more bold actions by the government with much needed normative basis for their arguments.

Over the course of 2015, the calls for “watershed in distress” designation for the Maumee watershed were increasingly followed by calls for “impaired” designation for the entirety of Ohio’s western Lake Erie basin. This gained more momentum especially after the state of Michigan declared its portion of the basin “impaired” in the same year. Unlike the “watershed in distress” designation which subjects a watershed to state-level mandatory guidelines, the “impaired” designation is more stringent and it subjects a designated water body to federal procedures. Under the Clean Water Act, an impaired water body and its watersheds are put on “pollution diets” called Total Maximum Daily Loads (TMDL) whereby nutrients are fingerprinted and backtracked to their sources with the oversight of the USEPA (Kilbert et al., 2012). Hoping that they could benefit from such approaches, the Council of the City of Oregon and the Lucas County Commissioners (wherein the city of Toledo is located) formally called on the USEPA and the state of Ohio for impairment designation of Lake Erie under the Clean Water Act (Wozniak, Gerken, & Contrada, 2016).

However, for some observers, Governor Kasich’s run for the 2016 US presidency would make it politically unlikely for his office to embark on the “impairment” designation as this move was seen unpopular among the agricultural community (Henry, 2015). Consequently, some actors saw the best way forward to be through litigation. In early 2017, a group of concerned non-governmental organizations including the Alliance for the Great Lakes, the Lake Erie Charter Boat Association, the Lake Erie Foundation, and the Ohio Environmental Council filed a lawsuit in a federal court against the U.S. EPA Great Lakes Region Administrator (Rosenkrans, 2017). One month later, the Environmental Law and Policy Center and the Advocates for Clean Lake Erie also filed another lawsuit against the EPA. Both of these suits accuse the EPA for failing to properly discharge its mandates under the Clean Water Act and not declaring the whole of WLEB impaired (Rosenkrans, 2017). While running for the 2017 Toledo city mayoral race, the incumbent Mayor Paula Hicks-Hudson also had to join the call for impairment, as it became a key election issue. She wrote a letter directly to the US President calling on the federal government to declare Lake Erie impaired (Patel and Parshina-Kottas, 2017).

Overall, it became increasingly apparent that the Clean Water Act had major shortcomings in addressing non-point source agricultural nutrient pollution. As Kilbert et al. (2012) note it “neither authorizes the federal government to regulate nonpoint sources nor requires states to regulate nonpoint sources in order to comply with TMDLs”.

Moreover, federal grants to help implement incentive-based voluntary BMPs couldn’t show much progress as they weren’t “used consistently enough because policy and institutions don’t require it” (Ohio Lake Erie Phosphorus Task Force, 2010, p. 71). Hoornbeek et al. (2016) observe that the organizational structures that could bring actors together in working towards a common direction were similarly weak. They note that “the overall picture of organizational resources and tools that emerges from our investigation is one of fragmented efforts among multiple organizations that have many priority items on their respective agendas” (Hoornbeek et al., 2016, p. 36). The inability of the lead coordinating body, the Ohio Lake Erie Commission, to provide a framework for action towards a common objective was also reflected in the comments provided by stakeholders in the various consultation forums that the Commission convened over the course of 2017 (CI-58).

Consequently, in late 2017 the Commission was given some more “authority to ensure the coordination of state and local policies and programs pertaining to Lake Erie” (OLEC, 2018, p. 8). Thus, the commission was able to organize various town hall meetings open to all interested citizens in elaborating what the state was doing to address the eutrophication issue (C-58). This is also attested by the DAP draft document’s five iterations in the period 2016–2018. Nevertheless, when the final Ohio Domestic Action Plan was released in February 2018, a notable aspect of the document was that it ensured each of the major agencies involved had their own separate sets of tasks with no apparent indication of synergy. The document indicated that accountability for ensuring implementation would lie with the individual state agencies, as the plan “does not establish any new legislation, rule, or enforceable standard. Rather, the actions listed in the DAP propose or describe recommended changes...” (OLEC, 2018, p.8).

6. DISCUSSION

6.1 HOW HAVE THE INSTITUTIONAL CONTEXTS AFFECTED POLICY DISCOURSE?

The perspective of discursive institutionalism posits that the different institutional arrangements of simple and compound political systems make actors within them pursue a different combination of coordinative and communicative discourses in their policy-making processes. Relatively complex polities with dispersed power locus generally have stronger coordinative discourse in developing policies compared to their communicative discourse to legitimate those policies in the eyes of the public. Conversely, relatively simpler political systems tend to have ‘thin’ coordinative discourse as the power locus is

mostly concentrated in the hands of the executive, but are more likely to have an elaborate legitimating discourse as the public is generally not involved in the initial development of the policy itself. As the nature of coordinative discourse affects the number and type of actors who get to have their cognitive or normative ideas considered about potential policy, different institutional arrangements could influence not only the process but also the substantive content of policy as well (Fairbrass, 2011; Schmidt, 2002).

At the constitutional level, the institutional structures in Ohio and more broadly, the United States, come closer to ‘compound polities’ whose policy-making processes require an elaborate coordinative discourse but ‘thin’ communicative discourse. The results of this study suggest that there was indeed elaborate coordinative discourse in Ohio as policy actors were embroiled in debates about various aspects of the policy. However, contrary to the stipulation in the discursive institutional perspective (*Table 1* above), there also seems to have been an elaborate communicative discourse as opposed to a ‘thin’ one. Comparatively, institutional contexts in Ontario, and Canada more broadly, come closer to ‘simple polities’ that require ‘thin’ coordinative but more elaborate communicative discourse. Nevertheless, the results suggest that even though the coordinative discourse was ‘thin’ in the case of Ontario, the legitimating discourse was also ‘thin’—contrary to the stipulations in the literature. So why do we see an elaborate communicative discourse in Ohio, while a limited one in Ontario contrary to what we would expect according to the discursive-institutional perspective? The reasons lie at constitutional, collective choice (policy) and operational levels.

At the constitutional level, even though both Canada and the U.S. have issues of fragmentation when it comes to water quality policy, these problems have roots in different institutional traditions at the constitutional level. Fragmentation in the Canadian case happens because of poor institutional design that fails to bring more coordination (Bakker & Cook, 2011). Conversely, fragmentation and uncoordinated institutional mechanisms occur in the United States partly because institutional arrangements were designed to be fragmented and uncoordinated (Binder, 1999, 2015). The late constitutional scholar and U.S. Supreme Court Justice Antonin Scalia observes that this design, which often leads to gridlock in the American political system, was deliberately designed by the forefathers and that Americans need to “learn to love the gridlock” (C-SPAN, 2011). In addition, the U.S. constitution allocates ‘residual powers’ to the states, and not to the federal government as it does in Canada (Skogstad, 1987). Hence, in many cases the federal government cannot overstep on “states’ rights” in terms of demanding the states to act on some environmental issues, further

contributing to the fragmented policy approach as was the case with the non-point source nutrient pollution in Ohio. Thus, the institutional structures in place with specific reference to nutrients issues in the Great Lakes basin (e.g. GLPA) seem to have guided the policy process and obviated the need for an elaborate legitimating discourse in Ontario. Conversely, the absence of such structures required the concerned authorities to engage in an elaborate legitimating communicative discourse in Ohio.

At the collective choice or policy formulation level, we observe that the formal institutional structures in Ontario seem to have provided a conducive environment for a more closed policy making style compared to that of Ohio. The *Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health* (COA) provides the institutional mechanism for coordination not only between the provincial level and the federal levels vertically but also horizontally among three ministries at the provincial level and seven relevant ministries at the federal level. Moreover, the *Great Lakes Protection Act* provided province level explicit policy commitments supported by legislative mandates. As such, these institutional mechanisms that provided the overall framework for a policy response seem to have made the need for more elaborate communicative discourse in Ontario less important. This finding is in line with observations made by others in relation to the institutional approach to address non-point nutrient pollution by Canada and Ontario. Referring to the politics of water pollution control in the Great Lakes, Verweij indicates that Canadian institutions resemble European ones in that “their environmental decision making processes are often based more on consensus than they are in the United States” (Verweij, 2000, p. 1010). In the case of Ohio, there was no overarching institutional framework to coordinate the activities of the various actors and thus shape the nutrients policy discourse. The only relevant regulatory framework, the Clean Water Act, only served to provide actors with incomplete tools and interpretations on its applicability to non-point source pollution, pushing actors to resort to the Courts to interpret them. In addition, the various state and municipal level agencies and commissions seem to have their own agendas and programs, which are not coordinated with the efforts by the state legislature or even with the line departments (Berardo, Turner, & Rice, 2019). Reflecting the tradition of the ‘separation of powers’ among government entities, the Ohio Domestic Action Plan provides separate sections of activities divided by the relevant line departments. The complete independence between the relevant officers in the line departments and the legislature in the Ohio assembly (unlike in Ontario) also seems to contribute to the divergence in the policy discourse. This is also manifested

in the fact that considering Ohio's long history in dealing with nutrients, it is remarkable to see the state still facing difficulties in embarking on a coherent strategy to deal with non-point nutrient pollution in Lake Erie. Ohio's institutional fragmentation and the constitutionally created checks and balances seem to have created a condition that made it difficult for a coordinated strategy. With such type of institutional structures, it is likely that "environmental problems cannot be addressed quickly or adequately" (Kraft, 2011, p. 77).

At the operational (local) level, the important role played by Ontario's Conservation Authorities as legitimate and respected watershed bodies in coordinating actions by diverse set of actors is an important factor in explaining the general alignment of actors' discourse in the Thames watershed. Conversely, Conservation Districts in Ohio do not align geographically with watershed boundaries (and thus nutrient runoff pathways) and have much less perceived authority among key actors, such as in the farming sector. There is no single watershed level authority in the Maumee that could help in defining key issues, set rules, and bring actors together (Hoornbeek et al., 2017). Berardo et al. (2019) for example point to an instance whereby the Ohio Soil and Water Conservation Commission resisted to adhere to directives from the governor's office.

In both Ontario's and Ohio's cases, we have seen that there was some level of interaction between the institutional context and the policy discourses in each region. While the conceptual map in [Figure 2](#) above suggests a neat and clear relationship between discourses and institutions along a hierarchical scale, the case studies reveal that the relationship is more of a spiral and diffuse than sequential. In Ontario, the Canada-Ontario Agreement seems to have provided the impetus for the policy discourse that resulted in the Great Lakes Strategy in 2012, and later to the Great Lakes Protection Act in 2015. Such institutional provisions then provided further direction to the water quality related discourse that may then produce specific institutional structures in order to implement the domestic action plan. In the Ohio case, the relationship between institutional structures and discourse was more diffuse, more political (partisan) and also involved the courts. Thus, the extent to which the institutional contexts in Canada and the U.S. create divergent discourses and fragmented approaches to water quality policy differs significantly, at least in the cases of Ontario and Ohio.

6.2 NON-INSTITUTIONAL FACTORS AND INTERACTIVE DISCOURSE

While the institutional context provides some explanation as to why the interactive discourse differed in the two regions other non-institutional factors may also have contributed

to this outcome. Schmidt notes that there could always be non-institutional factors that act as intervening variables in affecting the nature of the interactive discourse, for example as in the case where the general public may not be fully engaged in an issue due to its complexity (Schmidt, 2000, 2002). The relatively limited level of communicative discourse in the eutrophication discourse in Ontario seems to be a reflection of those non-institutional factors. After the heightened sense of concern in addressing agricultural nutrients related water pollution in the early 2000s (Ali, 2004; Hrudey, 2008; Prudham, 2004), Ontario has not had to deal with any major problems of algae in Lake Erie in the 2010s (Johns, 2017). This is partly due to the proximity of the occurrence of those early algal problems to the Ohio shores on the southwestern parts of Lake Erie (IJC, 2009; OEPA 2010). In contrast, in Ohio efforts specifically geared toward addressing algal blooms in Lake Erie date back to at least 2004 (GLRC, 2005; LEPR, 2008). Moreover, Ohio has been active in preparing nutrients strategies as part of its nutrient runoff contributions to hypoxia problems in the Gulf of Mexico through the Mississippi River. Even after algal blooms started to become significant in the 2010s the level of scientific understanding for its occurrence differed between Ontario and Ohio. In Ohio, a number of dedicated facilities and research units had been following the increases in dissolved reactive phosphorus since the mid-2000s (Ohio Lake Erie Commission, 2008). By the time the first Ohio Phosphorus Task Force delivered its report in early 2010, there was a fairly comprehensive scientific understanding of the sources of the problem and its effects, which were further detailed with the second report in 2013 (Ohio Lake Erie Phosphorus Task Force, 2010, 2013). There seems to be a lack of a comparable, focused scientific research initiative on the Ontario side of the basin, and more specifically on the Thames watershed, that could spell out the exact contributions of point and non-point sources of nutrient pollution until the 2010s (Michalak et al., 2013). As late as 2017, the Ontario Federation of Agriculture had to commission a consultant to provide it with a rough estimation of the possible contribution of agricultural runoffs in the Thames watershed (BluMetric Environmental Inc, 2017; Nürnberg & LaZerte, 2015).

Thus, not only differences in the institutional contexts in each, but also the objective biophysical conditions contributing to the problem, and the differing effects of eutrophication in each region, seem to have contributed to differences in the nature of the nutrients discourses. In Ohio, there were clear indications of the major role of agricultural runoffs by 2010, which led to the discourse in Ohio to focus on the role of the agricultural industry's culpability and the lack of coordination of efforts. However, in the case of Ontario, without a clear understanding of the cause-effect

relationships of the eutrophication problem, policy actors blamed external variables (such as climate change) and the government as a whole for not doing enough to keep the lakes ‘great’ (Dryzek, 2013). In addition, major population centers such as the City of Toledo and the Cleveland Metropolitan area, both within the reach of algal blooms that originate in the western basin, make the eutrophication problem a politically sensitive issue on the Ohio side. The issue had become a key talking point for the mayoral races in Toledo in 2017, while some observed that Governor Kasich’s reluctance to take strong action might have been linked to political priorities in his bid to run for the 2016 presidential election (Henry, 2015). On the Ontario side, the city of Windsor on the northern shores of WLEB is the only major population center in the area and it seems to not have experienced any severe algal blooms as experienced in the southern shores. As such, these non-institutional factors may also have contributed significantly to differences in the emphasis on the nature of the interactive discourse in the two regions with respect to the immediacy of actions to address the problem (Fischer 2003).

7. CONCLUSION

This paper situates the interactive dimensions of the eutrophication discourses in the western Lake Erie basin in their institutional contexts. In doing so, we focused on how the institutional contexts in Canada, as a comparatively simpler polity, and the United States, as a compound polity, may have affected the nature of the interactive discourses in both Ontario and Ohio. The significance of situating discourse in institutional contexts is that the very nature of coordinative discourse affects the number and type of actors who get to have their cognitive or normative ideas considered about potential policy. As such different institutional arrangements could influence not only the process but also the substantive content of policy by the way they shape the interactive policy discourse. In the cases considered in this paper, we see that institutional structures in Ohio, and more broadly the United States, prompted an elaborate coordinative discourse in Ohio as policy actors were embroiled in debates about various aspects of the policy process. This would mean that in addressing environmental issues that cross political boundaries or occur regionally and globally, the domestic institutional arrangement within the relevant countries could be a significant factor determining the overall success of achieving common policy targets. Thus, in the current era of climate change and the urgent need for collective action, an important variable to consider would be the extent to which the internal institutional

structures of countries promote or constrain domestic and international initiatives to tackle common societal problems. Such analyses may also need to consider the non-institutional factors that act as mediating variables between the institutional context and policy discourse and policy outcomes. This is particularly important in studying nations with similar institutional arrangements in how they structure the policy process but different in their socio-economic and geographic characteristics. Future research should emphasize this important link between the policy discourse, the institutional context and other socioeconomic variables.

COMPETING INTERESTS

The authors have no competing interests to declare.

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