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An examination of municipal efforts to manage brownfields redevelopment in Ontario, Canada

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Abstract
Since the mid-1990s, the reuse of brownfield properties for urban intensification has emerged as a core strategy in government efforts to remediate pollution and support renewal, regeneration, and retrofitting. While upper levels of government in Canada engaged in early efforts to devise policies, programs, and funding strategies to support redevelopment, the job of overseeing it has fallen mainly to local governments. This paper investigates the role of municipalities in Ontario, Canada's most populous and industrialized province, in managing and facilitating brownfields redevelopment. Survey data from 43 municipalities, coupled with information gathered from six site visitations and provincial information, reveal that despite common goals, tools, and approaches put forward by Ontario municipalities in their Community Improvement Plans, the management of planning, funding, and redevelopment issues continues to be a challenge for many, resulting in some very proficient municipalities and numerous hopeful ones with limited capacity to address this demanding issue.

Keywords: brownfield, contamination, municipal, planning, Canada

Résumé
Depuis le milieu des années 1990, la réutilisation des terrains contaminés pour l'intensification urbaine est devenue une stratégie de base dans les efforts du gouvernement pour remédier à la pollution et soutenir le renouvellement, la régénération et la modernisation. Tandis que les paliers de gouvernement supérieurs du Canada ont participé dans les premiers efforts pour concevoir des politiques, des programmes et des stratégies de financement pour soutenir le réaménagement, la tâche de le superviser incombe principalement aux gouvernements municipaux. Ce document examine le rôle des municipalités de l'Ontario, la province la plus peuplée et la plus industrialisée du Canada, dans la gestion et la facilitation du réaménagement des friches contaminées. Les données d'enquête de quarante-trois municipalités, associées aux renseignements recueillis à partir de six visites de sites et aux données provinciales, révèlent que, malgré les objectifs, les outils et les approches communs proposés par les municipalités de l'Ontario dans leurs plans d'amélioration communautaire, la gestion de la planification, du financement et du réaménagement continuent d'être un défi pour de nombreux gouvernements locaux, ce qui fait que certains dirigeants et de nombreux dirigeants

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pleins d'espoir ont des capacités limitées pour s'attaquer à ce problème difficile.

Mots-clés: brownfield, contaminer, municipal, planification, Canada

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Introduction

Brownfields are typically defined as properties with perceived or actual contamination resulting from previous activities. The reuse of these properties for urban intensification has become a core strategy in government efforts aimed at remediating past pollution, curbing sprawl into agricultural greenfields, strengthening communities, and, as noted in the United Nations General Assembly's New Urban Agenda (2016), prioritizing renewal, regeneration, and retrofitting. Like the United States and Europe, the management of brownfields is put forward as an important issue for Canadians eager to manage the tens of thousands of polluted sites scattered across the country. While the risks and liabilities associated with contamination severely impeded cleanup efforts in the 1980s and 1990s, legal and procedural arrangements introduced in the 2000s aimed to foster the reuse of what Canada's popular press once decried as the country's "most visible sign of urban rot" (Bergman and DeMont 2002, 21).

While the federal government of Canada did provide some financial and administrative support to devise management and policy efforts in the 1990s and early 2000s through the Canadian Council of Ministers of the Environment and the National Round Table on the Environment and the Economy, individual provincial governments are officially responsible for devising policies, programs, and funding strategies to guide assessment, cleanup, and redevelopment activities. Larger, more urbanized, and industrialized provinces like Ontario, that host an estimated 40% of Canada's 64,046 brownfields (ECO Canada 2007, 14), have been particularly keen to implement a policy regime to manage legal liability, limit risk, and support redevelopment. The approach Ontario formalized into legislation in 2004 has been described as relatively noninterventionist compared with other North American jurisdictions, in that the province lays out the rules for assessment, cleanup, and redevelopment, but the responsibility for undertaking these activities falls mainly on landowners, developers, and municipal governments who manage land use and property development (De Sousa and Spiess 2018). While recent studies have found Ontario's approach to be quite successful at enabling redevelopment in more robust urban markets, there continues to be a sense that much more can and should be done to support weaker market areas and small to mid-sized communities where greenfield properties are prevalent, and brownfields remain uncompetitive (De Sousa and Spiess 2018; De Sousa 2017). The present research focuses specifically on the role of municipal government in managing brownfields in Ontario. While a few studies have examined the efforts of individual municipalities in Ontario (e.g., Wang, Hipel, and Kilgour's 2008 study of Hamilton, Hayek, Arku, and Gilliland's 2010 study of London), the present study surveys numerous municipalities to contribute to a better collective understanding regarding the following questions:

- What role are Ontario municipalities playing in managing and facilitating brownfields redevelopment?
- What barriers continue to inhibit the redevelopment of brownfields?
- What is the municipal relationship with other public, private, and non-profit sector stakeholders in this domain?

Information was gathered from an online survey of municipalities with brownfield interests, site visitations to six cities that policymakers and practitioners consider to have progressive and supportive brownfield programs, and data from the province. The answers to these questions will, hopefully, contain implications for future research, planning, and policy since they provide an empirical basis for assessing the current state of municipal brownfields policy and practice in Ontario, understanding the challenges that continue to confront them, and suggesting the most appropriate role for municipal governments to play moving forward.

Brownfields policy in Ontario

Ontario is Canada's most populous province (population 13,448,494, Statistics Canada 2016) and home to both the nation's capital (Ottawa, population 934,243 municipal, 1,323,783 CMA) and its largest city (Toronto population 2,731,571 municipal, 5,928,040 CMA). Located in east-central Canada, the province borders the Great Lakes, the St. Lawrence River, and the United States, making it a strategic location for manufacturing to add to its abundant natural resources. The Environmental Careers Organization of Canada (ECO Canada 2007, 28) estimates that Ontario may have 25,611 potentially contaminated properties based on manufacturing industries, gas stations, recycling industries, mines, and coal tar sites alone. Ontario's Ministry of the Environment, Conservation, and Parks (MECP, 2021a, 1) characterizes brownfield properties as "vacant or underutilized places where past industrial or commercial activities may have left contamination (chemical pollution) behind," which could add a host of additional properties to ECO Canada's estimates (e.g., dry cleaners, auto repair, truck terminals, hospitals, etc.). Those interested in undertaking or promoting brownfields reuse, as opposed to the development of 'clean' properties or agricultural greenfields in the periphery, must first address the human health and environmental risks that these sites may pose, as well as the additional costs this may entail.

Ontario's Environmental Protection Act of 1971 prohibited the discharge of harmful contamination into the environment and marked the beginning of Ontario's regulatory efforts in this domain. These provisions were enhanced in 1985 to require the immediate cleanup of spills and financial compensation for those who suffered personal harm or economic loss (Fishlock 2010). The emergence of regulatory challenges associated with brownfields, along with scientific improvement in testing, resulted in the development of the Ministry's Guidelines for the Decommissioning and Cleanup of Sites in Ontario (1989) and Interim Guideline for the Assessment and Management of Petroleum Contaminated Sites (1993).

Ontario began updating its brownfield policy in 2001 via the Brownfields Statute Law Amendment Act of 2001; with Ontario Regulation 153/04 (Records of Site Condition) officially coming into force on October 1, 2004, under the Environmental Protection Act. In brief, someone interested in acquiring, remediating, and/or redeveloping a brownfield site must first hire a Qualified Person (QP) (engineer or geoscientist) to assess the property and submit a Record of Site Condition (RSC) confirming that it meets applicable standards for soil, groundwater, and sediment. An RSC is mandatory if land use is changed from a less sensitive use (e.g., industrial) to a more sensitive one (e.g., residential). Property owners may also voluntarily submit an RSC to reduce potential future liability, to fulfill a condition of property sale, for financing, for a mortgage, or to obtain approval from a municipality for a building permit (MECP 2021b).

The QP initiates the process of ascertaining the likelihood of contamination by conducting a Phase one environmental site assessment (ESA), which generally involves reviewing historical records and conducting interviews and site visits to examine past use and risk from chemical processes. If the Phase one ESA identifies no concerns, the QP can file an RSC to Ontario's Environmental Site Registry. If a potentially contaminating activity is identified, then a Phase two ESA involving physical sampling of soil and water is conducted or supervised by the QP to: determine the location, type, and concentration of one or more contaminants on the site; to recommend cleanup alternatives if needed; and, in Ontario, to take action to manage contamination to meet government standards. If assessment and/or cleanup are carried out to meet so-called generic standards (wherein they reflect exposure risks considered safe for specific land uses, such as residential/park or industrial/commercial), then this is certified by the QP in an RSC that is submitted to the MECP, which is checked for administrative and technical errors and then filed on the province's Environmental Site Registry. Only in the case of a risk assessment (i.e., a risk-based approach wherein exposure risks are determined and managed based on the specific redevelopment proposed for the property) is the QP required to provide the MECP with results from their Phase one and two ESA containing human health and ecological conceptual site models for review prior to conducting and submitting an RSC. The RSC filed with a risk assessment demonstrates that the property meets site-specific standards as certified by the QP. If accepted by the Director of the MECP, the Ministry may also issue a Certificate of Property Use (CPU) requiring the property owner to undertake specified risk management measures and limit certain land uses and activities on the site (MECP, 2021).

In addition to clarifying assessment and cleanup procedures for managing health and environmental risks, Ontario's Ministry of Municipal Affairs and Housing (MMAH) also initiated measures to support and promote the redevelopment of brownfields. The Ministry began the process of amending the Planning Act (Section 28) and the Municipal Act in 2001 to provide a legislative basis for devising Community Improvement Plans (CIP) that permit municipalities to provide financial incentives (e.g., study grants, loans, tax assistance, tax increment equivalent grants,

municipal fee and development charge waivers) to developers undertaking brownfield redevelopment in designated plan areas. Ontario also introduced the Brownfields Financial Tax Incentive Program (BFTIP) in 2004 to help with redevelopment using the provincial portion of educational property taxes. MMAH also established the Office of the Brownfields Coordinator in 2005 to facilitate its work and support municipal efforts. Also important is the Places to Grow Act of 2005 that enables the province to plan for population growth and economic expansion while protecting greenfields by devising growth plans for different urban regions. The growth plan for the populous Greater Toronto and Hamilton area explicitly targets greenfield sprawl by "increasing intensification of the existing built-up area, with a focus on urban growth centres, intensification corridors, major transit station areas, brownfield sites and greyfields" (Ministry of Infrastructure 2013, 12).

Literature review

The scholarly and professional literature on brownfields has expanded considerably in geographic scope and focus over the last four decades. Indeed, a recent analysis by Lin et al. (2019) of over 600 scholarly papers published on the topic from 1995 to 2017 identifies 17 clusters of research that the authors organize into six categories; (1) sustainable brownfield reuse, (2) brownfield soils, (3) brownfield actors, (4) decision-making, (5) brownfield reuse impacts, and (6) brownfield reuse evaluation and prioritization. An ample number of researchers have examined municipal efforts in Europe and the United States that cover four general topics related to trends, roles, tools, and rationales. The first refers to factors influencing the spatial pattern of urban brownfields redevelopment, such as the work by Frantál et al. (2013), who found that even though political support matters, redevelopment in the Czech Republic is principally located in municipalities with higher development potential due to strong business activity, larger cores, robust infrastructure, and other factors (also see Lange and McNeil 2004; Longo and Campbell 2007; and Tintera et al. 2014). A second focus relates to the role of municipalities and other actors in the remediation and redevelopment process. Silverstein (2003), for instance, emphasizes the vital role of local governments in Michigan who control both the playing field (zoning, planning, planning approvals, public processes) and the various interests (or city departments) that arbitrate the brownfield redevelopment process (also see Hula and Bromley-Trujillo 2010). The third area of municipal research examines tools and measures for improving the ability of local government to support remediation and redevelopment, such as enhanced information technology (Thomas 2003), community participation (Bartsch 2003), redevelopment agencies (Minkus 2007), effective planning processes (Meyer and Lyons 2000; van Rooyen 2001), funding and liability protection (De Sousa 2005; Kotval-K 2016; Inaraja Vera 2018), and building local capacity (Fortney 2006; Altes 2002). Last are papers highlighting the need to expand the outcomes associated with brownfield redevelopment beyond property cleanup and redevelopment to incorporate broader sustainability, justice, and community objectives (McCarthy 2002; Saha and Paterson 2008; Buchanan 2010).

The brownfields literature in Canada has also emerged at a slow but steady pace. Early work by government agencies and advisory groups like the Canadian Council of Ministers for the Environment (1991, 1993, 1996, 1997) and the National Round Table on the Environment and Economy (NRTEE 1996a, 1996b, 1996c, 1997, 1998, 2003) laid a foundation by providing information on the extent of the problem, as well as other critical legal, financial, and environmental issues. Most influential is a 2003 report produced by the NRTEE entitled A National Brownfield Redevelopment Strategy for Canada that put forward a "blueprint for action" and recommendations for all levels of government concerning public investment, public policy, and raising community awareness.

Since then, professional work on brownfields has been rather informational (i.e., "how-to" documents, case studies, etc.) and produced by provincial agencies and non-profit organizations such as the Federation of Canadian Municipalities (FCM), the Canadian Brownfields Network (CBN), the Canadian Urban Institute (CUI), and ECO Canada. The most relevant for local government are guidebooks produced for FCM's Leadership in Brownfield Renewal (LiBRe) program a national peer-learning program that involves seven training modules on (1) committing to action, (2) understanding the landscape, (3) building partnerships, (4) devising strategy, (5) promoting programs and opportunities, (6) managing programs and projects, and (7) evaluating, improving, and celebrating. Ontario's Ministry of Municipal Affairs and Housing (2011) has also written a relevant report reviewing the role and function of CIPs and other municipal financial incentives as they relate to brownfield redevelopment in Ontario municipalities. The study revealed that by October 2010, 44 municipalities in the province had adopted CIPs containing brownfield provisions that allowed for incentives to be offered (e.g., tax increment equivalent grants, tax assistance, study grants, development charges exemptions or reductions, etc.) (MMAH 2011).

More critical of government intervention, including municipal efforts, is a recent report prepared for the CBN to commemorate the 15th anniversary of the NRTEE's 2003 strategy report (De Sousa et al. 2018). Based on a survey of public, private, and non-profit brownfield practitioners from across Canada (with just over half from Ontario), the study finds that most are only marginally satisfied with the government's implementation of the NRTEE's brownfield recommendations; giving them an average grade of D-. Grades given to municipal government were relatively consistent (D- to D+) across all recommendations, with participants feeling that they have made some marginal progress with the application of strategic public investments (i.e., tax changes, removing tax liens, providing grants and loans), the approval regime for assessment and cleanup, and building capacity for brownfield redevelopment. The study advises municipalities to focus on two key issues: (1) increasing funding and incentives (i.e. tax breaks, faster approvals, lower development charge rates etc.) to support assessment, remediation, and redevelopment, along with municipal involvement and dedicated staffing; and (2) improving education, awareness, and outreach within the municipal council, bureaucracy, and communities generally.

Scholarly research on brownfields in Canada has also received modest attention, touching on the array of categories put forward by Lin et al. (2019) (see for example De Sousa 2000, 2002a, 2003; Tam and Byer 2002; Cakrapani and Hernandez 2012; Adams, De Sousa, and Tiesdell 2010; Shipley, Utz, and Parsons 2006; Wang, Hipel, and Kilgour 2008). At the local scale, only a few studies have examined redevelopment trends and/or the role of municipal government in facilitating redevelopment. Research examining trends in Ontario finds assessment and remediation activity to be extensive from 2004 to 2015 and comparable to US jurisdictions along the Great Lakes despite limited involvement from upper levels of government, with the lion's share going to robust urban markets within the Greater Toronto and Hamilton Area, and Ottawa (De Sousa and Spiess 2018). Research on Toronto finds that residential redevelopment on former brownfields has been particularly extensive since the 1990s due to high growth pressure and real estate values, combined with the local government's willingness to rezone industrial/commercial land and increase residential density (De Sousa 2002a; De Sousa 2017).

An older study of local governments across Canada revealed that despite perceptions of what is needed to manage the brownfields issue locally being similar throughout the country, administrative efforts remain disparate and somewhat limited because of variable provincial policies and property markets (De Sousa's 2006). Wang, Hipel, and Kilgour's (2008) work on Hamilton, Ontario (population 579,000) found that local government plays a key role in promoting brownfield redevelopment and is particularly effective when financial and technical tools support public-private partnerships that take advantage of market efficiencies and encourage stakeholder coordination. In their comprehensive analysis of a privately-led redevelopment project in Kitchener, Ontario, (pop. 242,368), Walker, Boutilier, and Hipel (2010) outline the critical role of collaboration between city government and developers to work through the numerous conflicts associated with brownfield acquisition, remediation, and building renovation; highlighting, in particular, city government assistance with financial and planning issues. Research by Hayek, Arku, and Gilliland (2010, 389) on London, Ontario, (pop. 404,699) also emphasizes the role of city administrators but recommends that they develop more familiarity with how the property development industry operates and increase financial support to developers if they want to advance the brownfields issue.

As for policies and tools, another study by Hayek et al. (2010) recommends that municipalities use GIS data to help local administrators understand the extent of the brownfield problem and better manage it with other urban issues such as heritage preservation and infrastructure management. Philpot, Johnson, and Hipel (2017), in their examination of a long-term brownfields management dispute in Elmira, Ontario, recommend using conflict management techniques to help decision-makers, including local government, seek outcomes that all parties prefer. Research on other mid-sized Ontario cities, including Guelph (Jamal 2018), Waterloo and Kingston (De Sousa 2017), emphasizes the vital role of municipal growth planning in getting communities with a history of low-density greenfield development to focus on redeveloping brownfields located in their cores into dense, walkable, and transit-connected communities. Outside of Ontario, municipal research in Quebec highlights the benefits of provincial financial assistance, especially for large cities like Montreal who had made early efforts to characterize several of their brownfields and apply for assistance (Beaulieu 2002, 19). Sroka's (2016) work on the city of Calgary finds Tax Increment Financing to be a particularly effective instrument to spur brownfield redevelopment because it combines revenue certainty with comprehensive long-term planning and the control of real estate sales.

Lastly, despite research outlining the broad community and sustainability benefits that can be gleaned from reusing brownfields in Canadian jurisdictions (De Sousa 2002b; Cakrapani and Hernandez 2012; Darchen and Poitras 2020), work by Bliek and Gauthier (2007) in Montreal finds that brownfield landscapes are overly commo-

dified by a focus on technical and technocratic considerations. They recommend that more policy attention focuses on the historical economic, social, and cultural significance of these landscapes to older industrial neighbourhoods. Unfortunately, more recent work by Darchen and Poitras (2020) on private sector-led brownfield regeneration in Montreal finds that innovations in social sustainability continue to be limited, with the authors' recommending that development contracts be used to compel developers to meet sustainability objectives negotiated with local communities. The present study aims to complement, update, and add to the Canadian literature by surveying municipalities in Ontario with a brownfield-oriented CIP to examine the collective group's experiences concerning their roles, tools, and rationales.

Methods

As mentioned, information for the present study was compiled via online surveys, site visits, and data provided by the province of Ontario. Online surveys were distributed to all municipalities in Ontario with Community Improvement Plans (CIP), although only municipalities with brownfield-oriented provisions were asked to respond. A search through the MMAH website and a review of other relevant reports was used to identify municipalities with a CIP. The survey was developed and approved by Ryerson University's ethics board in the fall of 2017. Pre-tests were conducted with a few municipal brownfield officials in December 2017 to ensure that the questions were clear and appropriate. A first-round of surveys was distributed in February 2018 via email to individuals responsible for coordinating brownfield redevelopment efforts and/or directors of planning departments as identified through online research. However, survey distribution was paused in the spring of 2018 because a time-sensitive national brownfields survey was also being conducted by CBN that was negatively affecting our response rate. Survey distribution resumed in September 2018, and emails and phone calls were employed to increase the response rate.

In total, 43 municipal surveys were suitably completed for use, with eight discarded due to incomplete information. These included 14 surveys from small (pop 20,000 persons or less), 15 medium (pop 20,000 to 100,000), and 14 large (pop 100,000 and over) municipalities. Despite the partial sample, it is reasonably representative of Ontario's situation in terms of the province's most populous and industrialized municipalities that lie along the north shore of Lake Ontario.

The online questionnaire itself was relatively comprehensive, comprising of 59 questions designed to gather information on: (1) land information and policy (23 questions); (2) funding and support (23 questions); and (3) opinions regarding stakeholder activities (6 questions) (the remaining seven questions were informational, including consent to participate, desire to receive results, etc.). More specifically, the first section asked questions regarding municipal CIPs, brownfield registries, brownfield coordinators, and measures for assessing/tracking the effectiveness of brownfield projects at the municipal level. The second section focused on internal and external funding and incentive programs supporting brownfields. Lastly, respondents were asked for their opinion on the role of developers, non-profits, and other governmental stakeholders involved in the brownfield redevelopment process. The survey took about 35–45 minutes to complete, and the questions were designed mainly as open-ended ones, with some asking respondents to rank their answers in order of importance using a Likert scale. Relevant materials (e.g., planning documents, project summaries) and case studies were also requested. Closed-ended survey responses were examined using descriptive statistics and frequency counts performed on the whole sample and on the three size categories of municipalities. Qualitative and open-ended questions were analyzed through thematic/content analysis, which consisted of organizing responses into categories and themes and, for many, counting the occurrence of responses to gauge prioritization.

Municipalities with a progressive management approach to brownfields, as perceived by practitioners and professional organizations (e.g., CBN, FCM Libre), were visited (Cornwall, Guelph, Hamilton, Kitchener, Kingston, Ottawa). These six communities were also selected from about a dozen suggested because they differed from each other demographically, in industrial history, and real-estate market characteristics. This approach does favour communities in southern Ontario, where the bulk of the province's population and industry resides. The city visits allowed for informal discussions with municipal officials, covering specific programs, initiatives, and significant projects in their jurisdictions. The same author conducted all of the site visits and took hand-written notes to record the conversations.

A fortuitous occurrence that provided meaningful information for the present study was research on brownfield provisions in municipal CIPs being undertaken by the MMAH in 2018. Upon describing the current research

to provincial officials, they graciously offered the use of their data, which identified 80 municipalities with CIPs containing brownfield provisions, the financial incentives they provide, and whether local CIPs cover the entire municipality or specific areas therein.

Given the size and complexity of brownfields policy-making and the enormous amount of regulatory activity it has generated, it is evident that no single analysis can presume to be exhaustive and all-encompassing. Suffice it to say that the objective here is to inform municipal practice and flesh out general patterns that can be used as frameworks for future research efforts on municipal brownfield redevelopment.

Results and discussion

Municipal roles and tools

Community improvement plans and brownfields administration

Forty-three municipalities sufficiently completed the online surveys, representing slightly over half of the 80 municipalities that the MMAH identified in 2018 as having CIPs containing brownfield provisions. While the number of Ontario municipalities with CIPs containing brownfield provisions almost doubled between 2018 and 2011 when there were 44 (MMAH 2011), it still only represents less than 20% of the 444 municipalities in the entire province. Roughly one third of the surveys were completed each by small (< 20,000 people) (33%), medium (20,000–100,000) (35%), and large-municipalities (> 100,000) (33%), which also aligns well with the provinces research on who has brownfield-CIPs (35% small, 40% medium, and 25% large municipalities) (MMAH 2018). Interestingly, the provincial data reveals that from 2011 to 2018, the highest increase in CIPs with brownfield provisions was among smaller municipalities (+211%), while medium and large municipalities witnessed increases of 60% and 43%, respectively (MMAH 2018). Larger municipalities likely initiated their CIPs earlier to address their more extensive brownfield inventories, while smaller municipalities are catching up in hopes of employing incentives to deal with the financial challenges associated with redeveloping brownfields in smaller markets. Municipalities with brownfield CIPs are located primarily in older and more populated parts of the province along the north shores of Lake Ontario, Lake Erie, and the St. Lawrence River, where the impacts of deindustrialization and economic restructuring have been most acute.

Several questions focused on the administration of brownfield activities given the importance of the local role outlined in the literature. Only 13.5% of the municipalities surveyed stated that they had a Brownfields Coordinator, who typically worked in a Department of Planning or Economic Development. None of the small municipalities had a Coordinator, while 20% of the medium and 29% of the large municipalities did. Reasons provided for not having a Coordinator include a low number of brownfield applications, the issue not being considered significant enough, or the sense that those in other positions or departments could do the work. Managing CIPs, and the authority to facilitate and incentivize brownfield redevelopment therein, is typically performed by a combination of Planning (56%), Economic Development (33%), Finance (13.5%), and/or other municipal departments (e.g., Infrastructure, Environment, Legal, Real Estate, etc.), with large and medium-sized municipalities also engaging more specialized units (e.g., Tourism, Culture).

Critical municipal brownfield tasks outlined by the respondents include processing, reviewing, and approving applications, processing and dispersing grants and incentives, advertising CIPs to potential investors, and evaluating project feasibility and development. When asked more broadly which departments in their municipality are involved with brownfield redevelopment generally, most noted Planning (95%) and Economic Development (72%), along with Finance, Environment, Engineering, and Building (21% each), and Legal or Real Estate (16% each). Over half (56%) of the respondents noted that these departments had a unified vision for managing brownfields (35% no, 9% NA), with a quarter (24%, primarily medium and large municipalities) stating that they had an internal brownfield working group or committee that meets regularly or when applications are submitted. The main tasks of these departments identified in open-ended responses are summarized in Table 1 below.

When asked whether their CIPs applied to the entire municipality or specific planning areas therein, only about a third (31%) said it covered the whole municipality, with the remainder highlighting specific plan areas like the downtown core (37%), industrial zones (6%), or 'other' (29%; e.g., specific properties, land in designated growth/built-up zones, or commercial corridors). The larger municipalities (56%) that responded were more inclined to have their CIP cover the entire municipality as compared with smaller (17%) and medium (20%) sized ones. These results

Table 1
Key tasks of municipal departments involved in brownfield redevelopment in Ontario

Planning Department • Processing applications to CIP programs (i.e., reviewing applications for completeness, follow-up meetings/emails/phone calls, preparing and defending staff reports for Council approval). • Managing the CIP (i.e., processing brownfield redevelopment applications, updating the CIP, managing the Municipal Leadership Strategy). • Measuring the success of the CIP, managing incentive programs, coordinating and implementing actions/initiatives in the CIP Tax incentive.
Economic Development • Promoting CIP program. • Project Lead for the development and the implementation phase of projects.
Finance Department • Disbursing funds. • Managing loan repayments. • Budgeting for incentives.
Legal Department • Preparing relevant legal agreements and approval by-laws.
Environmental, Engineering • Reviewing assessment and remediation applications and documentation.

vary slightly from the province's research, wherein 40% of CIPs targeted the entire municipality and 60% target specific locales (MMAH 2018).

Sixty percent of the municipalities surveyed have incorporated or are in the process of incorporating (12%) their CIP into their Official Plan. Half of the larger cities (50%) and just under half of the mid-sized (40%) ones possessed a formal Growth Plan, but only one smaller municipality did (although a few small and mid-sized municipalities noted that they followed a less formal growth study or a regional growth plan). Most small and medium respondents tied their brownfield efforts to downtown and/or commercial area revitalization endeavours, while a more significant share of larger municipalities links their brownfield efforts to infill development and growth management initiatives.

When asked in an open-ended format to list the top three objectives for brownfield projects supported by their CIPs, many respondents noted remediating (42%) or redeveloping (37%) contaminated properties, while other responses focused on; the provision of public incentives (19%), rehabilitating old buildings (19%) and/or serviced land (12%); revitalizing communities (12%); encouraging private-sector investment (12%), creating jobs (7%); and smart growth (7%). Other responses included improving public and environmental health and safety, supporting intensification and adaptive reuse, protecting against groundwater contamination, making brownfields competitive with greenfields, and pursuing broader policy goals related to sustainability, environmental improvement, planning, and economic development.

Community improvement plan funding and financing tools

Research by the province compares the number of municipalities offering an array of brownfield incentives in 2018 compared with 2011 (see Table 2). The most common tools continue to be the Tax Increment Equivalent Grant (93%), Tax Assistance (70%), and the Study Grant program used to support site assessments (59%). While there has been a proportional decline in municipalities offering development charge reductions and exceptions (from 55% in 2011 to 33% in 2018), there has been an increase in the provision of Fees Grant programs and Façade Grant or Loan Programs.

When asked how many brownfield projects have received municipal funding, the answers reveal that 19% of municipalities have supported a considerable number (over ten projects), while about a third (28%) have funded 1 to

Table 2
Municipal Brownfield Incentives in Ontario (figures shared by the Ministry of Municipal Affairs and Housing, 2018).

Type of Financial Incentive	No. of Municipalities 2018	% of Municipalities offering incentive, 2011	% of Municipalities offering incentive, 2018
Tax Increment Equivalent Grant	74	93%	93%
Tax Assistance	56	77%	70%
Study Grant Program	47	59%	59%
Development Charges Reductions/Exemptions	26	55%	33%
Fees Grant Program	41	48%	51%
Façade Grant or Loan Program	30	34%	38%
Rehab/Redevelopment Grants/Loans	7	9%	9%

3 projects, and the remainder noting that they have not sponsored any projects or were unsure. Using a Likert scale, respondents were asked how often these tools are used by their municipality (always 3, often 2, rarely 1, never 0, and do not have) and how effective the tools are in promoting redevelopment (very 3, moderately 2, somewhat 1, not effective 0, and do not have). A surprisingly large number of respondents noted that they "rarely" or "never" use the tools, or that they simply "do not have" it (or chose not to answer). This could reflect limited funding and financing support available or, perhaps, a lack of familiarity with the financial tools themselves. Of those who replied, the tools used "always" or "often" include Tax Increment Equivalent Grants (30%), Study Grants (19%), and Development Charge Reductions (19%), followed by ESA Phase I Support (9%), Façade Grants/Loans (9%), Rehabilitation and Redevelopment Grant/Loans Programs (9%), Municipal Tax Assistance (7%), Heritage Preservation Grants (2%), and Zoning Exceptions (2%).

As for the effectiveness of different tools, the results seem to mirror responses related to their use to some degree, with most finding Tax Increment Equivalent Grants to be very or moderately effective (35%), followed by Development Charge Reductions (21%), Study Grants (18%), Municipal Tax Assistance (16%) and Rehabilitation and Redevelopment Grants/Loans (14%). A closer look at the results reveals that respondents from small municipalities had very limited awareness of the frequency of use or effectiveness of the different tools. While half of the large cities and a couple of medium cities noted making regular use of tools that they perceived as effective (i.e., TIEG and Study Grants), most of the respondents overall indicated that they rarely used or did not use them. Only 15% of respondents revealed that they had other programs that could support brownfield projects outside of these (namely grants/loans for heritage preservation and building restoration/remediation). Only 30% of respondents stated that their funding was tied to specific goals (e.g., urban design, sustainability, accessibility, heritage preservation, employment, population) or end uses (e.g., commercial, residential, non-retail, employment, new rental housing). So, while municipalities with brownfield CIPs may offer financial tools, the overall results suggest that the awareness of and application of these tools may diverge. Indeed, the results suggest that there is a small group of large and medium-sized municipalities that are very savvy when it comes to their knowledge and application of these financial tools, another small group of large and medium-sized municipalities that seem to apply them as needed, and a larger group of small and medium-sized municipalities who are inexperienced or uncertain about which tools to use.

When asked in an open-ended question to identify the strengths and weakness for municipalities of the CIP approach for supporting brownfield projects, a quarter of responses highlighted the ability for municipalities to provide financial incentives to support revitalization efforts and, in particular, to entice private investment into their community. Having some monetary "skin in the game" was perceived as allowing municipalities to play a more significant role in projects, while the legitimacy of the CIP approach and the incentives available through it helps proponents maintain the strategic support of the local council, dedicate staffing and in-house environmental expertise, and assist with marketing new opportunities. A quarter of respondents also noted that brownfield incentives

available via the CIP reduce the financial burden on property owners and make development feasible, supporting municipal desires related to achieving employment densities, improved building and design quality, heritage restoration, affordability, and sustainability. Three respondents noted that the CIP framework provides clear policy and well-understood criteria that allow for a streamlined administrative process within a secure legal framework. Other strengths mentioned by a few respondents include supporting local businesses, enhancing street activity, improving aesthetics, and bolstering networks of collaboration among various stakeholder groups and municipal sectors (i.e. business, industry, education, research).

There was less consensus regarding the weaknesses of the CIP approach. Five respondents noted that the delivery of the brownfields program via the CIP could be expensive, which presents challenges in obtaining a reasonable and consistent budget for supporting brownfield activities. At the same time, there was some concern about potential budget pressure on municipalities if they provide too much support by deferring taxes, foregoing development charges, or not generating enough property tax to pay back their TIEGs. Determining the amount of incentive to offer individual brownfield projects was also considered to be very complex by a couple of respondents, especially when applicants were reliant on them for making their projects feasible or were sensitive to project delays. Disbursement of funds was also seen as challenging to predict due to many factors such as the time needed for assessment, remediation, and planning approvals, as well as construction timelines and property re-assessments. Two noted that they simply did not have the proper training in CIPs, allocating resources, and dispensing funding, making the process time-consuming, complicated, and affected their ability and willingness to target support to pursue opportunities.

Two respondents also mentioned broader ethical challenges associated with justifying the use of public money to support private development and with municipalities' 'picking winners' from the development community based on their 'hunch' on 'do-able' projects that will best provide short- and long-term benefits. At the same time, they worried that if they did not use their CIPs to attract projects, developers might flock to another municipality. Two respondents also felt that the CIP model was rigid with limited flexibility and creativity in supporting redevelopment. One respondent noted that it favoured urban areas and was challenging to apply in rural areas, while two said it favoured large projects and was not practical for small developments. Lastly, the need to assign staff to promote the program and manage and update policies, procedures, and goals and work on individual projects was considered an ongoing challenge, particularly if the CIP is not a top priority for developers and city managers.

Other municipal tools to support brownfields reuse

The survey asked about other actions and tools often employed by municipalities to manage brownfields in Ontario. Interestingly, only a few large and mid-sized municipalities noted that they had a brownfields registry/inventory in place (8%) or in progress (12%), revealing limited use of information technology in brownfields management despite the benefits outlined in the literature (Hayek et al. 2010). Only a quarter of respondents noted having a registry of municipally-owned brownfield sites developed (21%) or in progress (5%), despite the recent federal accounting standard requiring all public sector entities to audit and report their environmental liabilities related to contaminated sites by 2015 (Public Sector Accounting Board Standard PS 3260). Those who maintained a registry of municipally-owned sites noted that they owned/managed 1 to 5 brownfields, while 7% reported having more than 25 sites consisting of former historical landfills that are now used for municipal parks, properties being remediated for future residential/commercial development, and easements or other landholdings not intended for redevelopment.

Few (14%) were aware of brownfield outcomes, including how many brownfield assessment, remediation, and/or redevelopment projects were completed or closed in their municipality, even though this information can be easily gleaned from the province's RSC database. Of those who did, 28% (primarily large and some medium) tracked application and development details (i.e., type of project, use, location, site/redevelopment size, approvals/dates, number of new units, project progress, etc.), while 12% tracked municipal financial contributions, or property assessment and construction jobs created (7%). Interestingly, only 8% noted that they formally required and tracked broader socio-economic or environmental outcomes of their projects, which included standard variables such as the area of land or building redeveloped, the number of new units, or the increase in assessed value and employment. This raises concerns that sustainability innovations and outcomes will be limited unless they become more formalized, as Darchen and Poitras (2020) found in Montreal.

Capacity building and collaboration

Overall, when asked about the most significant challenges facing their brownfield efforts, 23% of respondents pointed to a lack of awareness/demand/priority or funding issues, followed by limited knowledge/training/expertise in brownfields (12%), budgets (9%), staff resources (9%), and weak market forces (9%). While challenges related to funding and uptake by developers were shared by municipalities of all sizes, medium and small locales also emphasized staffing and internal knowledge/training/expertise, while large and medium ones emphasized market forces and lack of public awareness.

Several questions were also asked to assess the relationship between municipalities and upper levels of government, as well as other organizations that were established to raise awareness and improve the capacity of municipalities and others to address the brownfields issue. About a third of respondents (37%) said that their municipality had received technical/policy support from the provincial government (mainly the MECP or the MMAH), with the most significant share being medium-sized municipalities (53%) versus large (29%) and small ones (18%). Other provincial agencies that were mentioned by a few respondents include the Ministries of Northern Development and Mines; Transportation; Natural Resources and Forestry; Agriculture; Food and Rural Affairs; Finance; and Labour. Only 4% said they used the province's BFTIP funding program due to the arduous application process. When asked for their opinion regarding the role of the Ontario government in brownfield redevelopment, about half (46%) did not respond, and those who did felt that it was neutral (26%) or poor (27%), with medium-sized municipalities being the most favourable. Many noted that the province needed to play a more active role in policy and funding while calling for environmental procedures and approvals to be streamlined further.

Only 13% of respondents from large and medium-sized municipalities said they received technical/policy support from the federal government, although when asked in an open-ended manner which agencies, a few listed the Federation of Canadian Municipalities, which is technically a non-profit. Very few (6%) had received funds from the federal government, which came as a special budget item for a project aligned with federal jurisdiction or responsibility. It is not surprising, therefore, that when asked to provide their opinion regarding the involvement of the federal government in brownfield redevelopment that the majority of respondents (71%) did not answer, while those who did state that it was neutral (12%) or poor (15%).

As for external partners, half of the respondents stated that they were familiar with the FCM and its Leadership in Brownfield Renewal peer-mentoring program, with 38% saying that they had received capacity building support (e.g. resources, training, networking) from the organization. Only 15% of municipalities surveyed, mainly large ones, said they had received funding from FCM's Green Municipal Fund for a brownfield initiative (e.g., for CIP development, site assessments, remediation); with several applying again after a successful experience. Ten percent noted that they were aware of private redevelopment projects in their municipality that received FCM Green Municipal Funds. While 67% did not provide an opinion on FCM's role, those who did were neutral (12%) or favourable (19%), highlighting its advocacy, funding, research, and educational programs for municipal practitioners.

Half of the respondents were also familiar with the Canadian Brownfields Network, although only 12% noted receiving capacity-building support (e.g. knowledge resources) from the network. Consequently, most did not provide an opinion on the role of CBN in brownfields redevelopment. Those who did were either neutral (12%), favourable (9%) or unfavourable (10%), highlighting their networking opportunities, newsletters, conferences, and awards but stating that they did not impact the day-to-day implementation of municipal brownfield efforts.

Lastly, 39% of the respondents pointed out that the relationship between developers and their municipality regarding brownfield redevelopment was favourable or neutral (15%), with unfavourable opinions (10%) or non-responses (35%) typically coming from smaller municipalities.

Site visits and municipal conversations

In tandem with the survey, informal conversations were conducted with municipal brownfield Coordinators and staff in six municipalities with a strong reputation for being highly effective at supporting redevelopment due to their influential brownfield CIPs, extensive redevelopment experience, and in a few cases, award-winning policies and staff. The intent here was not to report on their individual policies and programs but rather to highlight key themes and issues related to municipal roles, tools, and experiences. Given the nature of the survey results presented above, it is crucial that future research also consider those municipalities that seem to be having more difficulty with the brownfields issue, particularly smaller ones.

One shared and significant observation from all the site visits is that municipal brownfield actions and programs are principally market/developer-oriented and that municipalities see their role as reacting to and supporting development inquiries and proposals put forward by developers. As such, they tend to be end-user-oriented and development-focused, concentrating on "marketable" locations, making development pro formas work, and helping developers navigate RSC, planning, and development processes.

Site visits and conversations also highlighted the vital role planning can play in fostering and supporting brownfield redevelopment by preparing CIPs that call attention to brownfield locations and tools. Several Coordinators highlighted the importance of the process of developing or updating a CIP in terms of framing brownfields as infill opportunities; understanding the needs of developers, internal departments, and other stakeholders; gaining a better understanding of the strength of specific markets and land uses; and linking brownfields with internal planning processes and exercises (e.g., secondary plans), as well as the mandates of different departments (e.g., economic development, real estate). The CIP approach has also allowed municipalities to innovate and adapt tools to meet local conditions (e.g., hydrology and groundwater issues in Guelph and Waterloo) and has raised the importance of brownfields in the city bureaucracy allowing for internal fast-tracking of projects.

A few of the faster-growing municipalities noted the importance of provincial and municipal growth planning on pushing the market toward brownfields by supporting efforts tied to intensification and densification. Most municipalities were trying to corral infill development into specific locations to promote catalytic projects to spark revitalization, particularly in downtown and waterfront markets. Where development has been very successful and prices have soared, two noted using brownfield parcels as spaces for affordable housing or other public uses.

In terms of organization, all of these 'effective' municipalities had a defined brownfields coordinator or a small team of staff from different units responsible for coordination. Several highlighted the out-facing role of Coordinator(s) in terms of acting as a matchmaker between landowners, prospective businesses, and brownfield developers, as well as a nurturer of niche brownfield developers, particularly in smaller markets. Emphasis was put on the Coordinator's role within the municipality to link planning, economic development, and in-house engineering staff, as well as finance, health, and environment staff (e.g., water). The Coordinator was the navigator of brownfields assessment and redevelopment processes internally, with several noting that the presence of a formal Coordinator elevated the status of the brownfields issue internally. All highlighted the Coordinator(s) role as champion, resource warrior, storyteller, and advocate responsible for consistently justifying the brownfields CIP program to the council, managers, and other internal stakeholders, translating the cost/benefit value of program, rationalizing funding and public/private partnerships, and defending the use of taxpayer funds to support private development. Despite these critical roles, however, several of these jurisdictions have permanently/temporarily lost their Brownfield Coordinator position in the past.

All the municipalities visited also maintained extensive programs related to funding and financing brownfield assessment, remediation, and cleanup activities. Two emphasized the importance of funding coming early in the redevelopment process and discussed the different types of activities that are eligible for funding support. Not only did they have a robust set of tools and knowledge of them, they were constantly evaluating, tweaking, adjusting, and eliminating incentives depending on market forces and effectiveness.

Other issues that came up included a desire to approach the brownfields issue more strategically versus just keeping up with development proposals, trying to prevent the creation of future brownfields, using infrastructure to attract redevelopment in brownfield districts, and the vital role of "high-quality" environmental consultants. Two mentioned that recent requirements for municipalities to inventory their environmental liabilities is helping their city be more aware and proactive in managing city-owned brownfields and infusing those sites into brownfield CIP activities (see Auditor General 2013, PS 3200). Two were not convinced about the value of inventories, however, while two felt they helped highlight particularly challenging locations or subcategories of sites (e.g., fuel stations).

Conclusion

What started off in the 1980s as an effort to address the risks posed by contamination on human health and the environment became, by the mid-1990s, a broader effort to remove the rust left behind by deindustrialization and to revitalize local economies and urban spaces. While the federal government was an early champion, it has virtually left the scene and put in its place a non-profit with some funding and virtuous intentions. The provincial government also grabbed the reigns, but after formulating the rules for cleanup and public investment in the mid-2000s, it too

stepped back on the latter and passed the responsibility to municipalities to manage the issue. So how are things going for municipalities a decade and a half in?

Information shared by the province reveals some growth in the number of municipalities of different populations using Community Improvement Plans to provide a strategic framework for addressing their brownfields issue and offering incentives to support redevelopment. The CIP approach is helping to standardize how municipalities in the province perceive their role and the role of brownfields in planning for growth and urban economic redevelopment. But, while goals and roles may be aligning, the present research reveals that municipal capacity and experience to deliver on them is diverse, as has been the case across Canada (De Sousa 2006). Indeed, three groups of municipalities seem to have emerged in Ontario: one group very experienced in how to apply a CIP and the financial tools therein; another group with CIPs, but only working through limited opportunities as they arise; and a large group with objectives and plans in place but little opportunity and capacity to move them forward.

As such, the barriers that continue to inhibit brownfields redevelopment in Ontario, according to respondents, focus not only on the traditional cost, risk, and process oriented-challenges associated with redeveloping brownfield sites but also on improving and maintaining the municipal capacity to support and engage in brownfield activities. As for the municipal relationship with other stakeholders, the favourable perception of private developers is fortunate given the critical role of collaboration between city government and developers outlined in the Ontario-based literature (Wang, Hipel, and Kilgour 2008; Walker, Boutilier, and Hipel 2010; Hayek, Arku, and Gilliland 2010). That said, more can still be done to improve that relationship, as well as to improve the one with non-profits and, especially, with upper levels of government responsible for setting the tone and the rules for brownfields, planning, and urban growth.

Overall, the provincial goal of empowering municipalities with the ability to both plan for and support brownfields redevelopment locally via the CIP approach seems to support a shared vision but also fragmented realities on the ground. While this is working for some municipalities, it may not provide adequate support for those smaller and mid-sized cities keen to see brownfields reach their potential in helping prioritize renewal, regeneration, and retrofitting. While an easy recommendation would be for all levels of government to redouble their brownfield efforts, realign their priorities, and invest in increasing municipal capacity, the concern is that interest in the issue is diminishing at the municipal level, as it has federally and provincially. Another option is to allow municipal governments to continue to plan for brownfields via their CIPs, but to also create specialized units or authorities at the regional or provincial level to work through more complex financial aspects of redevelopment deals between municipalities and developers (akin to what is done in the province with assessment and cleanup aspects). Suffice it to say, maintaining the present course will perpetuate current realities, and, eventually, grand plans for improving Ontario's brownfields may also turn to rust for many communities.

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