

ACHIEVEMENTS AND CHALLENGES: THE MANY FACES OF BROWNFIELD SITES IN THE TERRITORIAL SYSTEM OTTAWA-GATINEAU, CANADA

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Abstract: This article provides an analysis of various aspects regarding the situation of brownfields in the territorial system of Ottawa – Gatineau, in Canada, which developed considerably from an economic point of view over the last 60 years. The brownfields located in the National Capital Region share a historical / patrimonial significance, but also contain a possible economic value that cannot be neglected. Thus, balance between the economic imperatives of the 21st Century and the heritage elements of these sites must be found in order to achieve the requirements of a sustainable development of the city. Nine brownfields have been identified and analysed, most of them being reintroduced in the economic flow, which led to a considerable amount of positive outputs to the community, eventually contributing to the reduction of urban expansion and to the improvement of the quality of life within this ever-growing urban environment. Reusing these sites for various purposes aims at achieving social, cultural and economic goals set by the administration of the city since the introduction of the Gréber Plan in the 1950's. Brownfield rehabilitation can thus be considered as possible antidote to the erosion of the urban fabric, but not without some ever increasing challenges.

Key words: brownfield site, territorial system Ottawa - Gatineau, financial programs, Canada.

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INTRODUCTION

The territorial system of Ottawa-Gatineau is located at the borderline between Ontario and Quebec (Figure 1). Historically speaking, the city has developed over the lumber-timber industry, and constituted a major hub of economic development during the first half of the nineteenth century. After a period of infrastructural development from the second half of the nineteenth century to the first half of the twentieth century, which was the direct result of the nomination of Ottawa as the National Capital for the newly formed federal alliance of the provinces of Canada, the Ottawa – Hull area (soon

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to be the Ottawa – Gatineau area) has seen its urban fabric profoundly modified (Benali & Ramirez, 2012). The construction of many of the Federal agencies, the expansion of the economic influence of the city and the demographic rise of the population led to the explosion of the growth of the city. After the introduction of the Gréber Plan in the 1950's, the city has undergone profound modifications. Entire sectors and industries have been shut down or re-localised to other parts of the city (Benali & Ramirez, 2012). The train station was moved from the downtown core to the periphery of the city. The introduction of a highway system, as well as the current development of the transit system, has profoundly modified the urban landscape. Over the years, the city has thus transformed itself, leaving here and there some scars and souvenirs. One of these, of course, is the proliferation of brownfields.



Figure 1. The geographical position of the territorial system Ottawa-Gatineau
(Source: www.geobase.ca; www.nrcan.gc.ca)

The problem of brownfield sites located on the territorial system Ottawa-Gatineau and other Canadian metropolitan areas has received the attention of the Canadian federal government in the 1980's, when it was found that brownfields could be transformed for the benefit of the community, but also could generate new forms of revenues such as the reinforcement of the tax base. Although, historically speaking, the attention over brownfield rehabilitation had begun since the 1970's, with the academic publications of environmentalists, mostly doing research in the United States and in Europe. The first real achievements came from the publications and recommendations given by the NRTEE (National Round Table on the Economy and the Environment). This process of site transformation and rehabilitation became largely known during the 1990's. The Canadian government providing after 2000, through the Ministry of Municipal Affairs and Housing, a series of financial programs that allocated financial incentives for this process,

thus bringing benefits both to the investor and the local economy. At the provincial level, Ontario and Quebec have created multiple programs to stimulate the rehabilitation of derelict sites in order to minimize urban expansion, renew the tax base for the municipalities, rehabilitate historical significant sites and of course, encourage private investors to invest locally. It was necessary at the for investors to properly evaluate the brownfields in order to minimize any health and safety threats, as well as liability. Public-private partnerships, as well as a national brownfield market have emerged since then. Multiple firms and corporations now specialized in the rehabilitation of brownfield sites since the emergence of the brownfield market, now possible with the implication of the provincial and federal governments.

In the territorial system of Ottawa – Gatineau, the constructed area increased by only 5% during 1966-2000 period (Figure 2 and Figure 3), due partially to the recovery of brownfields, while the farmland area have reduced by 9%. In order to further reduce the urban expansion, it is necessary to continue the recovery and rehabilitation of brownfields. This process of land recycling could in fact restrain the reduction of the greenbelt¹, which is presently a major issue for the city.

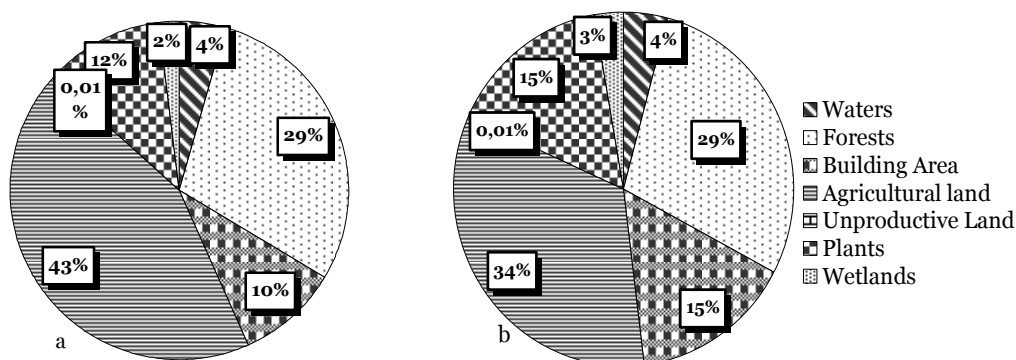


Figure 2. Land use in the territorial system Ottawa-Gatineau
in the years 1966 (a) and 2000 (b)
(Source: www.geobase.ca; www.nrcan.gc.ca)

CONCEPTS: BROWNFIELD, GREENFIELDS AND GREYFIELDS

Whether we talk about brownfields, or greyfields in some special cases, they all represent challenges for policy makers in terms of environmental and health risks, as well as in terms of private investments. The term brownfield became known in the early 1990's, when researchers have realized that those potentially contaminated sites could be rehabilitated and redeveloped for various purposes (Hollander et al., 2010). Also, it is important to note that the term brownfield went through many semantic changes over the years, namely: *contaminated* site - a site that has soil, groundwater or surface water contaminated with metallic and nonmetallic elements well above the level set by environmental authorities, and as *potentially contaminated sites* - suspected of being contaminated due to previous use or due to fuel spills (De Sousa, 2008). In Canada, it is estimated that there is over 200,000 contaminated sites (Miller et al., 2010). However, there is also a large number of uncontaminated sites, whose previous activities didn't have negative effects on the local community and

¹ The greenbelt is an approximately 11 kilometres thick band of greenfields, created by urban planner Jacques Gréber, in order to control and stop the urban expansion of the National Capital Region. The greenbelt today represents a major halt to the expansion of the core area, but has led to the creation of peripheral areas, such as Orleans, Kanata, Barrhaven, etc. (Benali and Ramirez, 2012).

environment once they were abandoned, but have infrastructures that present challenges for the redevelopment of these particular sites. These can include non-polluted factories, abandoned department stores, non-polluted storage facilities, as well as historical buildings. In terms of classification, these sites present a challenge for policy makers and urban planners.

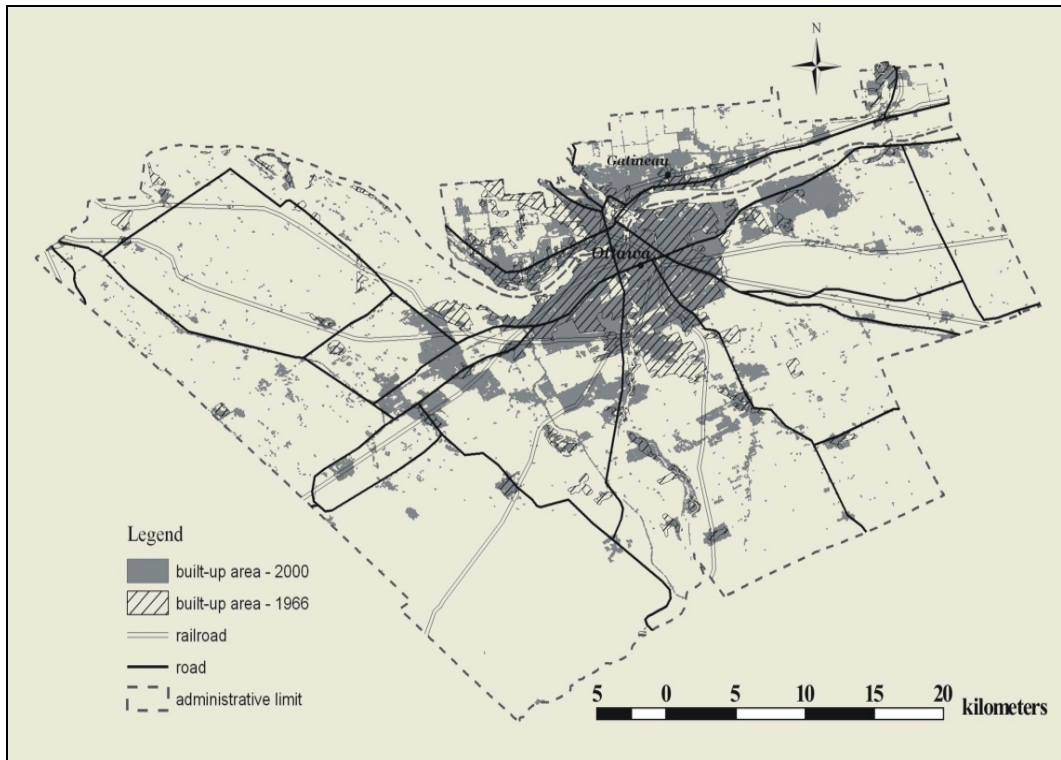


Figure 3. Constructed area within the territorial system Ottawa-Gatineau in 2000 and 1966
(Source: www.geobase.ca; www.nrcan.gc.ca)

The United States Environmental Protection Agency has defined early on that brownfields are “*commercial sites abandoned or underused whose rehabilitation and expansion process entails other costs, time and uncertainty*”. More recently, the US-EPA proposed a slightly different and more exhaustive definition for a brownfield, which consists of a: “*real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant*”². This last definition is the one that is mostly and internationally used by professionals in the brownfield rehabilitation market and industry.

However, the United States Office of Technology has offered a similar assessment, although the definition is much broader, namely: a brownfield is “*a site whose redevelopment may be hindered not only by environmental contamination, but also by poor locations, old infrastructure or other less tangible factors*” (Davis, 2002).

Also, Canada's National Round Table on the Environment and the Economy (NRTEE 1998:4) defines a brownfield as follows: “*abandoned or underutilized properties whose past actions have led to their contamination, but who represent, nevertheless,*

² <http://epa.gov/brownfields/overview/glossary.htm>.

potential for different uses and provide economically viable business opportunities" (De Sousa, 2000). Finally, according to Lesagre et al., (2007), brownfields are vacant or underutilized sites, but that can be reused only if they are first restored.

These multiple definitions by various experts and agencies pose a conflicting challenge: how to specifically define a brownfield. There are many definitions available, and all of them are justified in their context. For the purpose of this study, we have may retained the following definition (as the sum of all aboved mentionned definitions); a brownfield is a former industrial or commercial abandoned area that may be contaminated with various toxic chemical products, and that can endanger both the health of the population nearby and the local environment. Those sites also possess the potential for an ecological rehabilitation.

At the same time, the researchers' attention is directed to greenfields land and greyfields. Greenfield is a term used to describe an urban or rural land that is undeveloped or used for agriculture (Miller et al., 2010). Greyfield is a term that came into use in the early 2000s and is used in Canada to describe, from an economic point of view, the areas that cannot be used in agriculture or as a support for real estate due to their degradation (Miller et al., 2010). In some rare cases, such as we will see in the following sections, greyfields are part of the brownfield issue. Areas like the C.I.P in Hawkesbury, Ontario (to be discussed further), could be classified as a greyfield, as it is inactive, cannot be used for any purpose at the present time, and has little real estate value without any rehabilitation work.

METHODOLOGY

The information analysed in this study were obtained from the use of an efficient geographical research system (combining both a keyword search and archival data available through various data bases), as well as from the research conducted in the field. The methodology support is based on the analysis of the elements forming the territorial system (Ianoş, 2000) and their essential role in defining it. Thus, we have studied several brownfields that represent important elements for the territorial system Ottawa-Gatineau, Canada. These were analyzed from a quantitative and qualitative point of view. Elements such as the market value of those sites, historical site documentation, analysis reports from the city hall, economic indicators, urban plans and archival documents were selected for the purpose of this study. The data regarding the brownfield sites from the territorial system have been obtained through the bibliographic documentation method (Cocean, 2005), direct observation; analysis and profile processing (Cocean, 2005) and finally mapping (Iuliana Armas, 2006).

TYPES OF BROWNFIELDS AND THEIR LOCATION

The expansion of constructed areas is an inevitable trend and the space management for both current and potential consumption constitutes a major issue. Under these conditions, the rehabilitation and redevelopment of brownfields has become a necessity, and their management is a major problem worldwide (Petrea et al., 2011). In the late 1970s, policy makers from Canada, United States and Europe have become increasingly interested in the serious problems of contaminated sites, especially those located in urban areas (De Sousa, 2000). Such sites may contain hazardous materials, such as benzene, dioxins, etc., that pose a risk to human health and to the environment. During this period the interest of developers for these sites was minimal because they considered that the rehabilitation process and the redevelopment would involve high costs, plus they feared the side effects that may appear later in the rehabilitation process. However, at the end of the 1980's, the issue of derelict terrains became more visible due to the increasing presence of numerous abandoned industries

or urban and rural commercial properties that were suspected to be contaminated because of their former activities. Nowadays, approximately 25% of Canada's urban land is contaminated due to previous industrial activities (De Sousa, 2001). In addition, many industries have worked in the territorial system of Ottawa-Gatineau, some of these industries including: old factories, abandoned petrol stations, timber deposits, etc. (Table 1). However, many were closed or moved and the terrains left behind became brownfields as the year were passing by. Moreover, there were some brownfields that were attractive to developers and investors due to their location, to the existing infrastructure and to their accessibility, an example being the site known as "*LeBreton Flats*" which was a deposit of wood products and a deposit for dirty snow (Figure 4). The rehabilitation and redevelopment of this site into the Canadian War Museum (Figure 5) represented an important step in the development of local tourism, thereby contributing to the economic development of Ottawa.



Figure 4. Brownfield site "*Lebreton Flats*" from Ottawa, was a deposit of wood products and a deposit for dirty snow (Source: Canadian War Museum from Ottawa)



Figure 5. Currently, the Brownfield site „*Lebreton Flats*” restored, remodelled and transformed into the Canadian War Museum from Ottawa, Canada

The following table represents the nine sites that were selected for the purpose of this study. In the table, six of the nine sites are directly located in the Ottawa – Gatineau area, where as the last three are located in municipalities in the vicinity of Ottawa, mainly Hawkesbury, Ontario, as well as Cornwall, Ontario. These former industrial cities have a long history of commercial, retail and industrial activities with the Ottawa region. Unfortunately, the major factories in these communities have now closed and pose serious health and environmental issues. Chemical contamination of the soils and rusty infrastructures are just some of the noticeable phenomenon ongoing in these areas. To that list, we have to add a low job rate and a high unemployment rate for the entire sub-area following the closure of these factories, a high crime rate due to the lack of activities in these neighbourhoods, a deterioration of the quality of life, a low economic index for the sub-region, etc. With time, these trends are likely to go up if no action is to be taken.

THE CURRENT STAGE OF BROWNFIELDS IN THE TERRITORIAL SYSTEM OF OTTAWA-GATINEAU, ONTARIO

Regarding the current stage of brownfields in the territorial system of Ottawa-Gatineau (Table 1 and Table 2), it can be noted that some of these sites were subjected only to historical and empirical research, both by scholars and municipal regulators, while

others have been renovated and redeveloped into museums, mixed residential areas (Figure 8), space used by universities (Figure 6) or future shopping plaza (Figure 9). Some sites, like the Chaudière area, have a special historical significance to the local population. Finally, some sites were simply abandoned (Figure 7) and are of no interest for the local investors, probably due to high rehabilitation and redevelopment costs and also due to the old infrastructure.

Since the economic crisis of 2008, it is more and more difficult to find local investors who want to be involved in such projects as brownfield rehabilitation. The need for investors to create a risk-free environment contradicts directly with the need of the local community for revitalizing those areas. Brownfields represent a risky type of business, as liability issues, environmental degradation and public concerns can be more demanding than any other type of real estate entrepreneurship. On the other hand, the benefits to the local economy, the local environment and population can in some cases outweigh the wish for a risk-free type of project. As a matter of fact, so far, the example of the LeBreton Flats is the best case study for the region of Ottawa – Gatineau. The economic output of the project was much more than expected, and at the present, the phase two of the development is running its course. The results of the LeBreton Flats development could be replicated for other brownfields in the National Capital Region, but only if every urban actor would be engaged in such a project. In the case of the C.I.P. sites in Hawkesbury, Ontario, or the Domtar site in Cornwall, Ontario for example, all parties involved in the project, such as the local population, the urban planners, the private firms, the city hall administration, the local NGO's and the local medias must work together, in a symbiotic way. Different opinions must be heard and considered in order to satisfy all the parties involved.

Table 1. Brownfield's sites in the territorial system Ottawa-Gatineau - Ontario, Canada and their location
(Data source: data collected in the field)

Nr.crt.	Brownfield sites	Tipul de brownfield	Localizare
1	Les Chaudières	Abandoned multi-industry site	Vieux-Hull District, Gatineau (lângă podul Chaudière)
2	Domtar Ltd	Abandoned factory	Vieux-Hull District, Gatineau
3	LeBreton Flats	Abandoned deposit site of wooden products and dirty snow deposit at the beginning of the 20 th century until the middle of the 20 th century	Ottawa – west end of the downtown core (presently hosts the Canadian War Museum, a variety of condos and multiple attractions)
4	Texaco terminal (Coastal Canada Petroleum)	Abandoned oil / fuel installations	300 West Hunt Club Road, Ottawa
5	Algonquin College's Rideau campus	Abandoned college facility	Lees Avenue, Ottawa
6	City centre lands	Abandoned city property	100 Landry street, Vanier district, Ottawa
7	C.I.P.	Abandoned pulp and paper mill	Hawkesbury, Ontario (90 km from Ottawa)
8	Canadian Industries Ltd. Site (now Pioneer Chemical)	Abandoned chemical factory	Cornwall, Ontario (100 km from Ottawa)
9	Domtar Ltd.	Abandoned chemical /pulp and paper factory	Cornwall, Ontario (100 km from Ottawa)



Figure 6. Brownfield site Algonquin College's Rideau campus



Figure 7. Brownfield site Les Chaudières

Table 2. The current stage of brownfields in the territorial system of Ottawa-Gatineau, Ontario
(Data source: data collected in the field)

Nr.crt.	Brownfield sites	Specifications
1	Les Chaudières	Has been the subject of historical research done by Louise N. Boucher, Ph.D
2	Domtar Ltd	was opened until recently (middle of the 2000), factory and installations are still there
3	Le Breton Flats	Large site, but has already been transformed and is in the process of multiple transformations right now, more housing is planned in the coming years to be constructed on the site.
4	Texaco terminal (Coastal Canada Petroleum)	to be transformed into a shopping plaza
5	Algonquin College's Rideau campus	Space used by the University of Ottawa
6	City centre lands	Residential area
7	C.I.P.	Contains a polluted lagoon, not developed. City and province officials are still arguing about decontamination. Has a historical significance inside the city and it's population.
8	Canadian Industries Ltd. Site (now Pioneer Chemical)	Large industrial site, has a historical significance inside the city
9	Domtar Ltd.	Large industrial site, has a historical significance inside the city

Of course, derelict site rehabilitation presents some technical challenges. One of them is the question surrounding the financial aspect of such projects. As far as the present situation goes, private firms still don't possess all the required funds in order to fully restore a previously contaminated site. Such site rehabilitation projects are estimated in the tens of millions of dollars. In order to compensate for these challenges, provincial agencies have created over the years a series of programs in order to help private investors and local communities to deal with brownfields. The following section will look at a large fraction of these possible applicable programs to the Ottawa-Gatineau area.



Figure 8. Brownfield site City centre lands



Figure 9. Brownfield site Texaco terminal

PROGRAMS THAT PROVIDE INCENTIVES AND ENCOURAGE THE REHABILITATION AND REDEVELOPMENT OF BROWNFIELDS IN CANADA

In 2007, the Government of Ontario, through the Ministry of Municipal Affairs and Housing, has adopted a series of favourable reforms regarding brownfields in the province of Ontario and their productive use, taking into account the environmental, health and public safety. On 29 December 2009, the Ministry of Environment for the province of Ontario has made a number of regulatory changes in order to implement these reforms³.

In addition, many municipalities from Ontario offer incentives to encourage the conversion of brownfields. The new report *Municipal Financial Incentives for Brownfield Redevelopment* provides information on the planning and the financial instruments available to municipalities in order to encourage the conversion of brownfields. The power to provide incentives is governed by Section 106 of the *Municipal Act, 2001*⁴.

In a similar move, the Municipality of Ottawa has adopted its own policy on brownfield rehabilitation. Though it does not cover the entire National Capital Region (excluding of course the area of Gatineau-Hull), this brownfield rehabilitation program⁵ was born in order to improve the quality of life for the citizens of all of the city's neighbourhood, as well as the downtown area.

PROGRAMS THAT PROVIDE FINANCIAL INCENTIVES

At the provincial level, other than the municipal improvement plan designed by the planning office of the city hall in Ottawa, the programs that provide financial incentives for the rehabilitation and redevelopment of brownfields in the territorial system Ottawa-Gatineau are:

The *Community Improvement Plans* - used by municipalities to establish a framework for the rehabilitation of existing municipal built areas. They may include land related financial incentive programs: for example, grants and loans, which could encourage and stimulate investments from the private sector in areas with municipal priority.

The *Brownfields Financial Tax Incentive Program*- a program that allows municipalities to provide tax assistance to owners in relation with the environmental rehabilitation of properties in a given area.

The *Tax Increment Financing* - a fiscal tool used by municipalities to help with the conversion of brownfields and with the development of public infrastructure.

The *Action plan for contaminated sites* - worth \$ 3.5 billion, was set in 2005 by the Government of Canada, covering a period of 15 years. It will properly manage the

³ <http://www.mah.gov.on.ca/Page220.aspx>

⁴ <http://www.mah.gov.on.ca/Page223.aspx>

⁵ http://ottawa.ca/en/city_hall/planningprojectsreports/planning/brownfields/.

contaminated sites, focusing on reducing risks to human health and environment. Currently, the Action Plan for Federal Contaminated Sites includes 16 departments, federal agencies and consolidated corporations - Crown (called guards). The guards liaise closely with consultants, contractors and vendors and manage health risks from contaminated sites.

Also, there are three specialized departments, Environment Canada, Health Canada, Department of Fisheries and Oceans that are designed to the revision of projects documentation in order to ensure that the risks to human health and environment from those sites were taken into account in the proposals. These departments, however, play a smaller role in the evaluation of brownfields if we compare them to private corporations. The above-mentioned departments only have the ability to archive documentation or make assessments, but it is to the private sector or other crown corporations to actively take in charge the rehabilitation of brownfields across Canada.

Other similar programs that provide incentives for the rehabilitation and the redevelopment of brownfields in the province of Ontario are:

The Federation of Canadian Municipalities Green Municipal Fund - a program that provides loans and grants, as well as education and training services in order to support municipal initiatives that improve air, water, soil quality and climate protection.

The Infrastructure Ontario program- a program dedicated to renovating the buildings in which hospitals, courts operate, as well as other essential public goods from the province of Ontario, taking into account the allocated time and budget.

The Rural Economic Development (RED) program – a program that invests in projects that support sustainable rural communities and community partnerships that are involved in the rehabilitation of brownfields.

Building Canada Fund - in 2008, the program Building Canada Fund-Communities Component was launched, worth EUR 200 million and focused on the financing of infrastructure in small towns (under 100,000 inhabitants) and rural communities from Ontario.

CONCLUSIONS

In this study, it was possible to determine with the available data that a lot of achievements were made over the last 25 years in terms of brownfield revitalization in Canada. Various programs have been initiated both by the private and public sector in order to restore part of the urban ecosystem to better standards. The first step for the authorities was to provide clear definitions of brownfields, greenfields and greyfields, as well as set up a working administrative environment. At the end of the 1980's, the NRTEE has set up the basis needed for such works. During the 1990's, the first projects emerged to revitalize parts of the downtown area. And finally, during the 2000's' big entrepreneurial projects have finally surfaced in order to restore large areas of the city (e.g. LeBreton flats). The results of this study also show that most brownfields in the territorial system Ottawa-Gatineau, Canada have been of interest for investors and for the Government of Canada which, through the provincial Ministry of Municipal Affairs and Housing, has provided a number of financial programs that allocated amounts of money for their rehabilitation and redevelopment. Reusing brownfields for different purposes (factories, museums, residential areas, areas used by universities, etc.) entailed the reduction of urban expansion, saved protected greenfields such as the Greenbelt, created new jobs, and stimulated the local economy, thus contributing to the both economies from the Ontario and Quebec side of the National Capital, and improving the quality of life for the residents.

However, some brownfields were not of interest for investors due to old infrastructure or simply due to the fact that their rehabilitation and redevelopment costs exceed their initial value. This is the case notably for the C.I.P area in Hawkesbury, Ontario, as well as the old factories in Cornwall, Ontario. Re-developing those specific

areas will present major challenges. Contaminants in the soil, rusting infrastructures and the local population nearby present some of the challenges that the promoters need to face. In order to rehabilitate those contaminated terrains, government incentives and special programs that meet the requirements of these special cases must be introduced. It is only if the private and public sector collaborate, exchange ideas and work together, that these derelict sites will be finally restore, after a long period of inactivity.

As more and more parts of the Gréber plan of the 1950's are being introduced or redesigned for the needs of the 21st Century Ottawa-Gatineau region, the reuse of brownfields may pose some interesting opportunities for urban planners. Jacques Gréber, when conceiving the master plan for the Ottawa region, had a certain optimistic and positivistic vision of the National Capital Region. Even if for pragmatic reasons this vision has been altered over the years, the regeneration of brownfields may be one of the many ways to achieve in an ecological manner the vision of Gréber, one of a green, vibrant and ecological city.

Aknowlegments

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