
Policy Performance and Brownfield Redevelopment in Milwaukee, Wisconsin*

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The redevelopment of brownfield sites has become a central focus of government efforts aimed at developing and revitalizing urban areas in the U.S. This article examines brownfield redevelopment efforts in Milwaukee County, Wisconsin, which gained momentum in the mid-1990s, in order to determine how Milwaukee is performing in terms of redevelopment activities, what the effects of government support of such activities have been, and how performance outcomes are currently being measured. Through an examination of government data and interviews with key stakeholders, the Milwaukee case reveals that redevelopment is indeed progressing well as government becomes more effective at tackling the barriers to private-sector redevelopment. However, progress in redeveloping brownfields is still being measured primarily in terms of economic development outcomes rather than in terms of the broader social, economic, and environmental objectives that both policy makers and private-sector stakeholders associate with such redevelopment. **Key Words:** brownfield, redevelopment, Milwaukee, outcome, policy.

Introduction

Since the mid-1990s, the redevelopment of brownfield sites has been a central imperative of government efforts in the U.S. as part of a general strategy of revitalizing urban cores and promoting smart growth. Numerous policies, programs, and funding initiatives have been devised and implemented by federal, state, and local governments to attract private investment back to cities so as to develop properties that not long ago were perceived as economically unattractive. Recent surveys show that such efforts have expanded considerably, leading to an unprecedented interest among geographers and other urban scientists in pursuing questions concerning the impact, extent, and viability of such redevelopment in terms of urban renewal (Great Lakes Commission 2001; Simons and Jaouhari 2001; U.S. Environmental Protection Agency 2002).

The present article looks at brownfield policy efforts and their outcomes in Milwaukee, Wisconsin, as a case in point. As an urban area in the so-called rust belt, Milwaukee has an extensive brownfields inventory resulting from its industrial past. To attract investment, several levels of government in Wisconsin have been active since

the mid-1990s in implementing a variety of policies and programs designed to lessen the costs and risks associated with brownfield redevelopment (Consumer Renaissance Development Corporation 1998; U.S. General Accounting Office 2000; Wisconsin Brownfields Study Group 2000). Many of these efforts have garnered widespread support from both public- and private-sector stakeholders. There have, however, been few critical appraisals of such efforts and, even more importantly, few attempts to evaluate the outcomes. To fill this empirical gap, the aims of the present article are:

- to examine the scale of the brownfields problem in Milwaukee County;
- to investigate the role and impact of government intervention by surveying both public- and private-sector stakeholders in order to get concrete information on how they perceive the effectiveness of policies and programs against the actual application of these to brownfield projects; and
- to review the outcomes of redevelopment efforts in Milwaukee in order to glean broader implications for the overall performance of brownfield projects, generally, in terms of urban revitalization.

*The research for this study was funded by the University of Wisconsin-Milwaukee Consortium for Economic Opportunity, through its faculty fellowship program, for which I express my sincere gratitude. I would also like to thank the interviewees, the government officials who provided data, my project assistant Josh Lang, the anonymous reviewers, and the editor.

Background

The Small Business and Liability Relief and Brownfield Revitalization Act, passed in 2002 (Public Law 107-118, H.R. 2869, 6), defines *brownfields* as “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.” In the traditional urban science literature, the term *brownfield* was often used alternately with *contaminated land* and *derelict land*. Today, however, *brownfield* is typically used because it does not evoke the negative connotations associated with terms such as “contaminated” and “derelict,” and because it constitutes a semantic counterpart to *greenfield*, the term designating an agricultural or undeveloped site in the urban periphery. It has been estimated that there are currently more than 500,000 brownfields throughout the U.S. (Simons 1999). To get a concrete grasp of the extent of the urban brownfield problem, the U.S. Conference of Mayors surveyed over 200 cities in 2003, finding that nearly 24,000 brownfield sites currently exist in those cities alone.

Similar statistics emerge in virtually every industrialized nation because of analogous migrations of industries from industrialized cities to greenfield areas or abroad. Urban geographers have devoted a significant amount of attention to the documentation and analysis of this migration trend. Early theories attributed the exodus of manufacturing activities out of the city core to two economic and demographic facts: the tendency of manufacturing enterprises to follow the exodus of higher-income groups (Park, Burgess, and McKenzie 1925) and the desire to acquire cheaper land and better infrastructure in the periphery (Alonso 1960). More recently, various conceptual frameworks have been developed attributing the tendency to move away from the city core to the globalization of production, the desire for businesses to locate themselves near areas where skilled workers have moved, and the need to be in a propitious situation, such as a location near airports, to reduce transportation costs (Storper and Scott 1992). This framework appears to explain many of the relocation patterns witnessed in midwestern and northeastern cities. Whatever conceptual framework is adopted, the end result has been a steady exodus of businesses from city

cores, leaving brownfield sites, a depressed real estate market, increased crime rates, a sense of isolation by urban dwellers, and overall blight behind (Smith 1996; Greenberg 1999; Greenberg and Lewis 2000). However, as some socio-geographic frameworks suggest, this pattern is only part of a cycle, whereby, after a mass exodus, abandoned urban neighborhoods start to experience a sense of renewal and rebirth, leading to their rehabilitation (Bourne 1981, 1991; for a more comprehensive review of these frameworks, see McCarthy 2002).

The first policies directed at addressing the brownfields problem were devised in the early 1970s. These focused primarily on finding appropriate engineering methods for efficient site cleanup and on developing suitable criteria for allocating financial responsibility for cleanup. Following such media-dramatized incidents as the Love Canal and the Valley of the Drums, the federal government passed the Comprehensive Environmental Response and Liabilities Act (CERCLA; 42 U.S.C. 9601-9675, 1980), commonly referred to as Superfund. CERCLA made funds available for remediation and gave governments the power to require cleanup and damage costs from virtually anyone they considered responsible for producing a brownfield. But this measure ended up deterring private investors, especially banking institutions, from getting involved in any property remotely suspected of being contaminated and, in the end, worked against efforts to get most brownfields redeveloped (Business Roundtable 1993; Stroup 1997).

Things began to improve considerably in the mid-1990s when governments at all levels began experimenting with and implementing a new range of conceptual approaches for encouraging remediation and redevelopment. In 1995 the Environmental Protection Agency (EPA) introduced the Brownfields Action Agenda (BAA) to help clarify the government's role in the whole scenario, to make funds available for pilot projects to test redevelopment approaches, and to provide direct assistance to those interested in redeveloping high-risk sites. At about the same time, state governments began implementing Voluntary Cleanup Programs (VCPs), loosening rigid redevelopment policy structures, offering more flexible cleanup options, according more leeway to the private sector to work on its own terms, and providing investors

with various kinds of technical assistance, financial support, and protection from legal liability. Nationwide, the BAA and the VCP approach culminated in the 2002 passage of the federal Small Business Liability Relief and Brownfields Revitalization Act (Public Law 107-118, H.R. 2869).

The state of Wisconsin has been of particular interest to the whole brownfields issue because it has an extensive problem with over 10,000 brownfield sites. Efforts at redevelopment got under way in 1994 with the passage of the state's Land Recycling Law. This put into place useful financial and liability tools for redevelopment (Consumer Renaissance Development Corporation 1998; U.S. General Accounting Office 2000; Wisconsin Brownfields Study Group 2000). However, while the role of state governments in cleanup processes is undoubtedly important, ultimately, the task of attracting investors, guiding the redevelopment process, and managing most of the brownfield inventory falls on the shoulders of local governmental entities. The present study focuses, in fact, on the kinds of strategies initiated by such entities in Milwaukee County, an extensive area populated by nearly 1 million people, residing in sixteen adjoining municipalities plus the cities of Milwaukee (pop. 600,000), Wauwatosa, and West Allis. It is estimated that the city of Milwaukee alone has over 879 ha (2,171 acres) of brownfield sites, making up 4 percent of its land area (Simons 1998). The county consists of a mix of older central city and inner suburbs, middle-income residential communities, and a grouping of rapidly growing municipalities in its southern sector. Each of the local governments within the county has a different perspective on how to implement federal and state regulations governing the management of brownfields. For this reason, several local governmental entities were investigated in order to be able to paint a general picture of how different jurisdictions approached the same problem.

Relevant Literature

While there is an extensive literature devoted to understanding the forces causing the migration of manufacturing out of urban cores, the emerging brownfields literature has focused on examining the viability of policy instruments for counteracting migration patterns, many with an

eye toward favoring models of smart growth and sustainable development (Eisen 1999; Greenberg et al. 2001; Bjelland 2004). McCarthy's (2002) "dual land-use policy challenge" framework, for instance, points to the twofold obligation for policies to change the conditions causing the primary barriers to private redevelopment (uncertain cleanup standards, complicated regulatory requirements, availability of funding, and liability), while connecting redevelopment to broader community goals (environmental health and safety protection, job creation, urban revitalization, community involvement in civil affairs, preservation of greenfields in the periphery, and so on).

To date, these research and policy-making activities have mostly concentrated on realizing the first part of McCarthy's challenge—to reduce the primary barriers to redevelopment. On the more technical side, much research has focused on devising effective remediation approaches and technologies (Asante-Duah 1996). Social scientists, on the other hand, have concentrated on a range of issues and measures, such as devising and testing policies aimed at reducing regulatory and financial barriers (Meyer, Williams, and Yount 1995; Page 1997; Rogoff 1997; De Sousa 2001), understanding private sector redevelopment efforts (Meyer and Lyons 2000; Howland 2003), formulating optimal practices for guiding economic development (Bartsch 1996; Bartsch and Collaton 1996; Iannone 1996; Yount 1997; Simons 1998; De Sousa 2000), outlining policies and programs for dealing with liability and other key barriers to redevelopment (Green Leigh 1994; Bartsch and Dorfinan 2000; Simons and Jaouhari 2001), and envisioning approaches for identifying the scale of the problem (Colten 1990; Simons 1999).

Typically, brownfields policy evaluation research has concentrated on project-specific case studies, but there has been a growing effort in recent years to track policy outcomes more broadly at the local and state levels. Simons and Jaouhari (2001), for instance, surveyed brownfield program managers in sixty-three cities in 1997–1998, finding that local governmental policies aimed primarily at encouraging private-sector-driven investment and redevelopment, making cleanup standards more flexible, and providing public funds and tax incentives to support redevelopment activities. Others, such

as Bartsch and Deane (2002), have documented the implementation of similar policy-making approaches at the state level.

Less attention has been devoted to tracking whether such approaches are achieving the second objective of McCarthy's challenge, namely, connecting brownfields reuse to broader community goals. Comprehensive surveys of state and local government initiatives have found, in fact, that governments have made very few efforts to gather suitable information in this regard. As Simons and Jaouhari aptly point out (2001, 18),

Improvement is needed in the evaluation of local government intervention. . . . In the absence of an accurate tracking system, it is difficult for cities to achieve an efficient allocation of funds, quantify the cost/benefit ratio of public incentive programs, or determine the effectiveness of new initiatives. . . . It is also very difficult for policy makers to identify successful programs and recommend their implementation in other locales.

Researchers and government officials are also concerned that the policies being implemented and the outcomes examined are too narrow in scope, focusing only on economic development impacts and ignoring other community goals altogether. A recent review by the EPA's Office of Program Evaluation found, ironically, that its own brownfields performance measures were designed only to take into account development and economic outcomes, failing to contribute to the EPA's own role in protecting human health and safeguarding the environment (U.S. Environmental Protection Agency 2002). No wonder, then, that there is a growing call for governments to devise ways of tracking and assessing socioeconomic and environmental consequences of brownfield policies (U.S. Environmental Protection Agency 1998, 1999; Council for Urban Economic Development 2000; U.S. Conference of Mayors 2000; Dair and Williams 2001; Simons and Jaouhari 2001; U.S. Environmental Protection Agency 2002).

Methodology

Gathering the information necessary for the study required a multimethod approach combining both qualitative and quantitative dimensions of research. The three-phase approach made it possible to gather appropriate information on both the perceptions of those directly

involved in brownfield redevelopment and on the quantifiable outcomes that such redevelopment entails. In the first phase of research, data on brownfield property in Milwaukee County was collected in May 2002 from the Bureau of Remediation and Redevelopment Tracking System (BRRTS) database maintained by the Wisconsin Department of Natural Resources. In the second phase, available data on redevelopment activity, project characteristics, policy application, and outcomes were gathered from individual municipalities within the county. Brownfield coordinators or other officials involved in the redevelopment process from the nineteen government units within the county were asked to provide any data available on these issues. In total, nine of the municipalities provided data, including the cities of Milwaukee, West Allis, and Wauwatosa, and the municipalities of Oak Creek, Greenfield, West Milwaukee, Cudahy, South Milwaukee, St. Francis, and Glendale. Relevant data was also gathered from state government reporting efforts related to their grant programs (Wisconsin Department of Commerce 2001). Given that the mandate of the municipalities solicited for data is to assist in redevelopment and economic development generally, information they themselves compile on their involvement tends to focus on tracking financial assistance programs, as opposed to the nature of the technical or legal guidance they may provide. Therefore, the empirical data provided focuses largely on projects that have received financial assistance from government and ignores those that may have been assisted in other ways. It also should be noted that the data requested were provided voluntarily for each region. Despite efforts to ensure standardization of the data, several problems are inherent in this approach: (1) some municipalities have collected information for longer periods than others; (2) municipalities may have a different definition of what constitutes a brownfield and/or a redevelopment project; (3) some municipalities reported individual projects and others reported mixed-use projects; and (4) some jurisdictions may have chosen to report on only large flagship projects as opposed to smaller ones. As Simon and Jaouhari (2001, 17) also reported, many communities seemed not to participate or were holding back on providing data due to definitional problems or "politics."

In the third and final phase of the present research project, twenty-four in-depth interviews were conducted with public- and private-sector stakeholders involved in land development in Milwaukee: thirteen public-sector respondents representing local and state governments and eleven private-sector respondents representing developers, nonprofit organizations, and the legal community. The two main criteria used for selecting the interviewees were (1) the degree of participation in brownfield-oriented working groups in Wisconsin and (2) the degree of involvement in brownfield projects. Although a sample size of twenty-four is generally considered small by most quantitative scientists, the interviewees were, nevertheless, typical key players in brownfield redevelopment in Milwaukee and, thus, there is no reason to believe that a larger sample would have produced conflicting results. Respondents were asked thirteen questions divided into three topical areas: (1) the nature of their involvement in brownfield redevelopment and how they perceived the associated costs, risks, and benefits; (2) the effectiveness of various government agencies and their policies in getting brownfields remediated and redeveloped; and (3) the effectiveness of a wide range of benchmarks for measuring the outcomes of brownfield projects.

Results and Discussion

The Scale and Nature of the Brownfields Problem

The data collected on brownfield areas reveal that Milwaukee County has an extensive problem with 8,004 brownfield sites, 4,452 of which are "open" and the remainder "closed" (3,588) (see Figure 1). The vast majority of the open sites are spill lands (59 percent or 2,627 sites) and LUST (Leaking Underground Storage Tank) sites (22 percent or 980 sites). The next in line (numerically) are ERP (Environmental Repair Program) sites (13.8 percent or 614 sites), General Property lands (2.1 percent or 92), Abandoned Containers sites (1.6 percent or 70), VPLE (Voluntary Property Liability Exemptions) sites (1.1 percent or 50), No Action Required properties (0.4 percent or 17), and Superfund sites (0.04 percent or 2). Of the non-spill sites, almost half are considered "High Priority," while 8 percent are tagged "Medium

Priority," 15 percent "Low Priority," and 31 percent "Unknown." While the level of contamination at the open sites is uncertain, their presence on the database requires landowners and/or developers to thoroughly assess them prior to redevelopment. As Figure 1 reveals, while open sites in the county are concentrated in older industrialized areas (the City of Milwaukee, West Milwaukee, West Allis, and Glendale), communities outside the industrialized core are not immune to the brownfields problem. The comprehensive BRRTS database, which synthesizes information from an array of data sources, has been a useful tool in governmental efforts to protect public health and safety, even though it only contains information on the nature and location of potentially contaminated sites, not on redevelopment activity.

To assess the nature of the problem, stakeholders were asked why they became involved in brownfield redevelopment, what benefits their brownfield projects were designed to bring about, and what problems continued to inhibit their redevelopment activities. For both the public- and private-sector interviewees, the decision to become involved in or to invest in brownfields continues to be influenced largely by economic factors, including encouraging economic development and investment (eleven responses), expanding the local tax base (seven), taking advantage of business opportunities (seven), and generating employment (four). However, interviewees also singled out urban renewal/blight elimination (ten) and site risk and liability reduction (six) as key factors. Other factors mentioned included the desire to become involved in a redevelopment challenge (three), an emerging sense of "environmental justice" (two), providing development assistance (two), and a desire to retain businesses in the affected areas (two). The pattern of responses on the part of private-sector stakeholders differed slightly from those of the public sector in that they suggested a greater number of motivating factors overall (twenty-seven versus twenty-five) and, interestingly, they pointed out more social and environmental objectives. Public-sector interviewees emphasized issues related to urban renewal, economic development, and local tax base expansion, focusing less on environmental justice and health-related issues. When asked what types of benefits their

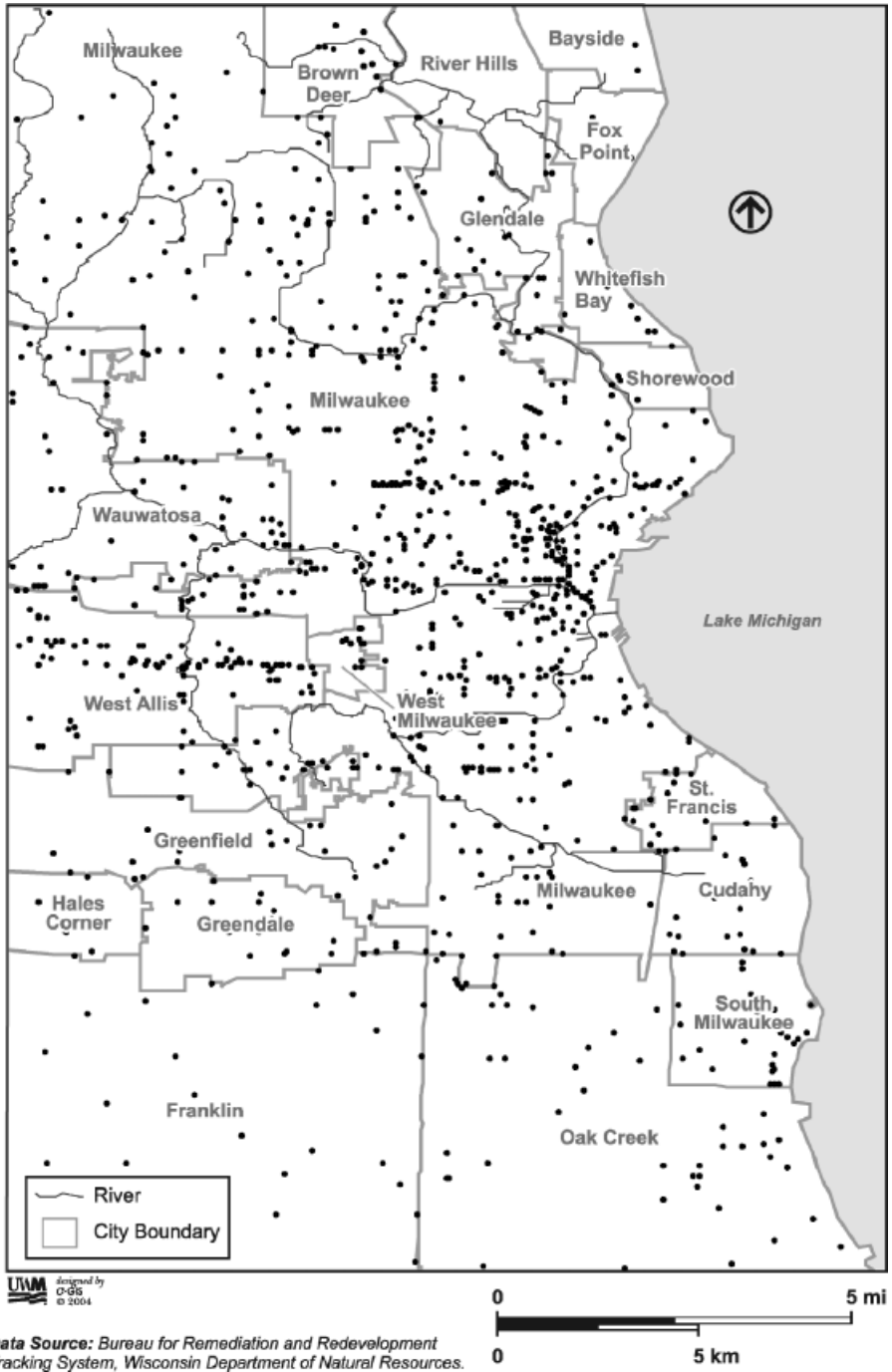


Figure 1 "Open" brownfield sites in Milwaukee County, May 2002.

projects had brought about, respondents mentioned, in decreasing numerical order, the following: renewal of urban areas (eight), employment creation (six), tax structure improvements (five), increased utilization of previously underused lands (five), project “snow-balling” (whereby new projects were inspired by successful ones) (five), and land cleanup (four).

When asked to enumerate the general problems that continue to inhibit brownfield redevelopment, both public- and private-sector interviewees singled out the high costs of, and the limited financial support provided for, remediation and redevelopment (sixteen) as well as the “sluggishness” that besets the bureaucratic/procedural processes involved (twelve). Nine pointed out that landowners needed to assess their properties for contaminants and make their properties available for sale, as opposed to “sitting on them and paying their taxes to avoid discovering what might lie beneath the ground.” Other obstacles identified included technical difficulties in assessing the extent of contamination (four), liability concerns (four), problems in keeping up the momentum related to brownfield redevelopment (three), assembling land (three), finding suitable legal/staff assistance (two), the continued attractiveness of greenfield lands for businesses (one), and the instability of regulatory practices (one). In all, the responses reveal that stakeholders were cognizant of McCarthy’s twofold challenge of promoting broader community goals in tandem with redevelopment, but also realized that many barriers must first be overcome in order to overcome the challenge in practical ways.

Policy Implementation and Effectiveness

When asked to describe the most effective form of government intervention for encouraging brownfield redevelopment, most of the public- and private-sector interviewees identified policies related to the provision of project grants and other financial incentives as the most critical (forty, in total) such as the Department of Natural Resource’s Site Assessment Grant (eight) and the Department of Commerce’s Brownfields Grant (seven), since the former helped to “get projects off the ground” and the latter “provided a significant” amount of funding,” as one informant put it. Other key forms of government intervention mentioned included the progressive approach taken under Wiscon-

sin’s Voluntary Cleanup Program (six), tax increment financing initiatives (TIF) (six), flexible cleanup standards (five), the transformation of local (four) and state (four) policy-making approaches from “regulation” to “facilitation,” and protection from liability (three). It should be noted that the focus of the responses was largely on state-level programs and initiatives, rather than on local intervention.

Interviewees were also asked to assess the effectiveness of different levels of government in facilitating the completion of brownfields projects. The majority (78 percent) of the public- and private-sector interviewees indicated that local governments were the most important ones and should become even more proactive. Several interviewees pointed out that the smaller jurisdictions were particularly effective because they appeared to have a greater desire to deal with the brownfields problem and to “pull an agreement together.” As for state government agencies, most of the interviewees (75 percent) found them to be effective overall, applauding the more progressive assistance-oriented approaches taken recently versus the regulatory “impediment” approach of the past. Specific problems still exist, however, such as the lack of funding flexibility with regard to various kinds of redevelopment activities, miscommunication between head and regional offices of state agencies, and the sense that funding decisions are often too political. Most respondents felt that the county played a minor role, but those that had received funds from the county mentioned that they did, in fact, considerably appreciate the support. Most (80 percent) also evaluated the federal role in changing previous regulatory philosophies, increasing funding for cleanup, and attracting the attention of the mass media to the brownfields issue, generally, as a highly positive one. All in all, the perception was that all levels of government were moving in the right direction with respect to brownfield redevelopment within the two-pronged conceptual frameworks advocated by McCarthy (2002).

As for which policies still need to be implemented or improved to facilitate redevelopment, the interviewees called for measures to deal with procedural sluggishness and to attenuate costs. These included speeding up the review process, making it more user-friendly (eight), increasing funding for site remediation and redevelopment (seven), harmonizing activ-

ities among the different levels of government (six), and providing more assistance at the early stages of the site assessment process (four). Several interviewees pointed out that the extra time it takes to implement brownfield projects (involving site preparation and application for support) adds considerable cost and frustration to the redevelopment process. Other suggestions put forward also had to do with improving regulatory efficiency and ensuring flexibility. These included governmental support over the long term (three), greater assistance from governmental sources for tracking down funding (three), improving the PECFA (Petroleum Environmental Cleanup Fund Act) reimbursement program for cleaning up contamination from petroleum storage tank systems (three), better techniques for profiling sites (three), allowing less costly remediation methods to be used (three), increasing the visibility and overall importance of the brownfields issue (two), providing municipalities with liability protection (one), and making policies related to protecting groundwater less stringent (one). Incidentally, exactly one public- and one private-sector interviewee pointed out that nothing more was needed.

Examining the implementation and effectiveness of brownfields policy in empirical terms is hampered by the lack of data maintained on the specific policy instruments employed and their effectiveness in getting projects off the ground. While the effectiveness of nonfinancial tools can be gauged through survey methods, further research is needed to assess their application in quantitative terms. As for the application of financial incentives, those redeveloping brownfields in Milwaukee County indicated that they have access to numerous financial programs from local, county, state, and federal government sources; there are, for instance, eighteen different state programs in place. Every effort was made to standardize the information gathered among the different jurisdictions and to cross-reference municipal data with information from other programs.

The City of Milwaukee has, by far, the most extensive range of financial support programs, in addition to the most comprehensive system for reporting on the outcomes of their application. Since the early 1990s, the most common source of funding for brownfield redevelopment projects in the city was RACM (Redevelopment

Authority of the City of Milwaukee) (62 percent of projects), which consolidates funds from a variety of sources (including federal block grants, Wisconsin site assessment grants, TIF funds, and money retained from the sale of city-owned property) to support brownfield projects. Other primary sources of brownfield funding administered by the city (in order of application) are Community Development Block Grant funds (through HUD) (12 percent of projects), TIF funds (11 percent), back taxes (7 percent), Land Bank funds (5 percent), funds from the Milwaukee Economic Development Corporation (5 percent), general public funds (3 percent), and land management funds (1 percent). Money from upper levels of government was also employed extensively for redevelopment projects, including the Wisconsin Department of Natural Resources (DNR) site assessment grant (23 percent of projects), the Wisconsin Department of Commerce brownfields grant (15 percent), PECFA funds (10 percent), and Milwaukee County brownfield grant funds (4 percent). Since many of the projects involved more than one funding source, and given that a common grievance is the procedural sluggishness of applying for them, the City of Milwaukee has made an effort to have its development department act as a one-stop shop for dispensing funds.

While data on the specific funding tools and sources employed for redeveloping brownfields were not provided for a quarter of the projects in the other jurisdictions, the data compiled revealed that the most common sources were: TIF funds (30 percent), Department of Commerce grants (24 percent), DNR grants (19 percent), county grants (4 percent), and PECFA funds (4 percent).

On the whole, over \$21 million in public assistance was handed out to support 127 brownfield redevelopment projects reported in the county. The funds came from city (48 percent of total funding) and state sources (totaling 48 percent—38 percent from the Department of Commerce, 8 percent PECFA, 2 percent DNR). The remaining 4 percent came from the county.

The perceptions of those involved in the brownfield redevelopment process and the ever-expanding sources of support from different levels of government provide a clear sign that things are improving overall and that most of

the key barriers are being attenuated or even eliminated through better public/private cooperation, policy making, and funding. The focus on state initiatives implies, however, that local governments still need to do a better job advertising their role and contribution to the whole process. The growing size of the public support framework, and the complexity associated with accessing it, however, is turning out to be barriers in and of itself. It is the ability of local governments to maneuver through this framework that will ultimately influence the overall outcome.

Redevelopment Outcomes

Data gathered on brownfield redevelopment activities in Milwaukee County reveal that the number of projects increased steadily between 1990 and 2001, especially in the city of Milwaukee where the number of publicly assisted projects rose from four in 1990 to fourteen in 2001. The majority of redevelopment activity in the city varied by land use, but was clustered in three areas: (1) along the Menomonee Valley (east-west), the city's historical industrial district and Wisconsin's largest brownfield area; (2) along the Milwaukee river (north-south) and North Avenue; and (3) in the Sherman Park area in the western part of the city (see Figure 2). Redevelopment projects in the other jurisdictions tended to cluster in specific areas, except for West Allis where they took place along their main corridor. It is not clear if the clustering of these projects is due to policy efforts directed at specific areas of the city, or to the domino effect that tends to occur after an initial catalyst project is undertaken.

Office and commercial redevelopment constituted the primary end use in Milwaukee County as a whole (31 percent), followed by residential redevelopment (20 percent), industrial (19 percent), retail (12 percent), public building (8 percent), open space creation (5 percent), and other site development (transportation, cemeteries, etc.) (5 percent) (see Table 1). While the city of Milwaukee and the surrounding jurisdictions witnessed similar trends overall, there was more commercial/office (37 percent) and industrial (22 percent) redevelopment of brownfields in the surrounding municipalities. Projects in the city were smaller in site area, but similar in building area, due to higher density conditions. Overall, Milwaukee's rede-

velopment trends are similar to national ones (U.S. Conference of Mayors 2003) in terms of open space creation (5 percent to 4/5 percent, nationally), but are higher in terms of commercial (31 percent to 25 percent, nationally), industrial (19 percent to under 8 percent, nationally) and residential redevelopment (20 percent to 14 percent, nationally), and lower in terms of mixed-use (19 percent to 24 percent, nationally) and retail redevelopment (12 percent to 23 percent, nationally).

Other than the City of Milwaukee and the Department of Commerce, most of the communities and agencies examined did not formally track the outcomes of the projects they funded. However, many did keep records informally and were able to provide them for the purposes of the present study. The information provided included project land use and location, as well as employment generation, property value data, and number of redevelopment funds leveraged. Brownfield projects supported through City of Milwaukee funds created or retained over 2,200 full- and part-time jobs in total (or eighty per relevant employment generating project) and leveraged over \$325 million in investment (or \$5 million per project for the sixty-four projects that reported it), leading to a ratio of private investment to city cost of 57 to 1 (see Table 2). Information on employment and investment outcomes for the other municipalities reveals that more redevelopment dollars and jobs were generated per publicly supported brownfield project. However, it should be noted that the information was limited to a small sample of fourteen larger-scale, employment-generating projects. The proportion of public investment in brownfields accounted for barely 5 percent of the total, and the average cost to the public per job created or retained was \$4,800. Both of these are far lower than what is reported by Simons and Jaouhari (34 percent and \$9,300, respectively) and CUED (29 percent and \$14,000, respectively). One reason for this discrepancy may be that those studies focused on large-scale projects supported by different levels of government, as opposed to the mix of projects involved in the present study. The question that the present research thus begs is the following: Should we continue to support larger-scale projects or should investment in brownfields be funneled to support more locally defined efforts?

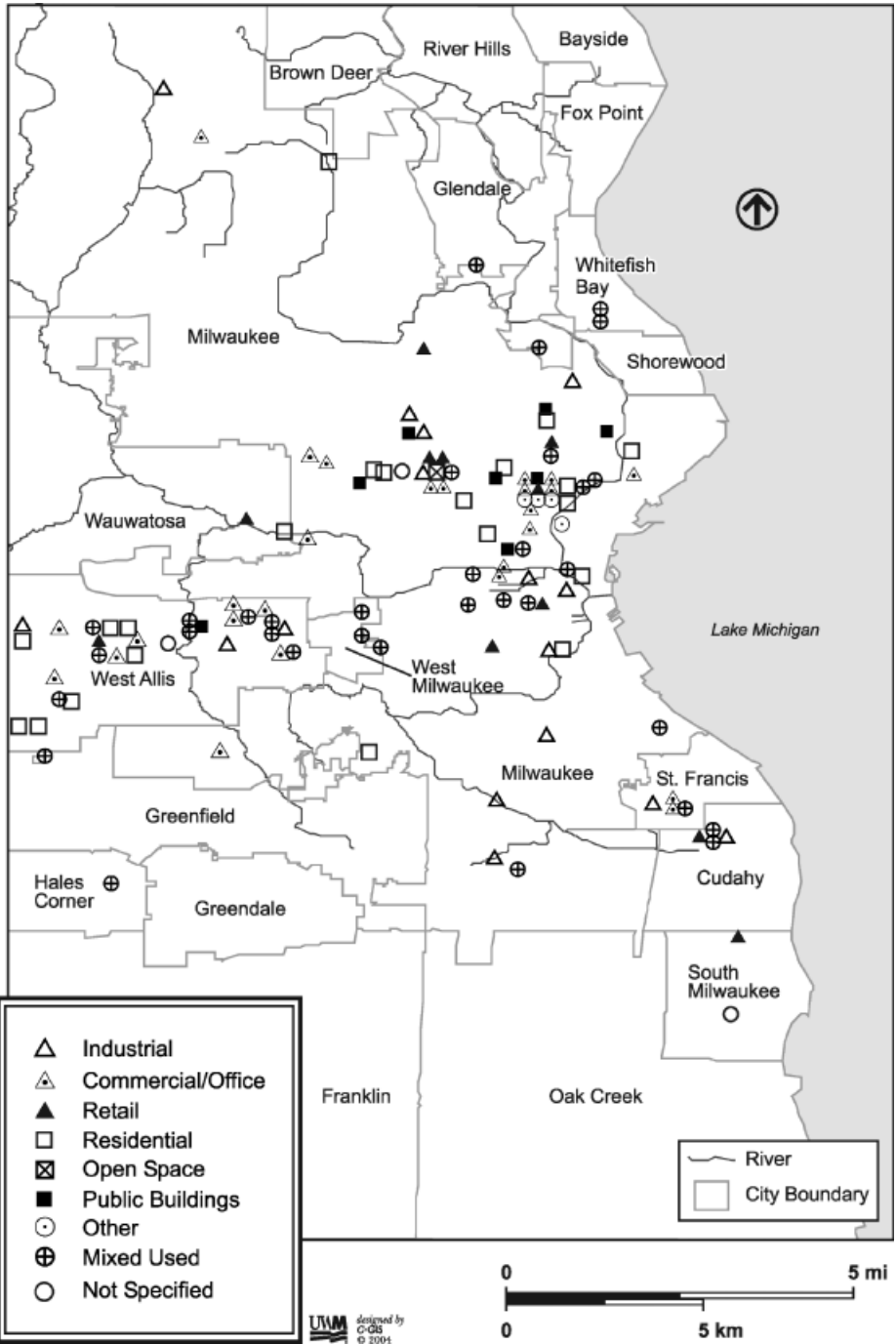


Figure 2 Brownfield redevelopment in Milwaukee County (Reported projects).

Table 1 *Brownfield Redevelopment End Use, Milwaukee County, 1990–2001 (Reported Projects)*

	Milwaukee County	City of Milwaukee	Other Municipalities
Number of reported projects	127	74	53
Commercial/Office	31%	26%	37%
Residential	20%	21%	19%
Industrial	19%	17%	22%
Retail	12%	13%	12%
Public building	8%	13%	1%
Open space	5%	3%	6%
Other	5%	7%	3%
Mixed-use	19%	15%	25%
Average site area hectares (acres/projects reported)	2.54 (6.28/57)	1.78 (4.41/34)	3.65 (9.03/23)
Average building area m ² (ft ² /projects reported)	7,068 (76,075/36)	6,411 (69,008/23)	8,229 (88,578/13)

Despite the promising redevelopment outcomes, the tone of the interviews changed when the content of the questions shifted from the performance of policy and procedural issues to the monitoring of redevelopment outcomes, especially in terms of connecting brownfields redevelopment to broader community goals. The interviewees were asked to identify which outcomes they tracked, to indicate what their attitudes were in regard to the efficacy of different social, environmental, and economic outcomes, and to indicate what their general opinion was of tracking and promoting a wider array of outcomes.

As mentioned, in addition to the remediation-oriented data compiled by the Wisconsin Department of Natural Resources, only the City of Milwaukee and the Department of Commerce maintain thorough and regularly updated databases of redevelopment outcomes. Most of the public-sector interviewees pointed out that they took into consideration only key economic outcomes, such as tax increases, job creation, and private investment dollars ensuing from or involved in a project. Private-sector interviewees generally kept track of project profitability, and some also maintained information on the overall effectiveness of their projects to stimulate future redevelopment activities.

To ascertain the attitudes of the interviewees toward the broader sustainability-oriented picture in the McCarthyan framework, they were presented with a list of outcomes mentioned consistently in the relevant literature (U.S. Environmental Protection Agency 1999; Council for Urban Economic Development 2000; U.S. Conference of Mayors 2000; Simons and Jaouhari 2001; Dair and Williams 2001; U.S. Environmental Protection Agency 2002). They were then asked to rank these as not important (1), somewhat important (2), important (3), or very important (4). Both public and private sector interviewees viewed the economic outcomes as the most important overall (score = 3.0 total, 3.03 public, 2.92 private), followed by environmental (score = 2.8 total, 2.8 public, 2.8 private) and social results (score = 2.5 total, 2.5 public, 2.6 private). However, there was significant variation within individual outcome categories. Most viewed the increase in tax base, the influence on local property values, and the reduction of risks posed by contaminants as very important outcomes to track (see Table 3). Outcomes that were perceived as “important” (2.5–3.4 average) can be roughly classified as standard (e.g., public cost per private redevelopment dollars leveraged, land/building development, jobs), and those that focused on the community

Table 2 *Brownfield Redevelopment Outcomes, Milwaukee County, 1990–2001 (Reported Projects)*

	Milwaukee County	City of Milwaukee	Other Municipalities
Redevelopment dollars per project	\$5,580,019	\$5,091,992	\$8,182,831
Number of projects reported	76	64	12
Number jobs created/retained per project	80	54	157
Number of projects reported	56	42	14
Ratio of private investment to city cost		57	

Table 3 Interviewee Evaluation of Potential Brownfield Performance/Outcome Measures

Performance/Outcome Measure	Type	Overall Avg.	Public Avg.	Private Avg.
<i>Very Important</i>				
Increases the local property tax base ^{3,5}	Eco	4.0	4.0	4.0
Reduces risks posed by contaminants ^{2,4,6}	Env	3.6	3.6	3.7
Influences local property values ²	Eco	3.6	3.8	3.3
<i>Important</i>				
Public costs per private redevelopment dollars leveraged ^{1,4,7}	Eco	3.4	3.4	3.4
Influences local economic activity & income ²	Eco	3.3	3.5	3.5
Enhances the aesthetic image of the local community ²	Env	3.3	3.6	2.9
Land acres or building area developed ^{1,3,4,5,7}	Eco	3.1	3.2	3.0
Allows for some level of local control over the project ²	Soc	3.1	2.8	3.4
Enhances quality of life ²	Soc	3.1	3.2	2.9
Number of jobs created ^{1,3,4,5,7}	Eco	3.0	3.0	2.9
Contributes to local business ⁶	Eco	2.9	2.9	2.9
Improves regional environmental conditions by minimizing greenfield development ^{2,6}	Env	2.9	3.1	2.5
Number of "living-wage" jobs created ⁶	Eco	2.9	2.9	2.8
Public costs per job created ^{1,4}	Eco	2.8	2.8	2.9
Improves the conditions of low-income population ²	Soc	2.8	2.8	2.9
Fosters community cohesion ²	Soc	2.8	3.0	2.6
Strengthens community capacity ²	Soc	2.8	2.7	2.9
Prevents pollution and reduces waste ²	Env	2.8	2.6	3.0
Physically conforms to community desires ²	Soc	2.7	3.1	2.3
Provides infrastructure for public transit, walking, cycling ^{2,6}	Env	2.7	2.6	2.9
Impacts on local unemployment ^{1,3,4,5,7}	Eco	2.7	2.9	2.9
Supports ecosystem functions ²	Env	2.7	2.6	2.8
Makes polluters pay for remediation costs ⁸	Env	2.7	2.7	2.6
Protects/preserves biodiversity ^{2,6}	Env	2.6	2.5	2.8
Involves coordination among multiple stakeholders ^{2,7}	Soc	2.5	2.5	2.6
Puts new businesses on the site ^{1,2,4,5}	Eco	2.5	3.0	1.9
Involves an open consultation process ²	Soc	2.5	2.5	2.6
<i>Somewhat Important</i>				
Permits equitable access to housing or employment ^{2,6}	Soc	2.4	2.6	2.1
Is energy efficient ^{2,6}	Env	2.4	2.2	2.7
Draws on local enterprises for inputs ⁸	Eco	2.4	2.6	2.6
Considers regional impact ²	Soc	2.4	2.3	2.5
Involves "green" building features (renewable/recycled materials) ^{2,6}	Env	2.4	2.3	2.4
Reduces local crime rate ⁸	Soc	2.3	2.3	2.4
Raises densities in comparison to typical development ⁶	Env	2.3	2.2	2.4
Provides an opportunity for training ⁶	Soc	2.0	1.7	2.5
Involves a mixture of land uses ^{2,6}	Soc	2.0	2.2	1.8

¹ CUED 2000; ² U.S. Environmental Protection Agency 1999; ³ U.S. Conference of Mayors 2000; ⁴ Simons and Jaouhari 2001; ⁵ Bartsch and Deane 2002; ⁶ Dair and Williams 2001; ⁷ U.S. Environmental Protection Agency 2002; ⁸ Put forward by stakeholders.
 Note: Eco = economic; Env = environmental; Soc = social.

benefits related to renewal, blight removal, and improvement of community cohesion (enhancement of the community's image and quality of life, contribution to local business, fostering of community cohesion, and so on). Other than those used for employment outcomes, the interviewees were generally wary of measures that tracked the specific features of projects (factors and issues dealing with equal access to housing, local green building, density issues, end uses, etc.). Interestingly, while both public- and private-sector stakeholders revealed similar attitudes toward most of the outcomes, those in the private sector were more amenable

to tracking the environmental features of their projects (such as access to alternative transportation, green building outcomes, energy efficiency), while the public stakeholders were more interested in community-directed outcomes (such as the enhancement of a community's image and overall cohesion).

The attitude of both groups of interviewees with regard to tracking other sustainability-oriented indicators was mixed. Public-sector stakeholders felt that such indicators could help advertise the long-term benefits associated with brownfield redevelopment, which, in turn, would help justify short-term public expense

and involvement. The main fear, however, was the difficulty of defining what constitutes a sustainable brownfield project, how its outcome would be measured, and who would do the measuring. The responses of the private-sector interviewees were also mixed in this regard. Many felt that the desire to monitor and seek out broader outcomes was a valid objective, given the level of public commitment and the need to obtain public support generally. Some also felt that a broader range of outcomes would take the focus away from job creation and maintenance that, as one interviewee put it, has become the “fixation” of financially oriented agencies such as the Department of Commerce. Many of the private-sector interviewees were also concerned that (1) small sites with less “social impact” would seem less attractive from a funding perspective, (2) outcomes would not only be used to measure performance, but be employed as specific criteria that developers would have to meet to attain funding, and (3) developers might not always be able to grasp the meaning of the outcomes themselves. Most importantly, almost half of the private-sector interviewees felt that those redeveloping brownfields faced too many bureaucratic obstacles already, a fact that continues to make greenfield development more attractive.

Conclusions

The present study of a specific case—Milwaukee County—makes it clear that this county’s brownfields experience has implications for the redevelopment of derelict lands in areas of similar size and characteristics. While project funding and procedural complications continue to be perceived as key obstacles to private redevelopment efforts, there is a growing sense that brownfield projects are not only economically profitable but also bring benefits of a social and environmental nature that can (and should) be documented so that they can be used to justify public support for them. The survey of Milwaukee County stakeholders reveals that the role of government is perceived as successful insofar as it can effectively address the main economic barriers to redevelopment. Both the provision of redevelopment funding and liability protection is considered crucial by all stakeholders, as a growing range of governmental funding policies are being devised and implemented to assist the redevelopment process.

The increasing number of projects provides a clear indication that such policies are achieving success. As for the kinds of policies that still need to be created to further facilitate redevelopment, stakeholders such as those in Milwaukee County continue to call for accelerated procedures, increased levels of funding, and more redevelopment assistance in the early stages of the redevelopment process.

In terms of connecting brownfield development to broader community goals, the Milwaukee County situation makes it obvious that both public- and private-sector stakeholders are in agreement that such goals are realized. The present study also suggests that the nature of data gathering on this dimension of the McCarthy conceptual framework should be greatly expanded, since the data gathered so far are much too narrow in scope (tracking only the amount of land redeveloped, land use, investment, and jobs). While those interviewed for the present study seemed to be in general agreement on the value of broader sustainability-oriented considerations, issues related to their measurement and tracking, as well as the impact this might have on redevelopment activities generally, were cause for concern. In terms of where we go from here, therefore, achieving tangible community outcomes from brownfield redevelopment that correspond to the sustainability and smart growth conceptual framework being suggested by both public- and private-sector stakeholders will require a more systematic approach to measuring outcomes and, possibly, tying them directly to public support.

Glossary

Abandoned Container. An abandoned container is a container with potentially hazardous contents recovered from a site. No discharge to the environment occurs. If the container releases a hazardous substance, a spill would be associated with the site. (See *spill*)

Closed Site. Closed sites are those that have completed all cleanup requirements and have received a case closure letter from DNR.

ERP (Environmental Repair Program). ERP sites are sites other than a LUST that have contaminated soil and/or groundwater.

General Property. General property refers to environmental actions that apply to a property as a whole, rather than to a specific source of

contamination, such as a LUST or environmental repair site. Examples include off-site letters, municipal liability clarification letters, lease letters, voluntary party liability exemption actions, and general liability clarification letters.

LUST. (Leaking Underground Storage Tank). A site that has contaminated soil and/or groundwater with petroleum is termed a LUST. Some LUST cleanups are reviewed by DNR; others are reviewed by the Department of Commerce.

No Action Required. This term designates a site where there was or may have been a discharge to the environment and, based on the known information, it has been determined by DNR that the responsible party does not need to undertake an investigation or cleanup.

Open Site. Open sites are contaminated sites in need of cleanup or sites on which cleanup is still underway. The activity status of a site has been a required field only since 1996. Some sites prior to 1996 may be closed, but inaccurately display an open status notice. Sites dated from 1996 to the present should be reasonably accurately designated.

Priority. This term refers to the general risk to the environment and to human health at the time that contamination was first evaluated.

- **High priority** means that contamination exceeds one or more groundwater enforcement standards in NR 140, Wis. Admin. Code. High priority sites also include emergency situations (e.g., explosive vapors, contaminated water supply wells, or high risk associated with exposed contaminants).
- **Medium priority** means that contamination exceeds one or more preventive action limits in NR 140, Wis. Admin. Code.
- **Low priority** means that contamination does not exceed any of the preventive action limits in NR 140, Wis. Admin. Code.

Spill. A spill is a discharge of a hazardous substance that may adversely impact, or threaten to adversely impact, public health and welfare or the environment. Spills are usually cleaned up quickly.

Superfund. Superfund is a federal program created by Congress in 1980 to finance cleanup of the nation's worst hazardous waste sites.

Thirty-nine of these sites may presently threaten human health and/or the environment in Wisconsin.

Tax Increment Financing (TIF). Tax increment financing is created through the assessment of property values. Special assessments are made on properties that are expected to gain particular benefits from a general improvement or from an environmental activity (such as a cleanup). The incremental difference in tax revenues between the original assessment rate and the new, higher, assessed rate is then used to finance the improvement activity.

Voluntary Property Liability Exemptions (VPLE). These are exceptions that apply to sites in which a property owner conducts an environmental investigation and cleanup of an entire property and then receives limits on his or her future liability. ■

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