

Brownfields: A World Report (Abridged)

This article provides a survey of brownfields redevelopment in selected countries throughout the world and draws on success stories as well as lessons learned that can be gleaned by professionals involved in brownfields redevelopment around the globe. Not to be overlooked in the international brownfields context, the authors say, are the impact of the real estate marketplace, which can result either in a robust or stymied approach to brownfields redevelopment, and the link between brownfield redevelopment and concepts of sustainable growth. According to the authors, sustainable brownfields projects ultimately will be the most successful because they address the “triple bottom line,” addressing economic, environmental, and social needs.

231.1951 Introduction *

There is a wonderful Zen parable about a sensei who, when approached by a brash youngster who wanted the sensei to take him on as a student, evaluated the candidate as not yet ready. The master bid him sit down and lifted up a glass, took a ewer of water and started slowly pouring it into the glass, but as the glass filled the master didn't stop pouring and the water spilled over the edge of the glass onto the table. The surprised youth asked the sensei what he thought he was doing, and the master didn't reply but got up and left. The import of the story is that he could not teach the student because the student already was too full, just as the glass was, and the student first would have to be ready to accept knowledge before it could be shared. Although readers of this article probably tend to focus on brownfield redevelopment occurring in their own localities, much can be learned by “emptying our glasses” and listening to what others are doing in this field around the world.

Some of the most interesting innovations are occurring in Europe. The brownfield industry started in earnest in Europe more than a decade earlier than in the United States, and considering the situation, it was inevitable. Countries where the developed footprint already was a larger percentage of the national geography, and where the history of industrialization goes back even farther than in urbanized areas of North America, naturally would have an early sensitivity towards the significance of brownfield redevel-

opment to preserve dwindling green space. Combined with the fact that half the continent suffered under the Soviets, who had a dismal record of care and maintenance of industrial operations generally, it is no wonder the European Union has focused so much attention on brownfield redevelopment. The maturity of the industry helps explain why universities in Europe have embraced a brownfield redevelopment curriculum and study the phenomenon seriously.

Much can be gleaned from the experience of the Europeans because they have illustrated both a commitment to the process and significance of brownfield redevelopment. There are various workshops and conferences supported with EU grants and talent from both academia and government. Concerted Action on Brownfield and Economic Regeneration Network (CABERNET)¹ is one such organization. In April 2007 it sponsored a conference in Stuttgart, Germany, that brought together brownfield practitioners from throughout the EU. North America already is reacting to the themes that have been learned in Europe, and one obvious emerging theme is that the best brownfield redevelopment works in a context of sustainability. The sustainable projects will ultimately be most successful because they address the triple bottom line: projects have to be bottom-line successful economically, environmentally, and socially.

In recent years, the U.S. Environmental Protection Agency has enabled members of academia, government, and the private sector to tap into some of the ideas promulgated by brownfield redevelopment specialists in Europe through the formation of the Bilateral Working Group.² This working group came out of an agreement with Germany and resulted in regular exchanges and projects between American and German engineers, regulators, and scientists studying each other's best management practices and consulting on shared projects. This group has been

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¹ See <http://www.cabernet.org.uk>.

² See <http://www.bilateral-wg.org/>.

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active for more than a decade, leading to the development of formal ties and relationships between EPA and this critically important European nation. Although initially formed between EPA and Germany, the Bilateral Working Group has expanded to include savvy brownfields professionals from around the world. Through this collaborative effort, an international compilation of brownfield success stories has been gathered, some of which this article will share.

Thanks to contributions from knowledgeable professionals from around the world, the following report has been prepared in the hope it will provide the foundation for additional innovative redevelopments in the United States and abroad.

(a) *Germany*³

The U.S.-German Bilateral Working Group, which has been active for more than 15 years, is responsible for bringing together brownfield practitioners from both countries via numerous conferences, workshops, and other venues with the primary goal of sharing best practices to facilitate brownfields revitalization in both countries. While brownfields are a national topic of concern, the term “brownfield” is not legally defined in Germany. However, the term is used widely in the context of unused or underused land that needs intervention to reintegrate it back into the property market—land that often previously served industrial, military, or trading purposes and for which no new use has been found. Given the extent of urban redevelopment activity in many parts of Germany, the term brownfields also includes abandoned housing areas, railway yards, and even shopping malls and offices.

In many cases, the term brownfield also includes the need to manage contaminated land and contaminated groundwater. In fact, a considerable number of brownfield properties in Germany have considerable pollution problems arising from their previous industrial use. Hence, contamination and the associated problems (costs, duration for remediation, liability, reuse options etc.) are serious obstacles for brown-

field redevelopment to be solved within the regeneration process.

The legal basis for brownfield management is established in Germany's Environmental and Spatial Planning legislation. Implementation, however, is with the federal states, which mostly have delegated land management and remediation responsibilities to regional or municipal administrative bodies. Regarding the environmental component, Germany's Federal Soil Protection Act sets the frame for the assessment and remediation of contaminated soil on brownfield land. The Federal Building Code (Baugesetzbuch, BauGB) provides the basis for project planning and building design requirements and defines the best available tools for urban planning. The Federal Building Code emphasizes in its *General Provision* and in a special section for Urban Redevelopment Measures the preference of brownfield redevelopment prior to new developments on greenfields.

In 2002, Germany's political driver for a sustainable land use strategy formally was established in their National Sustainability Strategy.⁴ One of the seven priority fields of action in this landmark strategy is the reduction of land consumption (that is, consumption of greenfields), and brownfield redevelopment is identified as a major tool to achieve this requirement. In fact, the German strategy sets a numerical goal—reduce the consumption of land to 30 hectares per day by the year 2020 (the baseline rate was 129 hectares per day in the year 2000).

Beyond the regulatory requirements and the drive for sustainable land use, brownfields provide a considerable potential for urban renewal in city centres and suburbs. This urban renewal incorporates the triple bottom line encompassing economic sustainability, environmental stewardship, and social benefits that is embraced around the globe.

After German reunification in 1990, specific brownfield problems emerged in the new German states. High greenfield consumption promoted by tax incentives met the decline of industry and military conversion. According to federal estimates, municipalities in former East Germany on average have more than three times as much derelict land with regeneration potential than their western counterparts.

Germany uses a systematic approach for brownfield redevelopment, “circular land use management.” The idea behind this approach is to ensure new use of land predominantly is replaced by re-

³ The research for this section was compiled with the help of Detlef Grimski and Dr. Fabian Dosch. Grimski is a senior project manager at the German Federal Environmental Agency (Umweltbundesamt or UBA) and also is the director of the European Brownfields Network Concerted Action on Brownfield and Economic Regeneration Network (CABERNET), <http://www.cabernet.org.uk>. Grimski can be reached at detlef.grimski@uba.de. Dosch is a senior project manager for Germany's Federal Office for Building and Regional Planning, and can be reached at fabian.dosch@bbr.bund.de.

⁴ See <http://www.umweltbundesamt.de/index-e.htm>.

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utilization of existing areas (land rotation through land recycling) to avoid the development of greenfields. This cyclic process encompasses planning, utilization, termination of use, abandonment, and finally reintegration. The reactivation of brownfields as part of this process not only is welcome from an environmental viewpoint but also because it satisfies economic requirements (e.g., by avoiding investment in new infrastructure and optimizing exploitation of existing infrastructure) and social needs (e.g., by contributing to a functional and social inclusion)—the triple bottom line.

Circular flow land-use management embodies a different philosophy of use, which is expressed by the motto “avoid – mobilize – revitalize.” This management approach accepts the development of greenfield sites under specific conditions but primarily and systematically seeks to utilize the potential of all existing sites, including brownfields. Circular flow land-use management also intends to provide an integrated political and governance approach that includes cooperation, investment and support programs, land information, legislation, marketing, organization and management, and planning.

The triggers for brownfields revitalization in Germany are similar to elsewhere around the globe—the availability of money, community demand, a private land development company, etc. However, Germany also has large-scale examples of politically and socially conscious revitalization projects. One such example is the International Building Exhibition Emscher Park⁵ completed in 1999 with the goal of revitalizing an abandoned steel mill into a driver for the ecological, economic, and social renaissance of an entire community by establishing innovative housing schemes, a major tourist attraction, new landscape schemes, and social infrastructure.

In Germany, the keywords are “sustainable development,” which closes the circle to its national strategy on sustainability mentioned above. It aims at reducing land consumption, that is, preserving greenspace. The release of this strategy is a significant driver for a number of initiatives on the community, state, and federal levels to put brownfield redevelopment higher on the political agenda. Every state in Germany now has an initiative for inner-city

development and urban sprawl avoidance. The implementation of this holistic strategy is impressive. For example, the German Ministry for Education and Research,⁶ with support from the Ministry for the Environment⁷ and the Ministry for Transport, Building and Urban Affairs,⁸ has kicked-off a special research program called Research for the Reduction of Land Consumption and for Sustainable Land Management (REFINA).⁹ This multimillion Euro program is focused on the following issues:

- analyses and evaluation methodology for sustainable land management and brownfield redevelopment,
- development of new information and communication structures, and
- model concepts for innovative land management in selected regions with different development conditions.

In Germany, there is a significant focus on developing tools to facilitate learning, research, revitalization, and sharing best practices. A recent example is a tool to scan the most important information to kick off a project—termed a “Start Up Plan.” The plan was developed in a project funded by the Ministry for Education and Research as part of the cooperation between Germany and EPA. The idea behind it is to provide a holistic project and business plan tailored to a specific vacant space and stakeholder perspectives. The Start Up Plan focuses on data relating to acquisition of funding, communication, information, and project planning, which are of primary importance to the target groups concerned. The Start Up Plan for brownfields collates site-specific information for stakeholders that previously only was available separately from a wide variety of sources. Thus, the plan facilitates crucial information flow and helps stimulate interest in brownfields and overcome existing prejudices. This tool does not replace general construction and remediation planning required by law or the wide array of other successful informal planning measures. Rather, it complements the existing tools and enhances communication of key information to key decisionmakers.

⁶ See <http://www.bmbf.de/en/index.php>.

⁷ See <http://www.bmu.de/english/aktuell/4152.php>.

⁸ See <http://www.bmvbs.de/en>.

⁹ See <http://www.refina-info.de/en/>.

⁵ See <http://www.landschaftspark.de/en/home/index.php>.

(b) Great Britain¹⁰

The United Kingdom is four separate countries, including England, Northern Ireland, Scotland, Wales. All of them combine a relatively small area with high population density, compounded by three centuries of heavy industrial activity. Reusing land was common practice, but the fundamental economic changes of the mid- and later 20th century resulted in deindustrialization that left much land derelict and idle. Brownfield redevelopment in the UK mainly is driven by a buoyant housing market and a policy framework that seeks to encourage reuse of “previously developed land” (PDL) and so hinder consumption of greenfield sites.

A recent study by the government, the Barker Report, may result in a change of policy emphasis for use of PDL and points out that not all previously developed land is a brownfield (although most brownfields are previously developed lands.)¹¹ Even within England, however, different regions have their own Regional Brownfield Action Plan, so there are natural local emphases in policy that might favor the need for improving transport networks, new housing, protecting cultural or natural heritage (as a way of attracting visitors), providing modern office or retail accommodation, and other land uses.

The UK's Department of Communities and Local Government¹² issues planning policy statements that set out the ground rules local development plans need to consider and should guide approval of applications for planning permission. Implementation involves all levels of government, and in theory there should be a downward cascade of legislation and policies refined and tailored to suit local priorities. At times the schedules of the various governmental actors are not as well-synchronized as they could be, and sometimes local government has policies that are more sensitive and sophisticated than national policies. Approval of local plans usually involves a lengthy process subject to detailed public and non-governmental organization scrutiny. When developers submit an application for planning permission, they are judged against the local plan, and there is a

presumption in favor of permission for an allocated land use. Community involvement in this process is variable, but larger projects, such as Nottingham's proposed extension to its tram system, have rigorous public consultation processes. The recent Aarhus Convention¹³ now has given birth to the Public Participation Directive that will kick in at many levels, so public participation in brownfield redevelopment decisionmaking is likely to expand throughout the EU.

The demand for local housing, especially for professions with affordability challenges, such as nurses, police officers, and teachers, is driving government action, but the policy may result in a short-term palliative at the expense of long-term health. The British government generally is viewed as a positive actor in the world of brownfield redevelopment in England, or at least it does not appear to be hindering redevelopment. While government regulators still are leery of private sector professionals who just want to be trusted to get on with the job, it appears England has learned that plan-led development coupled with sequential testing at brownfield sites does work. One primary concern is that the government, in its quest for cheaper housing, will loosen the protection of greenfield sites and the results may not be favorable for the environment or the reuse of urban brownfields.

(c) The Czech Republic¹⁴

Breaking the primary barrier to Czech brownfields revitalization (apart from a sluggish real estate market) requires providing expertise, knowledge, and understanding to all parties involved. To this end, the Czech IURS (Institut pro udržitelný rozvoj sídel—Institute for Sustainable Development of Settlements)¹⁵ concentrates on debunking myths about Czech brownfields and promoting data that demonstrate brownfields in the Czech Republic are not an environmental or industrial issue but an economic, social, and spatial issue whose main stakeholders were the local communities.¹⁶ For those communities, IURS compiled the first-ever local language publication and the brochure “Brownfields—Light and

¹⁰ The research for this section was compiled with the help of Dr. Paul Nathanail, a faculty member at the University of Nottingham; a consultant on land use and redevelopment issues; and a leader, along with his colleague Kate Millar, in Concerted Action on Brownfield and Economic Regeneration Network (CABERNET), <http://www.cabernet.org.uk>. He can be reached at paul.nathanail@nottingham.ac.uk.

¹¹ The Barker Report is available on the Web at http://www.hm-treasury.gov.uk/media/3/A/barker_finalreport051206.pdf.

¹² See <http://www.communities.gov.uk/corporate/>.

¹³ See <http://ec.europa.eu/environment/aarhus/>.

¹⁴ The research for this section was compiled with the help of Jirina Bergatt Jackson, director of the Czech NGO IURS-Institut pro udržitelný rozvoj sídel (Institute for Sustainable Development of Settlements). Jackson can be reached at jjackson@volny.cz.

¹⁵ See <http://www.brownfields.cz>.

¹⁶ See, e.g., Parsons Brinckerhoff Report Czech Brownfield Regeneration Strategy, PHARE project, August 2004, available on the Web at <http://phare.osf.sk/home.html>.

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Easy.”¹⁷ IURS concentrated on projects that provided information about brownfields reuse—even expanding their efforts beyond the Czech Republic to Poland, Slovakia, and soon Serbia, where the local universities and engineering consultants serve as partners in local revitalization projects.¹⁸

Brownfields revitalization has been affected directly by recent EU policy changes toward the promotion of sustainable integrated urban regeneration, creating possibilities for brownfields as part of integrated urban regeneration approaches that engage the broader expertise of sustainable and integrated urban development. The key issue is enhancing the skills of local authorities in whose hands the decision about local sustainable development actually lies.

Historically, there have been no national brownfields support programs in the Czech Republic and government is not directly involved in brownfields rehabilitation. The Czech states are involved as regulators and supervisors of environmental, planning, transportation, and other related issues. Furthermore, as an example of international lessons learned, the Czech Republic has adopted components of U.S. risk-based assessment techniques. Additionally, the states underwrite most privatized properties remediation projects with an environmental clearance guarantee. The residual liabilities of the state now are handled by a specialized section in the Ministry of Finance. The Czech Ministry of Environment¹⁹ supervises all the publicly funded brownfield revitalization projects.

In 2007, a new Czech planning law for first time recognized brownfields, set requirements for data supporting environmental cleanup, and possessed instruments enabling comprehensive urban design. This law supported the intended mission of CzechInvest,²⁰ an industrial investment promotion agency charged in 2005 by the government with getting the Czech brownfields policies and strategy on the road. This organization leverages international investment and EU programs with local and international developers and communities.

Despite an unaware citizenry, changes in governmental leaders, economic limitations, and ill-defined brownfields laws, there certainly are positive results and examples in the Czech Republic. One of the earliest private investor brownfield initiatives was a con-

version of a textile mill in Liberec to a conference and entertainment center called Babylon.²¹ This was accomplished nearly entirely without any state aide and despite the fact that Liberec had other brownfields problems and it was not a prime real estate location. The project was very successful because it provided family entertainment that was missing in the market and therefore filled an important community need.

There are four primary reasons for initiation of brownfields projects in Czech Republic: 1) political will, 2) profit, 3) suitable program funding, and 4) a “bee in the bonnet” of a particular brownfield promoter.

An example of a politically led project is the development in Prague of what previously was known as SAZKA Arena, now O₂ Arena, one of the most modern multifunctional arenas in Europe.²² There was a problem with locating a national sports hall to host the Ice Hockey Championship in 2004. After several years of procrastination, the only available large single-controlled ownership site with an appropriate land use was the ex-TATRA automotive manufacturing site in the Prague 9 district. The Czech state financed the site decontamination, demolition, and improvement to the surrounding road infrastructure. However, SAZKA had entered into a very unfortunate deal with criminal speculators who had bought this site from a bankruptcy administrator. The financial success of the project remains uncertain. Nevertheless, the result was a beautiful development that put the district of Prague 9 on the investors map. This project improved the local perspective and land values as well as the local district administration’s ability to deal with developers and land owners.

Examples of for-profit brownfields development by international developers mainly can be seen in Brno, Ostrava, and Prague. In smaller towns, local developers reuse brownfields sites in three major ways, for housing, petrol stations, and supermarkets. Generally, industrial owners get approximately 45 percent of remediation and redevelopment costs and urban projects can receive more than 75 percent of these costs from EU and state funding agencies.

The “bee in the bonnet” brownfields usually are developed by their owner and can range from an agricultural holding to a small castle. The rising wealth of citizens fortunately allows them to enjoy their excessive funds in useful ways.

¹⁷ See <http://www.brownfields.cz/wp-content/uploads/2007/11/brownfieldssnadnoalehce.pdf>.

¹⁸ See <http://www.fast.vsb.cz/lepob>.

¹⁹ See <http://www.env.cz>.

²⁰ See <http://www.czechinvest.org>.

²¹ See <http://www.centrumbabylon.cz>.

²² See <http://www.o2arena.cz/pg.php?id=M07A00&lang=2>.

Regarding public involvement in the Czech Republic, communities typically are most vocal in opposing demolition of historical structures located on brownfields because the structures constitute the fabric of their industrial heritage. This seems especially true in smaller towns.

The Czech Republic lessons learned are similar to those found elsewhere: a) brownfield redevelopment projects take more time to prepare and implement; b) when projects are located in a brownfield region, it is necessary for owners and local authorities to act in partnership and consider redevelopment concepts for the whole area, not just for the specific project; and c) local authority planning and proactive involvement enhances a brownfield's chance to turn into a successful project.

Lessons learned from the Czech Republic on the national level also are evident and highlight certain steps that should be taken:

- a) Appoint direct governmental responsibility or empower a body that can facilitate cooperation across various sectors.
- b) Assign broad authority that includes urban and spatial planning to the appointed body.
- c) Ensure the appointed body has a stable staff with requisite expertise and know-how.
- d) Introduce stakeholders' input as early as possible to keep the ideas flowing.
- e) Provide local language Web information and education sources.
- f) Support stakeholder platforms.
- g) Establish requirements for documenting project results in a suitably structured databank as a condition of any public funding.

(d) *Canada*²³

Although information on Canadian governmental practices with regard to brownfields was not readily available, information from a private brownfield redeveloper was revealing. Joe Van Belleghem, a development manager for Windmill West, a partnership committed to building only the best green urban environments, shared information about a project on Vancouver Island called Dockside Green, which may be certified as the highest scoring Canadian LEED

²³ The research for this section was compiled with the help of Joe Van Belleghem, development manager for Windmill West, a Canadian partnership committed to building only the best green urban environments. Van Belleghem can be reached at joe@windmilldevelopments.com.

Platinum project yet rated.²⁴ After reviewing the Dockside Green's *Annual Sustainability Report for 2007*, there is no doubt Canadian policy and public desire are creating a marketplace for the greenest of brownfield redevelopments.²⁵ The title page of the report has a logo that laid out the "E³" philosophy, "Economics, Natural Ecology, and Social Equity." It is the very embodiment of the triple bottom line thinking. The most cursory review of the project Web site reinforces the overall commitment to these sustainability criteria.²⁶

Despite the anecdotal nature of this research, some overarching lessons and themes are being heard. In countries where brownfield redevelopment has been ongoing for some time, the focus has sharpened on sustainability, which is not just about being green (although that is a necessary component) but about economic and social aspects of the redevelopment project as well.

(e) *Japan*²⁷

There are other countries, such as Japan, where the sensitivity to problems related to redevelopment of brownfields just now is maturing. In 2003, Japan adopted the Soil Contamination Countermeasures Act,²⁸ which identified a number of contaminants and required investigation of sites under some circumstances (including when certain manufacturing facilities are closed) and necessary countermeasures that are protective of public health. The act specifically provides for countermeasures that would contain contamination on site or treatment of soils onsite if feasible. However, it is reported there still is reluctance on the part of developers and communities to use risk-based strategies. In most situations, the public has been very skeptical about reusing once-contaminated land even after a complete "dig and haul" remediation had taken place, let alone a risk-based approach. Because of this barrier to reuse and

²⁴ Canada's Green Building Council has adopted the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system for application in Canada. See <http://www.cagbc.org/>.

²⁵ The report is available on the Web at <http://docksidegreen.com/images/stories/bottom/itn/SustainabilityReport2007.pdf>.

²⁶ See <http://www.docksidegreen.com>.

²⁷ The research for this section was compiled with the help of Miki Mitsunari, chief consultant with the Environment, Natural Resources and Energy Division of Mizuho Information & Research Institute Corp., a Japanese think tank. She was very interested in the level of discussion about risk-based remediation, and generously took the time to share some of her own views. Mitsunari can be reached at miki.mitsunari@mizuho-ir.co.jp.

²⁸ See <http://www.env.go.jp/en/index.html>.

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the reliance on complete removal for the preferred remediation countermeasures, a fairly significant number of sites do not overcome the hurdle of time and money and thus remain unused. This, of course, is reminiscent of the classic brownfield dilemma first realized in Europe. There is some concern the problem this brownfield reality may cause in the next few years may grow in significance in Japan.

Reliance on excavation and removal as the preferred remedial approach has the benefit of being implemented in a short period of time with more predictability, so developers and builders prefer that approach. As a result, there is less exploration of the possibility of alternative, risk-based approaches. Even though no risk-based remediation standard exists as yet (at least not recognized and accepted by governmental authority), a formal discussion about such standards began in 2007.

With regard to the role government has played in brownfield policy in Japan, there are no so-called “official brownfield redevelopment processes” in Japan. While a number of government organizations could be involved in brownfield development, such as the Ministry of the Environment; the Ministry of Land, Infrastructure and Transportation; the Ministry of Finance; and the Ministry of Economy, Trade and Industry as well as local governments, at present there is no formal coordination for these entities to authorize or approve individual brownfield developments. When government approval processes for remediation and development are required, they are divided between the environmental division and planning/development divisions in prefecture government level.

In the *Interim Report on the Current Status of Brownfields in Japan*, developed by a study group and issued in March 2007, there is concern about the future because of a growing awareness of the number of contaminated or potentially contaminated sites in the country.²⁹ Such sites not only are in the high-value metropolitan areas where the cost of a removal cleanup may be bearable given the high land values, but they also increasingly are found in smaller communities where land values are not so high and the contamination may become an ever-greater barrier to redevelopment. There is some concern that a relaxation of population growth pressures and economic pressures also may result in more lands being idle or underused. These factors, taken together, sug-

gest a keen awareness of the social implications of brownfield policy, and the *Interim Report* ends with a warning that these factors, if unchecked, could have negative socioeconomic impacts on the region.

(f) *Australia*³⁰

The creation of a research program in Australia known as the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) is a brownfield innovation that may be unique.³¹ CRC CARE focuses on economic, legal, policy, and social issues related to site contamination. This organization was established in 2005 with a grant from the Australian federal government and has more than 20 partner organizations throughout Australia, including several universities and important members of the private sector, such as petroleum and mining interests. The group is studying the science of risk-based remediation and the corollary issues of risk communication and legal policy, gathering information from around the world and studying how different systems work (or do not work).

The Australian federal government has not involved itself in the regulation of contaminated sites in Australia, leaving this task entirely to the states and territories, and using informal guidelines to direct the cleanup of sites under the jurisdiction of its own agencies. Most states have developed specific legislation on this subject, sometimes as stand-alone measures but more often within the framework of their general environmental protection legislation. These measures consistently apply a “polluter pays” approach to the identification of responsible parties but also may extend liability to current owners or occupiers. Liability invariably is strict, retrospective, and joint and several.

The term “brownfield redevelopment” is not widely used in Australia and the usual elements of brownfields schemes found in other countries are not present. There are no specific brownfield programs that provide financial incentives or assistance to parties that want to voluntarily undertake a site cleanup, nor is there any legislation within the states and territories that offers some level of immunity from

²⁹ Available on the Web at <http://www.env.go.jp/en/water/soil/brownfields/interin-rep0703.pdf>.

³⁰ The research for this section was compiled with the help of Professor Rob Fowler, chair in environmental law at the School of Natural and Built Environments of the University of South Australia in Adelaide. He has taught and researched in the field of environmental law for more than 30 years and currently is serving as the leader for CRC CARE. He can be reached at rob.fowler@unisa.edu.au.

³¹ See <http://www.crccare.com>.

future liability under site contamination legislation for those parties that undertake voluntary cleanups.

On the other hand, it appears the regulatory authority to order responsible parties to clean up sites is exercised quite sparingly by the State Environmental Protection Authority, and usually only where large and complex cleanups are involved. Instead, cleanup is driven through the market for land redevelopment, which is extremely dynamic because of the scarcity of inner-city sites for commercial and residential uses in most Australian cities. As one of the most urbanized countries in the world, Australia faces serious challenges in terms of urban sprawl and land scarcity, so the redevelopment of sites with a prior history of industrial use is very common. In most instances, it is the land-use planning system, which requires approval for any proposed change of land use, that has triggered investigation of site contamination and consequential remediation of sites found to be contaminated. Thus, local government authorities exercising their function as planning authorities have performed a regular role in the oversight of site cleanups in Australia. However, neither state nor local governments have seen fit to introduce specific brownfields measures, instead leaving it to the property development market to determine when it is economically and technically feasible to undertake cleanups as part of the redevelopment of contaminated sites.

Most recently, pressures to limit the disposal of wastes to urban landfill sites significantly has impacted the traditional “dig and dump” approach to cleanup very widely employed in Australia. There now is growing interest in the option of retaining contaminants in situ provided a site-specific risk assessment has indicated there is no risk to potential targets. This often involves the imposition after cleanup of both engineering and institutional controls to limit the future use of such sites or parts of sites.

Finally, it should be noted contamination associated with mining and petroleum extraction activities tends to be regulated quite separately from all other types of site contamination, via the relevant state mining and petroleum tenures legislation.

Regarding how brownfields projects get started in Australia, there are some land cleanup and redevelopment projects in which collaboration occurs between the relevant state (and sometimes local) government and developers, often where relatively large-scale development is involved. An example is the Homebush site in Sydney, which was redeveloped

in the 1990s for the 2000 Sydney Olympics.³² Similarly, in Melbourne, there has been a major redevelopment of the inner-city Docklands area for high density commercial, recreational, and residential usage. In both instances, significant historic contamination was addressed as part of the projects.

These major projects tend to be undertaken on an ad hoc basis with no overarching brownfields policy driving them. However, state governments may provide some assistance to developers to help drive these projects and may be willing to negotiate the cleanup standards to be applied. There is little published information concerning the types of assistance provided in such instances, the principal exception being the Homebush project where considerable public consultation was undertaken.

State governments also have created their own quasi-autonomous land development corporations to acquire and redevelop land, particularly for residential purposes. These corporations have been used to promote and support what would be described elsewhere as brownfields projects (for example, the redevelopment of the Port Adelaide harbor area in South Australia). Again, there has been little study of how these projects have been handled in terms of the site cleanup aspects. While orders occasionally may have been used, it would be more normal in these types of projects for cleanup strategies to be negotiated with the relevant state environmental protection agencies.

It is unusual for different levels of government get involved in a brownfield site. State environmental protection authorities may order a cleanup and therefore be required to approve the relevant cleanup strategy (usually as presented in a remediation plan). However, this is not the most common approach, and in most cases it will be local governments exercising their powers as planning authorities that approve projects where some level of cleanup has been required. In doing so, they usually will rely on reports produced by experts.

It should be noted Australia has pioneered a system for the administration of site contamination laws by nongovernment “environmental auditors”—in other words, experienced qualified professionals accredited by EPA to determine when a site requires cleanup and what level of remediation is to be undertaken. In some states, the delegation of authority to environmental auditors extends to the approval of

³² See <http://www.sydneyolympicpark.com.au/corporate/history>.

[§231.1951(f)]

remediation, while in others the environmental protection authority reserves the right to review this final decision. Local governments rely extensively on the reports of environmental auditors when exercising their planning powers. This system of “outsourced” regulation by qualified professionals also has operated in Massachusetts for more than 10 years and now is being introduced in several provinces in Canada.

The key relevant concerns for state governments appear to be land scarcity and associated urban sprawl. In effect, a “smart growth” movement, referred to as “urban consolidation,” has been developed through amendments to planning policies, but it has not been reinforced by the introduction of brownfields schemes in the same way that has occurred in other countries. The efforts to rely on planning policy have not been particularly successful, leading to the conclusion of some experts that state governments in Australia need to take up the brownfields redevelopment concept as a matter of some urgency.

There are some examples of successful brownfield redevelopment projects in Australia, but it can be argued there would be many more if appropriate financial and liability relief measures were introduced. Their successes largely can be explained by the fact that inflation of land prices in urban centers has made redevelopment of contaminated sites economically feasible without the need for incentives. However, the economics also have been influenced by the widespread employment of the “dig and dump” strategy, which is unlikely to be feasible for much longer. As more expensive alternatives become necessary, the market alone will be unlikely to continue to drive successful brownfield redevelopment.

It is the opinion of the head of CRC CARE that current law and policy in Australia is inadequate to address future challenges in numerous respects, particularly with regard to new and innovative measures for brownfields redevelopment, cleanup standards, and institutional controls. Australia seems to be lagging well behind Europe and North America in these aspects of its approach to site cleanup.

(g) Impact on U.S. Policy

To follow the opening parable of this article, it appears the brownfields community in the United States has emptied its cup and is drinking in the creativity, ideas, and innovative solutions from its international colleagues. From a basis of sharing information on innovative technologies for site cleanup, international cooperation has expanded to encom-

pass the full complement of economic, environmental, and social issues that together must be addressed to achieve the triple bottom line of sustainable revitalization.

Further, many of the concepts currently embraced by the brownfields community are on the forefront of the national public agenda. These concepts include environmental justice, green design, greenhouse gas emissions, and indoor air quality and are a reflection of what U.S. practitioners are developing and what they are learning from across the globe.

(h) Two Common Denominators: Market Influence and Sustainability

Certain themes emerge from a review of brownfield practices around the world. The first theme reminds us that the marketplace is a very powerful force, and when demand for land outstrips the ready supply, many brownfield problems can be solved because the increased value of the property both creates an incentive for redevelopment and a solution for the added costs. Whether in London, Los Angeles, or Tokyo, rising real estate values compel solutions to the problems caused by historic contamination. Where the profit margins may be marginal or demand lags, the problem of underutilized brownfields will grow, and more creative approaches other than “dig and haul” must be found to avoid propagating blight.

Another theme that seems to have emerged powerfully is the linking of brownfield redevelopment with concepts of sustainable growth. The “greening” of the world’s brownfields is underway. The Europeans have been leading the way toward sustainable brownfield practices for many years.³³ In 2002, the German cabinet adopted the national sustainability strategy. By 2003, Britain’s Sustainable Urban Brownfield Regeneration: Integrated Management team started developing checklists “for 63 items related to environmental, social and economic factors . . .”³⁴ The message is being heard around the world—the best brownfield policies encourage green brownfields.

However sustainability is defined, it must include thoughtful use of resources in a way that does not deplete them for the future, resulting in projects that are economically successful, environmentally sensitive, and socially valuable. The message of incorporating sustainability into brownfield projects as the

³³ See Kastman, *Brownfield News*, Oct. 2007, p.6.

³⁴ *Id.*

next logical development for the brownfield redeveloper is international. In the United States, EPA has been leading the development of a Web-based brownfields tool, Sustainable Management Approaches and Revitalization Tools-electronic, known as SMARTe, which also incorporates the concepts of sustainability.³⁵ This tool provides analysis, data, and examples

³⁵ This tool is available on the Web at <http://www.smarte.org>.

of other successful projects in the hope that spreading information through the ubiquitous Web can help empower local communities. It is a good start for anyone trying to consider how to approach a brownfield project in America, and can link the careful researcher with others who are solving brownfield problems around the world.

See also, 16 EDDG 59, 8/16/07.