

BROWNFIELD REDEVELOPMENT IN ROMANIA

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Abstract

The primary goals of this paper are to analyze the nature and the scale of brownfield sites in Romania and to make policy recommendations on how to redevelop them. The paper addresses primarily the Romanian land use planners, in order to provide them with a better understanding of what brownfield sites are, their unique characteristics and the barriers to their redevelopment. The final part of the paper attempts to recommend financial and non-financial incentives to stimulate brownfield redevelopment in Romania.



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I. Introduction

Brownfield sites represent an issue for urban areas in Romania, especially after the fall of the communist regime when many publicly owned factories were closed and the economy and employment of the areas where they were located declined. Very few former industrial sites were redeveloped, and presently developers are still reluctant to make investments in these sites. Therefore, the paper makes recommendations of financial tools to encourage private sector to redevelop the former industrial sites.

The paper is comprised of three major parts: 1) an analysis of the scale and nature of brownfield sites in Romania; 2) the role of private sector in encouraging brownfield redevelopment; 3) policy recommendations for the regeneration of derelict sites in Romania. The first part of the paper analyzes the factors that generated the large number of brownfield sites in Romania. The pattern of urban development between 1945 and 1989, especially the communist industrialization of the country was found to be the most important factor that influenced the decline and the closure of many publicly owned factories.

The second part of the paper analyzes the importance of redeveloping brownfield sites, and the benefits, as well as the barriers to their redevelopment. An analysis of the concerns that lenders, developers and public sector have with regard to brownfield redevelopment was performed. Intervention of public sector is needed for the regeneration of those sites that have potential to be redeveloped, but the lenders and developers are reluctant to invest.

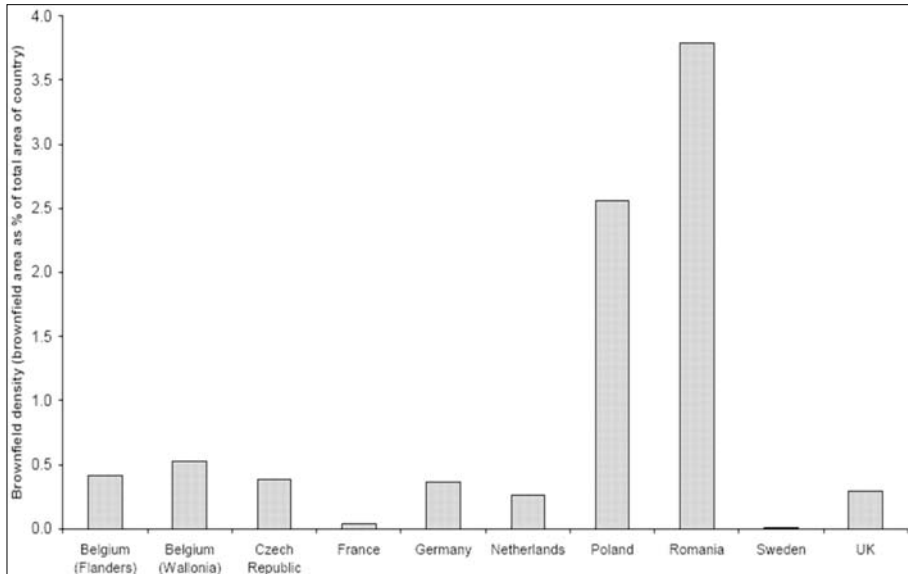
The third part of the paper makes policy recommendation of financial and non-financial incentives that public sector can use to stimulate developers and lenders to overcome their barriers and in order to make brownfield redevelopment projects feasible. The tools to reduce developers' cost of financing, to improve the business cash flow and to enhance investment climate were analyzed, as well as the incentives to reduce lenders risk of financing brownfield projects.

II. Scale and Nature of Brownfield Sites in Romania

1. Scale of Brownfield Sites in Romania

In Romania, "brownfield" is a new term in the language of land use planners. Generally, it refers to sites previously developed that have potential or confirmed presence of contamination. There is no official definition of brownfield sites, but the term seems to be associated with the contamination of land. No comprehensive database of these sites exists and the number of brownfield sites is based on estimations.

According to a study conducted by Concerted Action on Brownfields and Economic Regeneration Network (CABERNET) among several European countries (Oliver et. al 2005), in 2000 there were 900,000 hectares of brownfields in Romania. These statistics were provided by Romanian Ministry of Waters and Environment. Figure 1 shows that this value was the highest among all European countries included in the study. The authors of the study argued that the high difference rested on criteria used by the Romanian government to define what a brownfield site is. The Romanian government reported all existing contaminated areas, even though some of them were economically active.



Source: Oliver et. al 2005

Figure 1. Density of brownfield land in European countries

Figure 1 shows that Poland was the country that had the second highest number of brownfield sites. The country reported having around 800,000 hectares of brownfields in 2002, an area almost as vast as in Romania. The authors of the study indicate that the Poland governmental officials reported the coalfields in Silesia as brownfield sites to, even though large parts of this area were still active.

The CABERNET study concludes that there is no generally accepted definition of the term “brownfield”. Large differences exist among different countries. According to this study the differences on how brownfield sites are defined appear to be related to the development priorities of each country.

For example, some countries have a broader definition that includes the obsolete or blighted sites, even though they are not contaminated. The goal for including these sites is to encourage developers to invest in their redevelopment, by giving them access to the financial incentives, which are offered for brownfield redevelopment. Usually, those countries that use a broader definition are concerned with controlling urban sprawl and the limited amount of greenfield available for redevelopment. Thereby they attempt to stimulate the regeneration of the previously developed properties, even though they are not brownfields. Western European countries, such as Germany, Austria, Belgium, France, the Netherlands or the U.K fall in this category.

Those countries that require the presence of contamination on a site in order to classify it as a brownfield are concerned mainly with the risks that contamination poses to human health. There is no perceived need for the regeneration of the brownfield sites in these countries. The main arguments are that large areas of greenfields are available outside the main urban areas and no increasing population pressures the development of the main urban areas. The Scandinavian countries are an example

of countries that define brownfields by referring to health and environmental risks that these sites pose to human health.

Even though, the U.S. was not included in the study conducted by CABERNET, the redevelopment of brownfield sites has a long history. The first policies addressing the issue of brownfield sites concentrated on their cleanup and redevelopment. Because these policies didn't generate the anticipated results, more recently, individual states expanded the definition of brownfields to include blighted and obsolete sites that may not be contaminated (State of Michigan). Despite the lack of comprehensive data, the number of brownfield sites existing in Romania is high and they were generated by the pattern of industrialization during the communist regime (1945 and 1989).

2. Pattern of Urban Development in Romania

The pattern of urban development during communist regime was an important factor that generated the increasing number of brownfield sites. During communist regime, the country underwent a systematic process of urbanization and industrialization, which largely shaped the landscape of urban settlements.

Before 1945 when the country entered the communist regime, agriculture was the dominant economic sector. Table 1 shows that in 1948 agriculture accounted for 75% of total workforce. The same figure shows that the vast majority of population and dwelling units were located in rural areas. In 1940s, important economic disparities existed between different regions of the country. The industrial sectors were poorly developed and the infrastructure was undeveloped.

Table 1. 1930-1966. Changes in demographic statistics.

	1930	1948	1956	1966
Agricultural work force (%)	80%	75%	70%	57%
Dwelling units in rural areas (%)	79%	77%	69%	62%
Rural population (%)	78.6%	76.6%	68.7%	61.8%

Source: Sampson, 1984

After 1945, two main processes shaped the landscape of the urban areas: the urbanization and the industrialization of the country. In the first years of the communist regime, the state took the control over all means of production and centralized all economic decisions. The goal was to achieve a state planned economy that would facilitate an equitable redistribution of resources for all people. The role of private market in influencing the demand and the supply of goods was dramatically reduced in the first years of communist regime.

The central government decided not only in all aspects of economic activity, but also with regard to urban policies. The planning process was highly centralized as lower levels of government or the citizens did not participate in framing the urban development process. The central government had the control over all decisions regarding the land uses, the location of future settlements, the size and the development of major cities.

The communist planning practice was rooted in the belief that there is a close relationship between physical and economic planning, that industrial growth would lead to the improvement of living conditions. This ideology was the main argument to evenly spread the workplaces between various regions of the country. The aim of this decision was to achieve an equitable distribution of wealth and to reduce the economic gaps between territorial administrative units. Unfortunately, the “link between physical conditions, social potential and consequences of placing investment in a particular location was not sufficiently understood” (Hamilton et. al 2005).

The internal structure of urban areas was greatly changed. The central government regulated the supply of residential units. It nationalized the existing housing spaces and redistributed them. It introduced a system of fixed property taxes. For many years, the central government, through publicly owned agencies, was the major builder and provider of housing units. Large residential areas were developed following a similar pattern of development in order to promote equality among residents. Therefore, location within a specific part of the city became an irrelevant economic or social indicator since all neighborhoods were provided with the same amenities.

The urban policies of the 1970s concentrated more on actual form and structure of cities. Central industrial agglomerations were planned along with smaller urban agglomerations. These centers concentrated not only on industrial activities, but also on basic services, such as education and health care. This network of centers aimed to facilitate the access of all people to basic social welfare services and to increase the interaction between regions. In the 1980s, the central government aimed to develop each settlement in the country through a systematization program.

All major cities followed an almost similar pattern of development. A highly dense mix of historic buildings, retail businesses and public institutions dominated the core areas. These areas concentrated the major activities within the city. The second ring of the cities was a mix of buildings dominated by industrial facilities and other commercial functions. On the outer zones, high-density residential areas were developed. The restrictive policy regarding the construction of houses at the edge of these cities prevented the suburbanization process. Also, the number of people migrating to urban areas was strictly controlled. Commuting on regular basis was allowed, especially for people working in factories (Hamilton et. al 2005).

The rapid urbanization of the country is reflected in the distribution of population by urban and rural areas. Table 2 shows that in 1930 only 21.40% of population lived in urban areas. In the following 40 years the distribution of population between urban and rural areas rapidly decreased, reaching an even point in 1980s. According to the National Institute of Statistics, by 1990 54.30% of total population lived in urbanized areas.

The industrialization process was influenced by the communist economic policies that aimed to increase the industrial production of goods, to reduce the reliance of national economies on imports and to provide working places for all residents. The implementation of these decisions generated the most important changes in urban landscape. The industrialization process led to the spatial dispersion of industrial activity. The location of new industries was under direct control of Soviet Union. The

communist regime decided the type of products to be produced and imposed quotas on production. All industrial facilities were built using technology transferred from the Soviet Union (sometimes was sometimes outdated). No economic competition existed between former communist countries.

Table 2. 1930-1990. Change in urban and rural population

	Total population	Urban population	Rural population
1930	3,051,253	21.40%	78.60%
1948	3,713,139	23.40%	76.60%
1956	5,474,164	31.30%	68.70%
1966	7,305,714	38.20%	61.80%
1970	7,464,811	36.90%	63.10%
1977	9,395,729	43.60%	56.40%
1980	10,171,618	45.80%	54.20%
1990	12,608,844	54.30%	45.70%

Source: National Institute of Statistics

In the first years of the communist regime, many sub-optimal manufacturing, raw material processing and engineering industries were duplicated in the countries of the Central and Eastern Europe. In the 1960s the focus changed on building larger, more specialized industrial facilities to serve the needs of all communist countries. A limited amount of products were exported, the main export market was of the other communist countries, forming the market of Council for Mutual Economic Assistance. Between 1945 and 1990, the Soviet Union domination on national economies created an isolation of these countries from global economy (Hamilton et. al 2005).

After the fall of the communist regime, globalization and industrialization were the major factors that generated the decline of national economy. Businesses in all industrial sectors had to compete on the private market to maintain their economic activity. Majority of them were previously owned by the central government, which largely subsidized the activity especially of those sectors that were considered critical for the economy (such as the mining sector). Those industrial activities that were inefficient were closed and many others were privatized. The reduction of industrial activity in many cities consequently had important effects on the spatial organization, structure and on the functions of the cities.

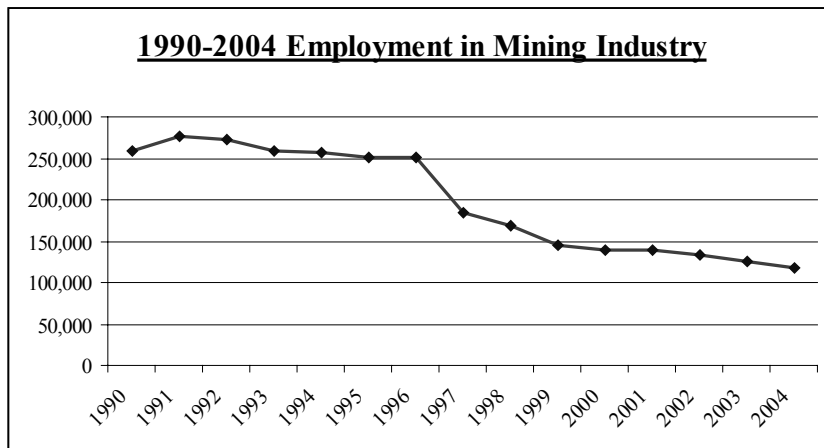
As the industrial activity reduced after 1990, many former publicly owned factories were abandoned. Today, they are often perceived as representing problems for these cities or for the larger regions. Often, these industrial sites are located within close proximity to major roads, financial and administrative institutions and to residential areas, as they were provided with the best location for the development of economic activities. Many of these abandoned industrial sites are not yet redeveloped. Investors are reluctant to cover the high cleanup costs and to assume the liabilities associated with the potential site contamination. Therefore, many new industrial investors decided to build the facilities for the factories outside the city boundaries, on greenfield locations. This trend deepened the decline of industrial areas.

The most affected areas were the mono-industrial cities that had their economic base relying on a major industrial sector. Many of such cities were established especially around mining and coal exploitations that were opened in the 1970s. After the oil crisis from the beginning of 1970s, which affected the entire economy, Romanian government decided to reduce the dependence of oil imports and to increase the coal production of energy. The coal from new mines was of poor quality and the national government had to largely subsidize the industry. After 1998, when the program for restructuring this sector was adopted, the inefficient exploitations were closed and thousands of people lost their jobs. Many settlements, which were dependent on this industrial sector, were severely affected because the local economy could not absorb all the unemployed people. Some of them abandoned their houses and migrated to rural areas, contributing to the degradation of the housing stock. Nowadays, these cities do not represent attractive locations for new investments, since the most part of the available land is contaminated, the housing stock is degraded and the local working force is largely untrained. In the next years, these cities need to diversify their economy and to become more flexible in order to adjust their economy to international competition.

3. Types of Brownfield Sites and Their Location

Most of the brownfield sites in Romania resulted from the changes in the pattern of industrial development. There are several patterns of how these sites were generated and where they tend to be located. The decline of mining industry generated the decline of mono-industrial cities that were built to support this industry. Large areas of industrial facilities were closed and they remained abandoned as the contamination discouraged any potential investor. The local economy could not absorb the high rates of unemployment (Figure 2 shows the employment decline in mining industry). People migrated to other regions where they could find jobs or to rural areas. In 1997, a year after the first decisions to restructure mining industry were adopted, the migration of people from urban to rural areas (26.8%) over passed the number of people that migrated from rural to urban areas (22.6%). This demographic movement generated the degradation of housing stock. The lack of available resources to preserve and renovate these houses and to upgrade local infrastructure, aggravated the crisis of the mono-industrial cities.

The larger urban settlements had also to confront the decline of those publicly owned factories built during communist regime. These cities, being larger and having a more diversified economy could absorb a part of the unemployed workforce. Although the unemployment rates were high for couple of years, these cities did not completely decline. However, large industrial areas were abandoned and they became brownfields. These sites tend to be located within the proximity of business district, downtown and residential areas. They are located in strategic locations, having easy access to major transportation routes. Many years after these factories were closed, some their former sites are not redeveloped yet. The main reason is that the industrial investment is moving out of the cities to greenfield locations around motorway junctions just outside the administrative cities boundaries or even beyond, to agglomerations of smaller settlements.



Source: Romanian National Institute of Statistics

Figure 2. 1990-2004 Employment changes in mining industry

The existing brownfield sites can be classified into four categories based on their redevelopment potential (ICMA 2001, Davis 2002):

1. **“Viable sites”** are those sites that have good economic development potential, even though they confront some level of contamination and some form of environmental remediation is needed. These sites hold market value, as they tend to be located on places where the expected profit of the redevelopment project is usually higher than the expected costs for land preparation and construction.
2. **“Potential development sites”** or **“threshold sites”** have some economic redevelopment potential. These sites tend to have a moderate level of contamination, which is difficult to determine without further investigation. The profitability of any redevelopment efforts of these sites is not secured due to contamination risks. Financial assistance or other forms of incentives are required to reduce the risks and distribute the redevelopment costs. Cooperation between private investors and public institutions are highly recommended to ensure the feasibility of these projects.
3. **“Non-viable sites”** or **“reverse sites”** have little or no market potential even after contamination remediation. These sites tend to have such locations where the expected income from the redevelopment is substantially below the expected costs for this redevelopment and construction. These sites can be redeveloped only with the financial support of public sector.
4. **“Super-polluted sites”** are those sites that, despite possible economic development potential, are highly contaminated and are perceived to present a public health risk.

Other sites that need a particular attention are those that confront historical contamination, but which are currently occupied. These sites can also be classified as brownfields because they hold the possibility to become abandoned in the future. They tend to be located in attractive locations, which can make them desirable for private investors. These developers can become interested in their development in

a more profitable use, but ultimately they may be discouraged by the environmental contamination on these sites. Eventually, these sites can become abandoned brownfields and to evolve into one of the other types. Therefore, it is important to prevent the decline of these sites, by understanding the danger that they hold and give property owners the opportunity to address the contamination issues in advance. The focus of this paper is on proposing mechanisms to redevelop those sites that have potential to be developed, but the investment decision is “on the brink” and which become interesting for developers and lenders only under certain conditions.

4. Is There Any Pressure to Redevelop Brownfield Sites in Romania?

The study conducted by CABERNET (Oliver et. al 2005) indicated that population pressure on core cities, limited available greenfields, increased competitiveness between cities and contamination risks of these sites increase the demand for brownfield regeneration. This section will analyze whether these factors influence the regeneration of brownfield sites in Romania, in order to estimate whether there is any need to redevelop them.

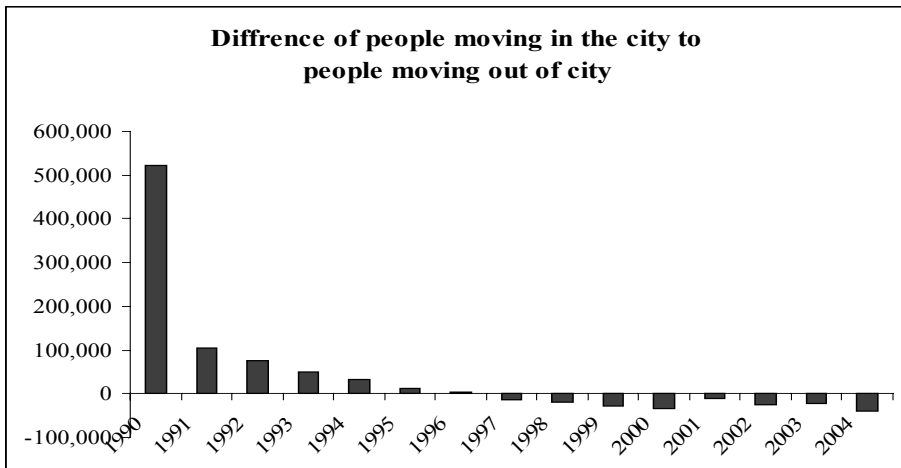
Currently, the Romanian efforts to regenerate brownfield sites are directed primarily by the need to reduce the health risks that these sites cause, and less by the need to make more sites available for redevelopment. However, in the last years, the competitiveness between some major cities increased. Even though, it is not a generalized phenomenon, the need for economic regeneration of major industrial areas created some competition between major cities that may conduct to revitalization of derelict sites.

In the last years, the population pressure on urban areas have decreased, however, they still have a high population density. After 1997, the pressure on the Romanian core cities decreased. Figure 3 shows that the number of people that left urban areas over passed the number of people that moved in urban areas. The phenomenon is caused by suburbanization, the number of people moving in the rural areas increased. One of the phenomenons that aggravated this migration fluxes was the restructuring of the mining companies in 1997. Many people moved in the rural areas where they could practice agriculture to address their basic needs. According to the Romanian National Statistic Institute, between 1996 and 2004, 117,000 people working in the mining sector lost their jobs.

The country still has greenfield areas that can be used for redevelopment The industrial investments are moving out of the major urban areas to greenfield sites located in the proximity of major transportation corridors just outside the administrative city boundaries, or in the smaller settlements orbiting the major urban agglomerations. Therefore, availability of greenfields at lower costs, the urban sprawl, lack of urban policies to prevent urban sprawl and accessible transportation alternatives for commuting deepened the issue of brownfield sites.

The main pressure to redevelop brownfields is the need to use the large areas that they cover and to address the environmental and health risks that they generate. The former industrial sites represent one of the environmental and economic problems of urban areas that Romanian government fosters to address in the following years. They

tend to have a great location advantage, being located in strategic locations that provide them with access to transportation corridors and residential areas. The strategic plan for the redevelopment of Romanian regions listed these sites as representing a key issue that needs to be addressed. Several factors constrain any future efforts to redevelop these sites. First, no systematic efforts were conducted to collect information about the number and location of these former industrial sites. Second, no systematic evaluation was made to assess the potential level of contamination and the human and environmental risks that they cause. Third, the know-how to clean up and redevelop these sites is limited. Therefore these sites are perceived as being key issues for urban areas. The main concerns regard the environmental and health risks that they pose to the local residents.



Source: Romanian National Statistic Institute

Figure 3. Difference between people that are moving into city to the people that are moving out of city

This part of the paper shows the scale of brownfield sites in Romania and analyzes the causes that generated them. The market forces do not exercise any pressure to redevelop these sites, but the public sector is concerned to revitalize the former industrial areas by cleaning them up and bringing new investments. The following section will analyze the public sector role in redeveloping brownfield sites, as well as the barriers that it has to overcome in order to stimulate private market forces to invest in brownfield redevelopment.

III. Public Sector Intervention in Brownfield Redevelopment

The brownfield sites have specific characteristics that make their development difficult to achieve than in the case of greenfield sites. Usually they are abandoned, idle or underused sites and they have real or perceived contamination problems. Many times, they require the intervention of the public sector to improve the obsolete infrastructure and to reduce the risks that developers and lenders bear when investing in these sites. Usually, private sector focuses the intervention on those sites that

have development potential, but they become interesting for redevelopment only on certain conditions.

1. Why are Brownfields Demanding Attention?

Most of the brownfield sites are caught in a vicious cycle of decline. The cleaning costs of these sites are high and thereby they are let to deteriorate. These vacant facilities invite then to illegal dumping, and vandalism, including stripping of parts and materials. Unaddressed contamination may spread, further eroding the property value, escalating the cleanup cost, and threatening the economic viability of adjoining properties. As a consequence, potential investors faced with uncertain costs and legal liabilities seek development opportunities elsewhere.

2. Which are the Benefits to Redevelop Brownfield Sites?

Most of the times, brownfields have a good position, being centrally located, good access to public transportation, and location in an urban environment. The acquisition price is usually low, comparatively with the greenfield sites and they have the potential for a stable increasing value of the property over time. The construction costs can be lower than in the case of greenfield sites because the infrastructure and utilities are already in place. Many times, financial incentives and support programs are available for their redevelopment. Their central location provides them with the opportunity for a broad spectrum of uses, especially when mixed uses are desired. Therefore, once they are cleaned up and redeveloped, they have great potential for redevelopment and a low vacancy rate.

The brownfield redevelopment projects would represent a catalyst to revitalize the older mono-industrial areas confronting with high concentration of poverty, crime and other social problems. They would contribute toward improving the quality of life in these communities. Cleaning the property can provide long-term public health benefits to residents who live in the vicinity of these brownfield sites.

Redevelopment of brownfield sites would divert growth away from undeveloped “greenfields” located in suburban and rural areas. This diversion would protect farmland and open space and would reduce the need for the construction of new infrastructure and community facilities such as schools, parks and nurseries. The better available utilities are utilized, the lower financial expenses of community would be.

Redeveloping abandoned sites can improve local tax revenues by raising the value of the properties being developed, by bringing in viable owners for tax-delinquent or government-owned sites, by generating sales taxes through commercial development, by employing taxpaying citizens, and by creating public amenities like parks or recreation centers that increase the value of surrounding properties

3. Which Are the General Concerns regarding the Redevelopment of Brownfield Sites?

The liability, costs and time create uncertainty that can prove to be the most difficult barrier to overcome regarding brownfield development. It may discourage lenders to finance brownfield projects and, in the same time, it may reduce the

rate of return of these projects, and, therefore, discouraging potential developers. The following section analyzes the developers' and lenders' concerns regarding the investment in brownfield redevelopment projects.

3.1. Developer's Concerns

A brownfield developer is mainly concerned by the rate of return of the project. The developer hopes that, after remediation, the market value of the site will be at least equal to the original purchasing price plus cleanup costs, and a reasonable return on investment. The required rate of return for an investment in a brownfield depends on the risk taken by the investor. The more risk the investor takes, the higher the rate of return is required to compensate for the risk of the project.

In order to determine the rate of return of the investment, the developer needs to exactly estimate the development costs, the completion time of the project and the value of the property after remediation. The very nature of brownfield sites makes all these costs difficult to estimate.

The major barrier to brownfield redevelopment is the difficulty to precisely value all the costs related to redevelopment. For example, in some cases, it is difficult to estimate the remediation costs because the location and level of contamination is unknown. Little information is available about remediation strategies and often the most familiar strategies prove to be the most expensive ones. Unforeseen additional cleanup costs may raise the overall development costs to levels at which they are no longer feasible for developers.

Another crucial component of the investment decision-making process is timing. Basically, investors want to eliminate the duration of the holding time of a property, because a long holding period will decrease investor's rate of return. However, many times, in brownfield redevelopment projects, it is difficult to estimate the time needed to perform the site cleanup. Previous brownfield redevelopment projects demonstrated that most cleanups take longer than it was initially estimated.

Developers are concerned by property market value after remediation, whether the property will regain its entire fair market value. It is difficult to quantify the market value of a previously contaminated site because many times, the value is determined by public perception and attitudes existing within each local market. Public tends to attach a stigma to property that has a history of contamination and the market reacts to this public perception, even if the perception is irrational. A prospective buyer will expect a discounted price for formerly contaminated property, even if the site is completely remediated. Some authors (Boyd, Harrington and Macanley 1996) argue that "it is not the environmental liabilities themselves that predominantly distort real estate markets, but rather information asymmetries between buyers and sellers regarding the extent of contamination".

Developers must understand and estimate many risks before investing in a brownfield redevelopment project. The uncertainty of brownfield projects increases the costs for borrowing the money, therefore increasing the project costs. The uncertainty regarding contamination cleanup costs and level of contamination may require unforeseen additional resources that can reduce business cash flow and can

create problems to repay back the loan at fix terms. These barriers discourage the developers to invest in brownfield projects.

3.2. Lender's concerns

When making a decision to give a loan, lenders are concerned mainly by the borrower's ability to make timely payments on the loan and by the value of the collateral. When the loan is used to redevelop a brownfield site, the lender is concerned by the extent to which the lender may be exposed to cleanup and possible liability costs and the extend to which the environmental condition impair the value of the property as a collateral for the loan (Moyer and Trimarch, 1997).

Generally, a lender looks at the borrower's capacity to make payments, specifically at the borrower's operating income as the first source to repay the loan. The lender also analyzes the borrower's available capital in the form of liquid assets, such as the cash in the bank. Liquid assets are distinguished from the property, and they represent extra funds for repaying the loan.

The lender is also concerned whether the property retains the estimated value as collateral, whether the value of the collateral covers the value of the loan in the event of borrower's default. If the borrower cannot repay a loan out of operating income or other liquid assets, the lender may be forced to foreclose the property pledged as collateral and sell it to satisfy the debt. If the estimated cleanup costs approach the property's value, the lender's ability to sell the property to satisfy the debt is severely limited. The lender is also concerned that in the case of foreclosure, as it becomes owner or operator of the contaminated property, it would become liable for the costs resulting from any environmental contamination.

3.3 Public Sector Concerns

Public sector is concerned with the risks that contaminated sites pose to the human health and the environment. It is also concerned with the impact that brownfields have on the community. Brownfields sites are unwanted burdens on the community and its taxpayers (Bartsch, 2005), as the community loses property tax revenues, and the extent and the quality of public services decreases. In the end, derelict sites affect the entire neighborhood and unemployment rates soar (Bartsch, 1997). **Therefore, public sector is interested in reducing health risks of contamination and establishing a climate that invites private investors to redevelop brownfield sites.**

4. Rationale for Government Intervention in Brownfield Redevelopment

Government intervention in brownfield redevelopment has been used to stimulate economic activity in certain geographic areas or industries or in situations when private capital market chooses not to participate. Some authors (Hamlin and Lyons, 2003) argue that government sector intervention is important to correct those markets that do not produce the outcomes desired by the public policies.

Therefore, public sector should target the brownfield efforts toward those properties in which lenders and developers are reluctant to invest. The initial efforts should provide the funds to cleanup the most contaminated sites that pose health risks. Also,

public sector intervention should attempt to close the financial gaps in brownfield cleanup and redevelopment projects.

Usually the uncertainty regarding the contamination level makes the redevelopment costs higher than the estimated income and therefore, making the projects unfeasible to certain investors. These investors would prefer to invest in greenfield sites, which represent the major competition of brownfield sites. Therefore, one of the gaps that public sector has to cover is the development costs between brownfield and greenfield sites.

Another gap that private sector has to close is between the funds available and the investment needs. In some circumstances, the public sector should act as an intermediary organization in order to balance the risks that the lenders are willing to take and the rate of return that the investors are expecting from a project. Banks are more concerned about securing the adequate collateral coverage for when the business fails, rather than investing in the future success of a project (Hamlin and Lyons, 2003).

IV. Policy recommendations for the regeneration of brownfield sites in Romania

Brownfield redevelopment is just in an initial stage in Romania. Romanian government has acknowledged the negative impact that brownfields have on communities where they are located, but there is no adequate understanding of the unique characteristics of these sites among policy-makers. Before making any specific recommendation, some more general recommendations will be made. These general recommendations should be viewed more as possible preliminary steps of any redevelopment strategy.

Preliminary recommendations

First, the local government officials, planners, economic development agencies and other stakeholders should strive to achieve a better understanding of what brownfield sites are, their unique characteristics that diminish their potential for redevelopment, as well as their impact on the communities/regions where they are located. The decision-makers should agree upon what brownfield sites are. A commonly accepted definition is essential for performing an inventory of existing brownfield sites.

The second preliminary step that local government should perform is an inventory of brownfield sites, their location, total area and a preliminary assessment of the contamination level. Once a better understanding exists on how many brownfield sites are and where they are located, a decision should be made about which sites should represent the focus of the redevelopment efforts. Our recommendation is that for the beginning, the redevelopment strategies should concentrate primarily on those sites that have potential for redevelopment, but lenders and developers are reluctant to invest.

In the same time, it is important to evaluate the impact of the previous brownfield redevelopment programs that Romanian government already implemented in distressed areas, such as enterprise zones, business incubators and small loan programs. A better understanding of whether those incentives achieved the desired outcomes is important to be performed before implementing new policies.

A clear commitment should be built among stakeholders with regard to the importance of brownfield regeneration and the redevelopment strategies that should be elaborated and adopted. The level of involvement of the public and private sector should also be decided. Is the public sector going to coordinate the process of redevelopment, or is it going to play an intermediary role that stimulates and supports private market players to get involved in the redevelopment process? Once the general role is decided, the specific responsibilities should be divided among different levels of government, based on their authorities.

Specific policy recommendations?

The brownfield redevelopment tools that we recommend to be implemented in Romania can be classified in: organizational tools, tools for making capital available for private investment and tools for providing supportive services. Establishing Brownfield Redevelopment Authorities can be useful in coordinating the redevelopment process, developing and adopting a comprehensive redevelopment strategy and providing financial resources to cover a part of the project costs. Also, local government can create or provide incentives to private sector to create economic development agencies to perform the role of financial intermediary organizations responsible with providing financial resources for companies that are perceived as having a higher risk of investment.

Public sector can stimulate private sector to make more capital available for brownfield redevelopment projects through several mechanisms. It can work with commercial banks to stimulate them to offer loans at subsidized rates. The public sector would cover a part of the interest rates, therefore making the loans more affordable to those developers that are perceived as having a higher risk. Public sector can guarantee the loans for projects that have collateral that could depreciate its value in time, due to contamination risks.

Another useful tool to cover some of the costs of a brownfield project would be a revolving loan fund. Local government or an economic development agency can create a revolving loan fund to cover some activities such as contamination assessment or site cleanup. Once the loan is paid back, new projects can be financed. Usually, funds are made available at an interest rate lower than the market rate.

Local and national government can provide private developers with tax abatements or tax credits when investing in activities related to brownfield redevelopment. Also, national government can create tax advantaged zones, such as enterprise zones, to encourage companies to relocate and invest in disadvantaged areas. In the same time, local government can decide to create a special district and to increase taxes or to introduce a new tax in this district. The additional funds collected would be used as a pledge for issuing a bond to finance infrastructure improvements in the respective area. A tax increment financing program would not be feasible to implement yet in Romania, since property taxes are not adjusted based on the market value, but based on a fixed rate. Also, property taxes are low and they represent just a small percentage of total revenues to local budget.

National government can provide grants to local government to support brownfield redevelopment projects. The grants could be used to finance activities, such as

contamination cleanup and infrastructure improvements. European Union is providing the member countries with funds for urban regeneration. These funds can be used as matching funds for a grant program.

Local and central government could provide supportive services to companies interested in brownfield redevelopment projects. Local government can convey properties and assemble larger lots of land. It can also provide assistance to smaller or new companies to apply for loans, grants and tax abatements when redeveloping brownfield sites. Local government can change the zoning of a site to allow a new use, thereby providing the developer with a more profitable opportunity to redevelop the property. The cleanup standards can be changed based on the type of use to be developed and the health risks. Therefore, the standards can be lowered when the contamination is capped and the exposure to contaminants does not pose health risks for people.

Public sector in Romania does not have the financial resources to cleanup all the brownfield sites and then to return them to private sector for future redevelopment. Therefore, we recommend the public sector to play the role of an intermediary institution that connects the resources available for investment with redevelopment ideas. The public sector could also provide incentives to help market players to overcome their risks and to become more willing to invest in brownfield sites. Therefore, we recommend innovation in the form of partnerships that can be established between public and private sector.

V. Conclusions

The present paper aimed to assist the Romanian planners with recommendations regarding how to stimulate private market to invest in redevelopment of brownfield sites. Brownfields represent an important problem especially for urban areas that were dependent on one major industry, and which was closed after the fall of communist regime. Almost 10 years after many industrial facilities were closed, these sites are still abandoned and they generate further degradation in the community. The paper analyzed the pattern of urban development, which was found to generate brownfield sites in Romania. Also, paper looked at the barriers that developers and lenders have to overcome when investing in brownfield sites. The final part of the paper consists of recommendations of how to utilize the U.S. approach to stimulate the Romanian private market to revitalize brownfield sites.

The recommendations were organized in three categories: institutional, financial capital and supportive services. We recommend the establishment of more financial intermediary institutions that would be willing to take more risks in financing brownfield projects. Public sector can use loan guarantees, interest rates subsidies, tax abatements, tax credits, revolving loan funds, special tax districts and grants to make more capital available for urban regeneration projects. The public sector can also provide assistance to small and new businesses to apply for grants and loans. It can assemble land and provide it for redevelopment. Public sector can provide the developers with the opportunity to get a higher rate of return by changing the zoning and the cleanup standards of a site.

The future governmental programs on brownfield redevelopment and urban regeneration should concentrate first on performing an inventory of these sites in order to have an exact imagine of the scale and of their impact. An active involvement of the public sector in designing comprehensive strategies to redevelop these sites is needed. The next step would be to create flexible and innovative financial mechanisms that would spur investment in brownfield sites.

The financial and non-financial tools discussed in this paper represent valuable resources not only from the perspective of brownfield redevelopment, but also from the perspective of city dynamic. Several factors, including globalization and the existence of multiple modes of communication and transportation, which make communication easier, put the cities around the world in competition. Some cities shrink, while others prosper. This will affect the patterns of urban land by constantly generating abandoned industrial facilities, which can become brownfields in the end. In the future, the public sector will be called to become more involved in playing an intermediary role in facilitating the redevelopment of these sites, without directly investing in urban regeneration projects. We estimate that the role of the intermediary organizations will increase in the future.

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