

Ways to sustainable brownfield regeneration in Istanbul

Ayçim TÜRER BAŞKAYA

Istanbul Technical University, Faculty of Architecture, Istanbul, TURKEY

Received: October 2010 Final Acceptance: November 2010

Abstract:

This study focuses on the brownfield sites owned by governmental agencies in Istanbul. It attempts to prepare an inventory for these under-utilized sites in order to explore ways to sustainable brownfield regeneration.

This study utilizes GIS technology for the dispersion and classification of brownfield sites. Besides the GIS studies, existing scholarly and government literatures are used for gathering information on the development of brownfield regeneration in Istanbul and the factors effective on the current regeneration trends.

Today, some obstacles hinder the regeneration process in Istanbul such as indefinite policies, uncertainty about legal liability, difficulty to estimate capital costs, absence of a consistent regeneration framework, insufficient practical knowledge, absence of a city-wide database system for brownfields, absence of some plans within the planning hierarchy, public opposition, difficulty to combine collective studies and competition from greenfields. This study identifies ways to overcome these obstacles and to gain sustainable brownfield regeneration for the benefit of Istanbul megacity. These ways are collected under 6 main categories as contamination related, political – institutional, legal, economic, plan-design based and communal issues. By following these ways, sustainable brownfield regeneration can be gained in Istanbul.

Keywords: *Brownfields, Sustainable brownfield regeneration, Istanbul.*

Introduction

Generated by economic, industrial and technological alterations, brownfields have been one of the key concerns of governments since 1980s. Current emphasis of governments on brownfields has a strong linkage with the concepts of “urban regeneration” and “sustainable development”. This study aims to lay out an inventory for brownfield sites in Istanbul and examine brownfield regeneration efforts for providing ways to sustainable brownfield regeneration.

Although there is an increasing demand for brownfield regeneration, scholarly studies on brownfield sites are extremely limited in Turkey. As a historical megacity Istanbul has a multilayered structure enabling a variety of brownfields. These brownfields posing a complex structure have diverse values ranging from ecological to economic. This study focuses on brownfields and difficulties in regenerating these underutilized sites

Several questions guiding the study are:

- How can we classify brownfield sites in Istanbul according to their characteristics?
- What are the primary factors and who are the actors effective on the generation of brownfield sites in Istanbul?
- How has been the progress of brownfield regeneration in Istanbul over the years?
- What are the main characteristics of sustainable brownfield regeneration?
- What are the ways to sustainable brownfield regeneration in Istanbul?

Brownfield as a cultural landscape and the concept of sustainable brownfield regeneration

European Landscape Convention is the first instrument devoted exclusively to the protection, management and planning of all landscapes in Europe (Fairclough, 2002). According to the European Landscape Convention, landscape means "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors". Article 2 indicates that this convention "concerns landscapes that might be considered outstanding as well as everyday or degraded landscapes" (ELC, 2000). Degraded landscapes take place in this convention as they are cultural products of human beings.

Culture is a way of life, whether it refers to a people, a period or a group (Williams, 1976). Hence, cultural landscape answers to "who you are, what is your way of life and how have you been evolved through time?" (Türer Başkaya, 2010). As the byproducts of our everyday life, brownfields depict our communal progress throughout the time.

According to Türer Başkaya (2010), studying cultural landscape focuses on natural and man-made components of the environment with the main aim to discover their way of change and interaction over time. The interactions between people and environment are complex, multilayered and are distinctive to each space and time (Moylan et al., 2009). These interactions occasionally create challenging landscapes such as brownfields.

As a frame definition, "brownfield" compiles several types of degraded landscapes. However, within their values and cultural compositions, these landscapes differentiate from each other. Hence, comprehending these values and compositions is essential for regenerating them in a sustainable way.

Brownfields are defined by CABERNET (2010) as sites that

- have been affected by former uses of the site or surrounding land,
- are derelict or underused,
- are mainly in fully or partly developed urban areas,

- require intervention to bring them back to beneficial use, and
- may have real or perceived contamination problems.

Contamination that is hazardous to the public's safety and requires remediation in order to create useful property is an impediment to the economic viability of any area. Such contamination can occur in a number of ways, at a variety of locations (Roberts, 2002). Owing to its multilayered structure, Istanbul has a diverse variety of brownfields ranging from industrial heritages to former mining sites.

This variety brings about a wide range of site related values. As a sample of cultural landscape, brownfields involve several values (Figure 1). These values altogether constitute the cultural identity of brownfield sites.

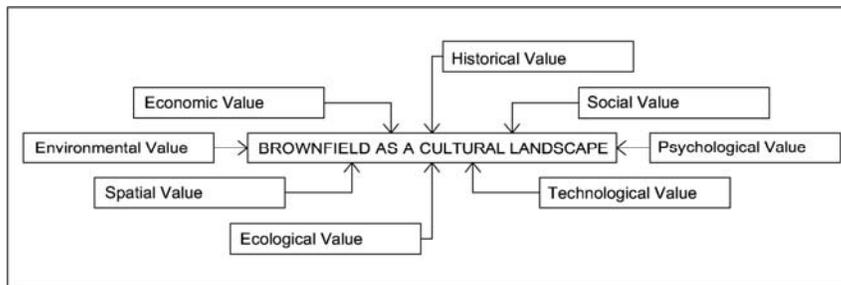


Figure 1. Values of brownfield sites

Historical value- Brownfield sites are records of past activities. Through their regeneration, memories related with them are arisen. Within their existence, these former brownfield sites inform urban citizens about the past status of their city.

Social value- Brownfield sites inform about past and present lives of ordinary people. Their regeneration increase quality of life within a communal aspect. Hence, it strengthens the social fabric of the society.

Psychological value- A problematic site turning into a communal asset stimulates sense of belonging within the city. Perceiving the increase in their quality of life, people have the feeling of being cared by the authorities.

Technological value- Brownfield sites are evidences for the progress of science and technology. Regeneration of them is important for reminding technological past to next generations.

Ecological value- Brownfield sites are subject to landscape restoration. Hence, besides the structural restoration, ecological one also takes place on these sites. These sites are potential centers for habitat and ecological life.

Spatial value- Brownfield sites are characteristic with their artifacts and extreme topographies. Their spatial value is created by soft and hard landscape elements that they involve.

Environmental value- Although they are degraded, brownfield sites are important open spaces within the city. Their regeneration cleans up the environment and strengthens the existing green infrastructure.

Economic value- Brownfields are available lands for investment, where such areas are lacking within the megacity. Although brownfields are problematic sites for redevelopment, their redevelopments have positive economic impact on surroundings. Increase at real estate values and job opportunities are just some of the impacts of the pertinent investment.

Understanding “sustainable brownfield regeneration” should follow understanding the complex structure of brownfields in Istanbul. Establishing a definition of sustainable development for the theme and scale of brownfield regeneration is required in order to develop sustainability objectives. Brundtland report provides the most widely known definition for sustainable development as “a development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).

RESCUE (2003) defines sustainable brownfield regeneration as “the management, rehabilitation and return to beneficial use of brownfields in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations in environmentally sensitive, economically viable, institutionally robust and socially acceptable ways within the particular regional context”.

Williams and Dair (2005) states, “Sustainable brownfield development is a development that has been produced in a sustainable way (e.g. in terms of design, construction and participation processes) and enables people and organizations involved in the end use of the site to act in a sustainable way”.

Pahlen and Franz (2005) highlight the fact that sustainability is neither static in time nor implies a fixed spatial perspective, in that it has to balance short and long term effects over generations, and also has political, administrative and functional impacts at a local, regional, national and global level.

Table 1. Objectives of sustainable brownfield regeneration

Economic
Reducing financial risks by a systematical reclamation process capable of minimizing environmental risks
Benefiting from tax-based incentives for the regeneration
Creating employment opportunities and economic development
Social
Achieving a brownfield regeneration which is locally representative and globally attractive
Achieving a participatory planning process regarding pertinent stakeholders
Improving quality of life in the community
Achieving a new and healthy image for community
Environmental
Achieving a remediation project that does not pose threat to human health and environment
Achieving a new land use compatible with the remediation process
Achieving an inter-disciplinary project team for holding all aspects of the regeneration process
Reusing existing buildings-infrastructure and producing renewable energy

Sustainability related definitions provoke the question of “What are the objectives of sustainable brownfield regeneration?” Table 1 represents the answer of this question.

Undoubtedly, objectives and impacts of sustainable brownfield regeneration are different from each other. Impacts of sustainable brownfield regeneration are represented in Table 2.

Table 2. Impacts of sustainable brownfield regeneration

Economic
Increasing land values and tax bases
Attracting new investments
Creating employment opportunities
Social
Achieving a new and healthy image for community
Improving quality of life in the community
Improving sense of belonging
Environmental
Achieving a new land use compatible with the remediation process
Protection of public health
Mitigation of development pressure on greenfields

Mapping and classification of brownfield sites in Istanbul

In order to obtain sustainable brownfield regeneration, understanding the dynamics of brownfield sites is vital. This study utilizes GIS technology for the dispersion and classification of brownfield sites. ArcGIS 9.3 software is used in this study. 1/5000 scaled digital maps in dwg format dating back to 2005 are obtained from Istanbul Metropolitan Municipality. Maps on dispersion of mining and solid waste disposal sites besides the current city development are obtained from IBB-BIMTAS (2005) and IBB-BIMTAS (2007). Some non-digital maps from Kuban (1970), Tezer (2004) and Köksal (2005) are turned into jpg files. Digitized maps and aerial photos are first rectified and then registered to UTM coordinate system with ED1950 datum (Zone 35N). Maps supported by field works are used to locate brownfield sites. Besides the GIS studies, existing scholarly and government literatures are used for gathering information on the development of brownfield regeneration in Istanbul and the factors effective on the current regeneration trends.

Istanbul has a great variety of brownfields. In order to define a framework for the research, this study focuses on former solid waste disposal sites, mining sites and industrial heritages, which are owned by governmental agencies in Istanbul.

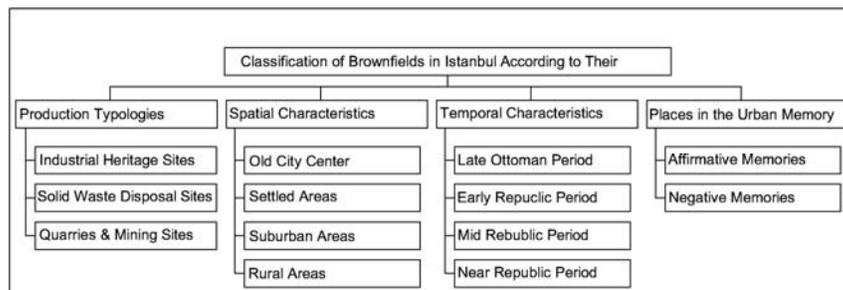


Figure 2. Classification of brownfield sites in Istanbul (Türer Başkaya, 2010).

The brownfields in Istanbul are classified into 4 primary and 13 secondary groups (Figure 2) based on production typologies, spatial characteristics, temporal characteristics, and places in the urban memory.

Former mining sites and solid waste disposal sites are vast open areas and hold characteristics of extreme landforms. Owing to their production types, they are contaminated. Through their remediation and reuse, they can contribute a great deal to an urban open space system.

Former solid waste disposal sites of Istanbul are dumping sites in Istanbul where municipal solid wastes were deposited in an irregular way. Hence, their remediation and reuse are more complicated than the regular solid waste disposal sites. Since the beginning of 1990s, it has been forbidden in Turkey to use dumping sites for waste disposal (Türer Başkaya, 2009). Although a substantial number of former solid waste disposal sites exist in Istanbul, there isn't any efficient regeneration study concerning them. According to IBB-BIMTAS (2007), 29 under-utilized solid waste sites exist in Istanbul (Figure 3).

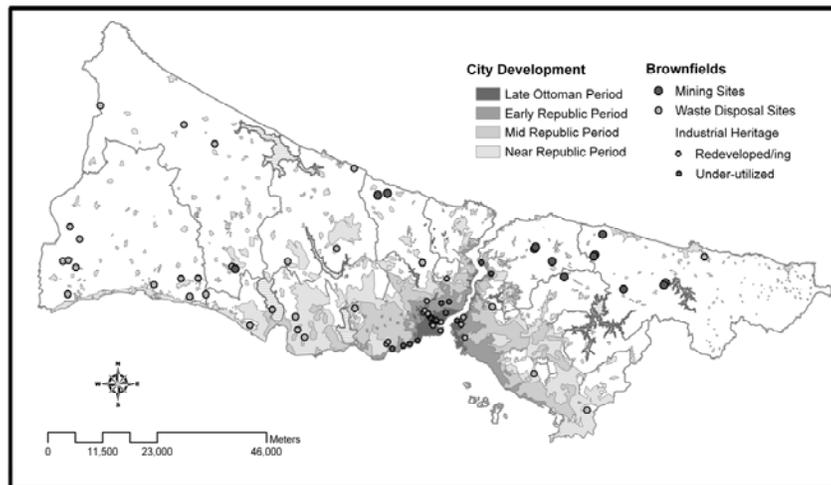


Figure 3. City development and dispersion of brownfields (Adapted from Türer Başkaya, 2010)

Former mining sites exist at the north of Istanbul where ecologically sensitive areas also take place. Hence, former mining sites have interactions with these ecologically sensitive areas such as forest areas, water basins and Black Sea beaches (Figure 4).

Kantarıcı (2005) indicates some forestation studies on open-cast mining sites dating back to the end of 1980s. Today besides such forestation studies, there isn't any comprehensive landscape regeneration project for the former mining sites of Istanbul

Besides the mining sites and solid waste disposal sites, abandoned industrial sites are also an important brownfields within the urban structure. As part of cultural landscapes, the industrial heritage sites include industrial artifacts within their surroundings, hence carrying the history and culture of past industrial activities. In this study, those industrial heritage sites with vast amount of open spaces are selected as the case studies.

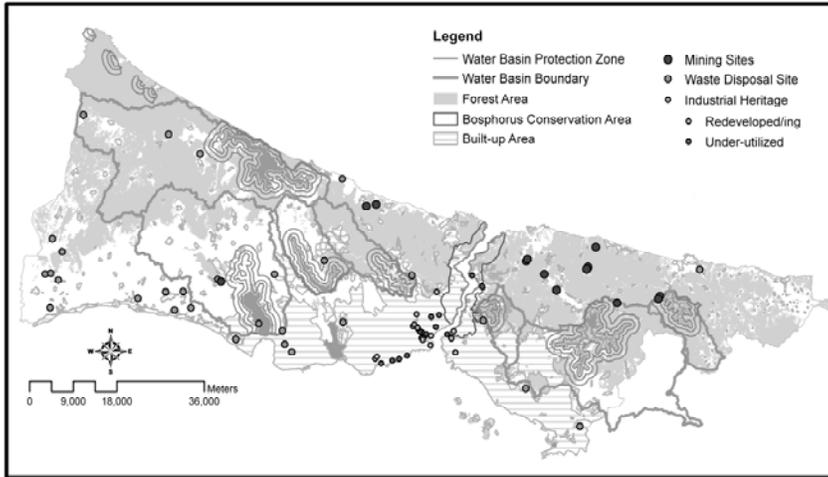


Figure 4. City development, dispersion of brownfields and ecologically sensitive areas (adapted from Türer Başkaya, 2010)

As the megacity is the 2010 European Capital of Culture, one of the European Capital of Culture projects is the regeneration of an industrial heritage site. Within this project, Hasanpaşa Gas Plant turns into a culture center. As in the case of Hasanpaşa Gas Plant, transformation of industrial heritage sites raises communal awareness and gives momentum to brownfield regeneration projects. In Istanbul, industrial heritage sites are part of urban memory. There is a psychological connection between community and industrial heritage sites. Spatial and temporal advantages of industrial heritage sites are distinctive as they are located inside the old settled areas and dating back to Late Ottoman or Early Republic Periods.

Former solid waste disposal sites and mining sites have disadvantages on spatial, temporal and psychological aspects when they are compared with industrial heritage sites. According to Türer Başkaya (2010), they are landscape features of rural identity rather than urban one. Subsequently, they are out of sight places for most of the urban citizens dealing with megacity's problems. For the few citizens experiencing these under-utilized sites, they are irritating places owing to their environmental impacts.

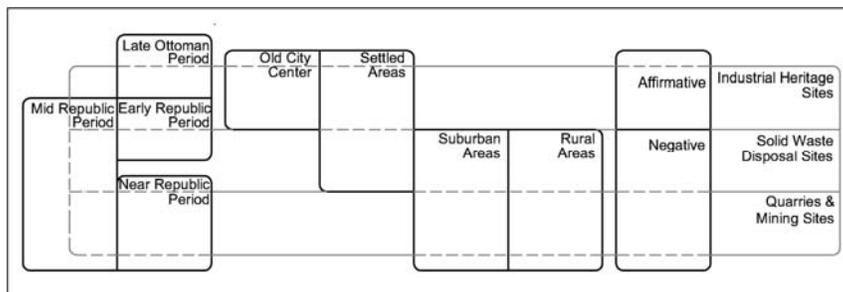


Figure 5. Interactions of brownfield types in Istanbul (Türer Başkaya, 2010).

Literature search and mapping studies indicate the interactions of brownfield types in Istanbul (Figure 5). These interactions notify the complex and multilayered structure of brownfields in Istanbul.

Generation and regeneration of brownfield sites in Istanbul

Several actors and factors are effective on the generation and regeneration of brownfield sites in Istanbul. Figure 6 indicates the answer of “How has been the progress of brownfield regeneration in Istanbul over the years?”

Diversity of actors and factors operating in the brownfield regeneration brings about a dynamic relationship between them. Regarding the strengths of actors and factors, even the most unexpected consequences can spread through out of the Figure 6.

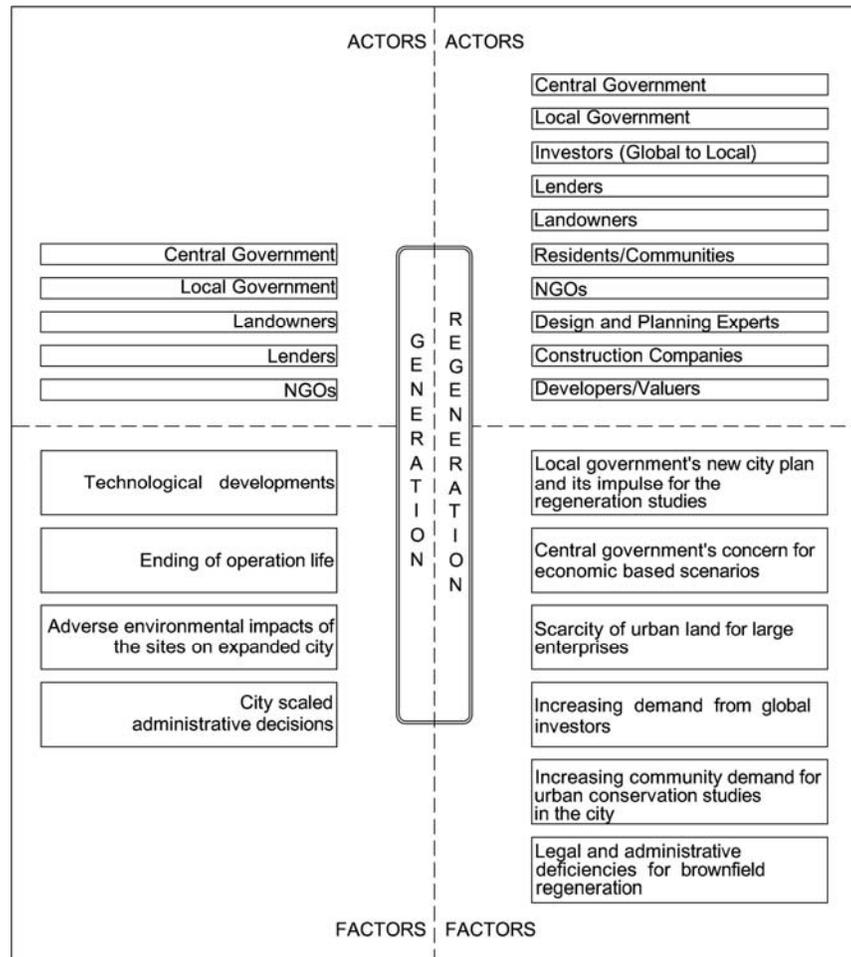


Figure 6. Factors and actors that are effective on brownfield generation and regeneration (adapted from Türer Başkaya, 2010)

Occasionally it is hard for industries to keep pace with technological developments. Industries remaining behind the technology of today are up to be left non-functional. Each enterprise has an operation life. When an industry reaches to the end of its operation life, it turns into a brownfield site.

With its increasing population, Istanbul is an expanding city. Spatial expansion of the city brings about industries surrounded by built-up areas.

As these industries have adverse environmental impacts on their surroundings, administrative units are pushed to take some measures such as decentralization of industries. As a consequence of decentralization of industries, today brownfields exist inside the built-up areas.

Today it is necessary for governments to arrange their targets for considering brownfield regeneration. The current emphasis on developing brownfield land instead of greenfield sites has arisen in all over the world owing to the population densities of the megacities and the perceived need to protect both the urban and rural heritages of the countries and to create more sustainable compact urban areas for human beings. For this scope, 1/100.000 scaled new environmental plan of Istanbul is promising for the megacity.

For the last decades, brownfield redevelopment has come to be seen as a tool to support urban economy and construction market. Central government of Turkey has a tendency to support economic based scenarios regarding brownfield redevelopment (Türer Başkaya, 2010).

As a megacity, Istanbul examines scarcity of urban land for large enterprises. This scarcity draws attention to under-utilized sites like brownfields. Brownfield sites, existing inside the built-up areas especially take the attention of global investors.

In Istanbul, unlike the solid waste disposal sites and mining sites, there are some successfully implemented regeneration projects for the industrial heritages such as Sütlüce Slaughterhouse and Silahtarağa Electric Plant. Regarding the success of implemented projects, there is an increasing community demand for the conservation and regeneration of industrial heritages. Brownfield regeneration is a new experience for Turkey. Hence, some legal and administrative deficiencies exist. Although there is an increasing demand for the regeneration of brownfield sites, existing legal and administrative deficiencies hinder the process.

Obstacles to brownfield regeneration in Istanbul

Identification of existing situation of brownfields is essential for finding out the ways to sustainable brownfield regeneration. Table 3 represents SWOT Analysis for brownfield regeneration in Istanbul.

Brownfield regeneration should come to an end with economic, environmental and social profits. However, there are several obstacles to brownfield regeneration, which are hindering the process. Obstacles for the regeneration of brownfield sites in Istanbul include:

- Indefinite policies,
- Uncertainty about legal liability,
- Difficulty to estimate capital costs,
- Absence of a consistent regeneration framework,
- Insufficient practical knowledge,
- Absence of a city-wide database system for brownfields,
- Absence of some plans within the planning hierarchy,
- Difficulty to combine collective studies,
- Public opposition,
- Competition from greenfields (adapted from Davis, 2002).

Table 3. SWOT analysis for brownfield regeneration in Istanbul

	Strengths	Weaknesses	Opportunities	Threats
Contamination related issues		- Need for intervention - Interdisciplinary long-term studies	- Worldwide technological developments	- Difficulty to combine interdisciplinary teams - Absence of practical knowledge
Spatial issues	- Location within the city - Extreme spatial formations for imaginative landscapes	- Location within the city (for mining sites)	- Existence inside the border of a megacity - Scarcity of land for large enterprises	
Political and institutional issues			- Existence of redeveloped brownfields by culture based studies	- Absence of a definite policy - Central government's concern for economic based scenarios - Weak control on global projects
Legal issues				- No frame law
Economic issues		- Financial risks owing to environmental risks	- High demand from investors - High land prices for the surroundings	
Plan/design based issues			- Existence of urban projects for 2010 European Capital of Culture	- No guidelines for the regeneration of brownfields
			- New environmental plan and its impulse for regeneration studies	- Absence of some plans within the planning hierarchy - Absence of a city-wide database system for brownfields
Communal issues				- Absence of participatory studies - Public opposition

Policy related background of a regeneration project is critical for its success. Unfortunately, central and local governments' policies are not consistent about brownfield regeneration in Turkey. Continuity of governmental policies is essential for sustainable brownfield regeneration.

Besides their complexity and ambiguity, environmental legislation in Turkey has an overlapping nature. Hence, one of the most important obstacles to brownfield regeneration is uncertainty about liabilities. Risk based remedial

approaches preclude parties from their investments as they are concerning on clean up costs.

Available data on actual brownfields cleanup costs is limited. However, the price tag can be substantial. Worse yet, potential liability issues make it difficult to determine up front what the final costs will be (Davis, 2002).

There is an urgent need for the establishment of guidelines for the sustainability of brownfield regeneration. Guidelines may support regeneration projects through determining course of action.

Theoretical and practical expertises are different from each other. As there are few implementation projects, scarcity of practical expertise is apparent about brownfield regeneration in Istanbul. In order to achieve brownfield regeneration, identification of the existing sites is necessary within a city-wide data base system.

Regarding the planning hierarchy in Turkey, different types of plans with various scales are connected to each other within the planning system. Inexistence of some of these plans may unavoidably interrupt this network and hinder the decision process for brownfields.

Collective study is one of the cornerstones of brownfield regeneration. It is hard to combine a collective study holding all stakeholders even in the developed countries. It is a new experience for Turkey to examine participatory planning. Collective studies are not only necessary for participatory planning but also for interdisciplinary long term studies.

Brownfields in Istanbul are rich within their values. Regarding their values, attaining new land uses to them is rather problematic as there are many options. Community cares especially for the brownfields existing inside the settlement areas. Hence, public opposition is quite common for these brownfields.

Fierce competition from greenfields, communities intend on attracting new development has contributed to what we refer today as urban sprawl – the practice of building on previously undeveloped land outside the city limits. Urban sprawl is costly. It allows a city's existing roads, bridges, water lines, sewer systems, and rail spurs to go unused while similar infrastructures are duplicated elsewhere (Davis, 2002).

Ways to sustainable brownfield regeneration in Istanbul

Within this section of the study, through SWOT analysis and identification of obstacles, sustainable ways to brownfield regeneration are defined for Istanbul. Figure 7 represents these ways, which are collected under 6 main categories as contamination related, political – institutional, legal, economic, plan/design based and communal issues.

Brownfields lie at the nexus of a variety of socio-economic and technical issues. Understanding their complex dynamics requires theories, concepts and methods that have traditionally resided within discrete academic disciplines (Catney et al, 2007).

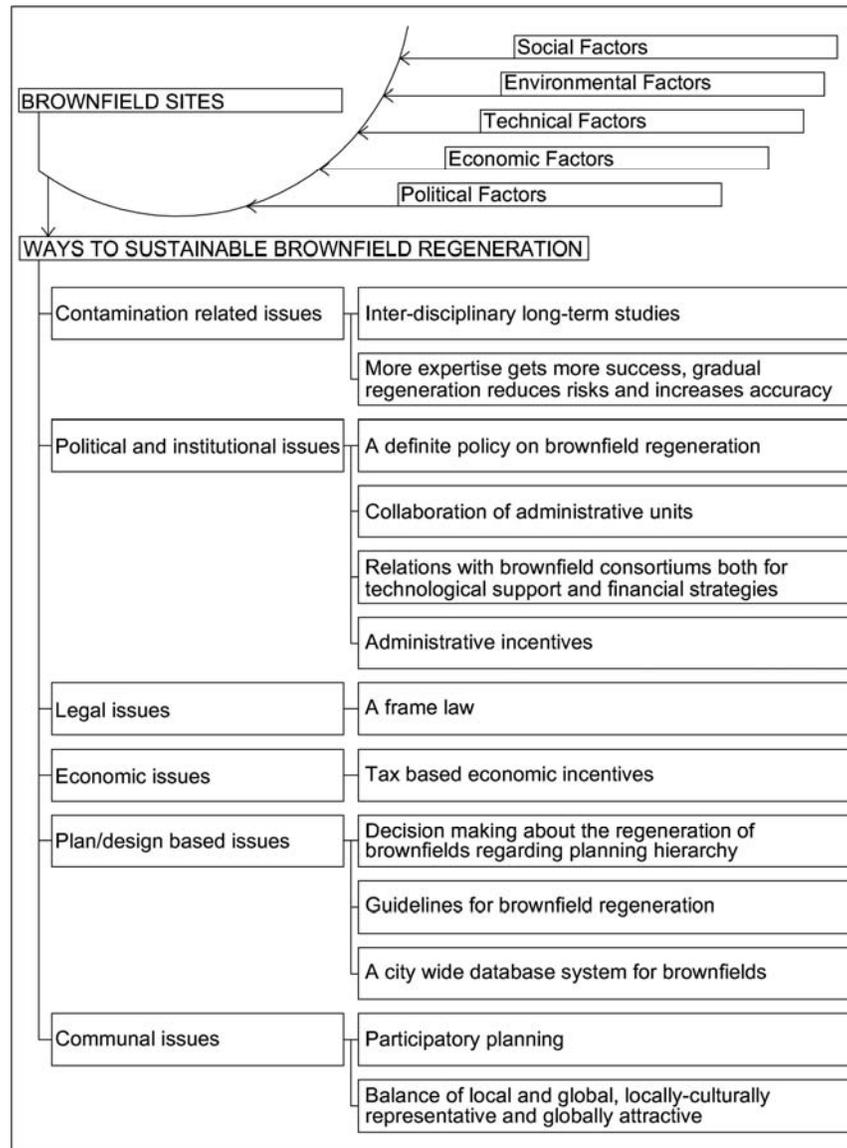


Figure 7. Ways to sustainable brownfield regeneration (adapted from Türer Başkaya, 2010)

For the success of gradual and long term regeneration studies, interdisciplinary structure of the planning and design teams is important. Scarcity of implementation related expertise is apparent in the case of Istanbul, especially for the solid waste disposal sites and mining sites. More implementation brings more expertise and more accuracy on the regeneration studies. Gradual planning and design are important for gaining experience about brownfield regeneration. Hence, they lower financial risks and raise technical accuracy. Regarding the expertise of brownfield consortiums, being in collaboration with them is essential for getting technical support and developing innovative strategies.

Central and local governments do not have a consistent environmental policy on brownfield regeneration. Without a consistent policy, it is inevitable to have deficiencies inside the administrative and legal structure. Deficiencies existing inside the administrative and legal structure are going to be eliminated when a policy is constituted. Concerning brownfield regeneration, litigation processes take place because of the existing administrative and legal deficiencies. Gans and Weisz (2004) states, "A brownfield is a latent condition, as yet unreclaimed, unbuilt. Too often the approach to its remediation is driven by economics and litigation rather than by a conceptual framework of landscape, urbanism and culture".

Existence of many indirect laws and bylaws complicates the regeneration process. Hence there is an urgent need for developing a frame law in order to eliminate problems constituted by indirect law and bylaws. Establishment of guidelines is also going to support the regeneration process while it directs parties through the process.

Brownfields face competition from greenfields. Regarding remediation related technical issues, investors mostly prefer greenfields rather than brownfields for their investments. Hence political support to brownfield regeneration is essential for a citywide sustainable development. In order to promote the regeneration of brownfield sites, there is a need for the implementation of several incentives, which may consist of economic and administrative incentives.

In terms of the sustainable development paradigm, democratic and holistic decision-making is a crucial factor in winning broader public acceptance of governmental decisions (Meadowcroft, 1997). It is widely acknowledged that decision-making processes need to arrive at negotiated solutions with actors and agencies from across the various tiers of government and the different spheres of society for actions to be legitimate, effective and sustainable (Catney et al, 2007).

As noted above, participatory planning is also important for balancing global and local forces on the brownfield sites. A brownfield site can be developed locally and represent its local and cultural values while it can be attractive globally. A key point is to understand the cultural dynamics forming its value and plans the degraded site by considering this value (Türer Başkaya, 2010).

The principles of sustainable development must become an integral factor in the development of a broader spectrum of public policies. With this understanding, economic policy can not be seen as isolated from environmental and social factors; rather, these realms should be seen as inextricably linked (Catney et al, 2007). Here the key point is to create locally – culturally representative but globally attractive brownfield regeneration in Istanbul.

As developing regeneration projects which are locally- culturally representative but globally attractive is one of the objectives of sustainable brownfield regeneration, identification of brownfields is a critical issue. Identification of brownfield sites is required for decision making about them. Hence developing a city-wide database system for brownfields is necessary for taking decisions about their regeneration. Contamination related issues should be regarded as an important component of this database system. It

is right to declare that not all of the brownfield sites are available for turning into active land uses. For some of the brownfields, it is better to turn them into passive green spaces as a part of green infrastructure. For attaining new land uses to brownfield sites, planning decisions are important. Hence planning hierarchy should be decisive about new land uses rather than the site specific political decisions.

Regarding the risks they pose, it is required for brownfield regeneration to have interdisciplinary long-term studies of research, participatory planning, design, remediation and implementation. It is not right to consider political and economic factors separated from the current process. Brownfield sites have various values ranging from ecological to economic. These values bring about several factors into the regeneration process. Hence, it is a challenging process to regenerate brownfield sites for the benefit of the city.

Conclusion

In Turkey, scholarly studies on brownfield regeneration are extremely limited although there is an increasing demand for the regeneration of brownfield sites. Brownfield regeneration in Istanbul is the subject of this study. Today, as the 2010 European Capital of Culture, Istanbul is under the focus of investors.

Owning a multilayered structure, Istanbul has a diverse variety of brownfields. This variety brings about a wide range of site related values. Identification of brownfield sites is essential for discovering their values. Classification of brownfields brings about the interactions of subgroups. Within this study, these subgroups and their interactions are examined through mapping studies and analysis.

There are some obstacles to sustainable brownfield regeneration in Istanbul such as indefinite policies, uncertainty about legal liability, difficulty to estimate capital costs, absence of a consistent regeneration framework, insufficient practical knowledge, absence of a city-wide database system for brownfields, absence of some plans within the planning hierarchy, public opposition, difficulty to combine collective studies and competition from greenfields. Several goals ranging from local to national and from short to long term exist in order to overcome these obstacles. This study is an attempt to discover the current situation and identify the ways to sustainable brownfield regeneration in Istanbul. The lessons learned in Istanbul's case can be applied to other cities in Turkey and developing countries.

References

- CABERNET (2010). Concerted Action on Brownfield and Economic Regeneration Network, <http://www.cabernet.org.uk/index.asp?c=1134>
- Catney, P., Lerner, D.N., Dixon, T., Raco, M. (2007). *Is Brown the New Green?* In: T. Dixon, M. Raco, P. Catney and D.N. Lerner, eds. **Sustainable Brownfield Regeneration Livable Places from Problem Places**. Blackwell Publishing, 352-372.
- Davis, T. (2002). *Defining the Brownfields Problem*. In: T. Davis, eds. **Brownfields A Comprehensive Guide to Redeveloping Contaminated Property**, 1-14.
- ELC (2000). **European Landscape Convention**, European Treaty Series, No.176.

- Fairclough, G. (2002). *A Forward Looking Convention: European Landscapes for the 21st Century*, **Naturope**, 98, 5-6
- Gans, D. and Weisz, C. (2004). **Extreme Sites: The Greening of Brownfield**, Wiley Academy, London.
- IBB-BIMTAS (2007). **İstanbul Büyükşehir Nazım İmar Planı Tarım Sektörü Analitik Etütler İşi**, İstanbul Büyükşehir Belediyesi Planlama ve İmar Daire Başkanlığı Şehir Planlama Müdürlüğü, İstanbul.
- IBB-BIMTAS (2005). **İstanbul Büyükşehir Nazım İmar Planı Analitik Etütler İşi**, İstanbul Büyükşehir Belediyesi Planlama ve İmar Daire Başkanlığı Şehir Planlama Müdürlüğü, İstanbul.
- Kantarıcı, M.D. (2005). *Ağaçlı (İstanbul) Açık Maden Ocağı Artıklarının Islahı ve Ağaçlandırılması Çalışmalarında Elde Edilen Sonuçlar*. In: **Madencilik ve Çevre Sempozyumu**, Ankara 5-6 May 2005, 173-182.
- Koksal, T.G. (2005). **İstanbul'daki Endüstri Mirası için Koruma ve Yeniden Kullanım Önerileri**, Doktora Tezi, İstanbul Teknik Üniversitesi Fen Bilimleri Enstitüsü, İstanbul.
- Kuban, D. (1970). *İstanbul'un Tarihi Yapısı*. **Mimarlık**, vol 5, 26-48.
- Meadowcroft, J. (1997). *Planning, Democracy and the Challenge of Sustainable Development*. **International Political Science Review**, 18, 167-190.
- Moylan, E., Brown, S., Kelly, C. (2009). *Toward a Cultural Landscape Atlas: Representing All the Landscape as Cultural*. **International Journal of Heritage Studies**, 15:5, 447-466.
- Pahlen, G. and Franz, M. (2005) *Sustainable Regeneration of European Brownfield Sites: Criteria for Future Funding Decisions*. In: **CABERNET 2005: the International Conference on Managing Urban Land**. Nottingham, Land Quality Press.
- RESCUE (2003). **Analytical Sustainability Framework in the Context of Brownfield Regeneration in France, Germany, Poland and the UK**. Final Report of Work Package 1, www.rescue-europe.com.
- Roberts, D.G. (2002). *Somerset County, New Jersey's Center-Based Brownfields Pilot*, **Brownfield Sites- Assessment, Rehabilitation & Development**, eds. C.A. Brebbia, D. Almorza, H. Klapperich, WIT Press, 419-424
- Tezer, A. (2004). *Modeling of Land Use-Transportation Interaction in Istanbul*, **A/Z ITU Journal of the Faculty of Architecture**, 1(2), 12-25.
- Türer Başkaya, F.A. (2010). *Brownfield Atlas of Istanbul: Reinventing Sustainable Ways to Regenerate Brownfield Sites*, **ECLAS Conference 2010 Istanbul – Cultural Landscape**, Proceedings Book, 183-191.
- Türer Baskaya, F. A. (2009). **İstanbul Kenti Katı Atık Alanlarının Peyzaj Planlaması Açısından Değerlendirilmesi**, Doktora Tezi, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, İstanbul.
- WCED (1987). **World Commision on Environment and Development – Our Common Future** p.43, Oxford.
- Williams, K. and Dair, C. (2005). **A Conceptual Model of Sustainable Development**, Working Paper 3: Oxford Institute for Sustainable Development, Cities Unit, Oxford.
- Williams, R. (1976). **Keywords**, London, Fontana.