

Post-Industrial Landscapes: are they threats or opportunities?

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Abstract: Even if it is widely acknowledged that the values connected with sustainable development are significant for people's daily life and that built and cultural heritage are an integral part of it, landscape is progressively coming under threat of new development. The impact of new construction is noticed not only at nationally important sites, but also in local areas, where small changes can be very significant, diminishing landscape character and local distinctiveness. Still, the idea of sustainable development is more frequently associated with protecting the natural environment than with preserving the built and cultural heritage. This fact added to the necessity of reusing previously developed landscapes in detriment of consuming new ones, increases the need to enlarge the interpretation of the term "redevelop", and to analyse and interpret the value and significance it should have on the particular case of post-industrial landscapes in order to preserve them. Considering this objective, this paper presents a cost benefit analysis for a set of landscape redevelopment projects implemented on six different postindustrial landscapes with different cultural and social values with the objective to put forward the main advantages and disadvantages of redeveloping this type of landscape, that may be used future interventions, thus helping to protect and redevelop relevant resources created and deposited by the industrial society, contributing for increasing the sustainability of our cities. Throughout this research, it was possible to identify a number of advantages and disadvantages of redeveloping post-industrial landscapes, in detriment of consuming new ones, associated to the three pillars of sustainability.

Key-words: Sustainable Development, Post-industrial Landscapes, Urban Redevelopment, Cost-Benefit.

1 Introduction

Even if it is widely acknowledged that the values connected with sociocultural aspects are significant for people's daily life and that the built and cultural heritage constitutes an integral part of it, cultural

values continue to be neglected, jeopardising the meaning given to certain elements of the city, ignoring its importance and exceptional significance.

This analysis and understanding of the city lead to a social perception of the kind of place people wish to

live in, and to the consciousness that each and every single element of the city part of our 'common heritage' [10, 19], regardless of whether it is large, small, historic, industrial, old or new. In fact, every single cityscape give us a sense of place and reveal men's sociocultural relationship with the land over time [4, 5, 8, 15, 21, 22]. They are special places that contain aspects of our origin and development through their forms, features, and history of use.

In this regard, post-industrial landscapes constitute an integral part of our culture, and thus of our heritage, reason why it urges to recognise that regardless of being more or less imposing and remarkable, it constitutes an irreplaceable expression of the wealth and diversity of common culture, which, as defended by the member states of the Council of Europe, is an "entity" shared by several people, which every country must show real solidarity in preserving.

However, it is increasingly recognized that this is not the general understanding of post-industrial sites, commonly associated to greater densities in urban areas and to the pollution and destruction of the natural and rural environment. This vision was greatly enlarged over the past decades considering the profound effect that globalization, deindustrialization, industrial relocation and economic (re)conversion has had on traditional industrial areas all over the world, producing a vast array of obsolete industrial facilities and the various impacts, which are generated from them [13]. The formal products of the modernist movement have become obsolete, forcing this generation to decide on the disposition of the last generation's industrial environment [13]. In recent years, several researchers have contributed for evaluating, documenting and developing remnants of the industrial society [3], in order to emphasise the necessity of taking post-industrial landscapes into consideration in city planning and territorial development [17, 20].

The fact that several countries are now facing various problems produced by landscapes constructed during the industrial revolution, currently in complete physical and functional decadency, contributed to enlarge the negative public perception about these spaces, which still face inappropriate appraisal of material and cultural resources and stereotyped ideas of industry, once the way in which they were designed do not satisfy the aesthetic, ecological, and functional requirements and standards [2]. Appearance was and continues to be almost everything, given that the assessment of the industrial heritage is often anchored to visual values rather than to any other consideration of function or history [18]. In this regard, several interventions developed on post-industrial landscapes are frequently reprehensible, contributing to the

disappearance of various buildings with significant meaning.

Moreover, they are often realized to isolated buildings, which is a mistake [1], as the analysis and intervention in these landscapes should never be directed to a single building, but to the industrial landscape as a whole, viewing these landscapes as assets that enhance the possibilities of creative practice in preservation, design, and planning, given that they are by definition: unique, resulting from the combination of natural landforms and buildings defining a particular place or region. These changes in perception might contribute for increasing the relevance of post-industrial landscapes and to highlight the need to study and protect the material and immaterial remains of our industrial history from a different perspective [6, 20].

In this regard, the research presented on this paper considered the development of a cost benefit analysis of several post-industrial landscape redevelopment projects, assessing the advantages and disadvantages of redeveloping post-industrial landscapes.

2 Methodological approach

The present research is based in a methodological approach that considers multimethod approaches as part of a cohesive process, which constitutes an adequate way to deliver a more integrated, more skilled and more effective analysis of a specific design process [2].

This methodologic approach uses case study research as a central method that has been applied, successfully, in various fields of knowledge as it is the case of sociology, engineering, planning, architecture and landscape architecture, and which is a very useful tool to study the way certain redevelopment approaches were implemented and how they converted problems into opportunities, enabling the identification of which strategies should be followed or avoided. Furthermore, case study approach is considered a source of practical information, that is an effective way to acquire problem solving skills and to develop useful evaluation strategies [4].

In order to understand and evaluate the complex relationship between postindustrial landscape redevelopment and sustainability, six projects were selected and analysed considering their benefits and costs on sociocultural, economic and environmental aspects (figure 1), assessing the advantages and disadvantages of postindustrial redevelopment as an integrated process, while evaluating the feasibility of this type of project.

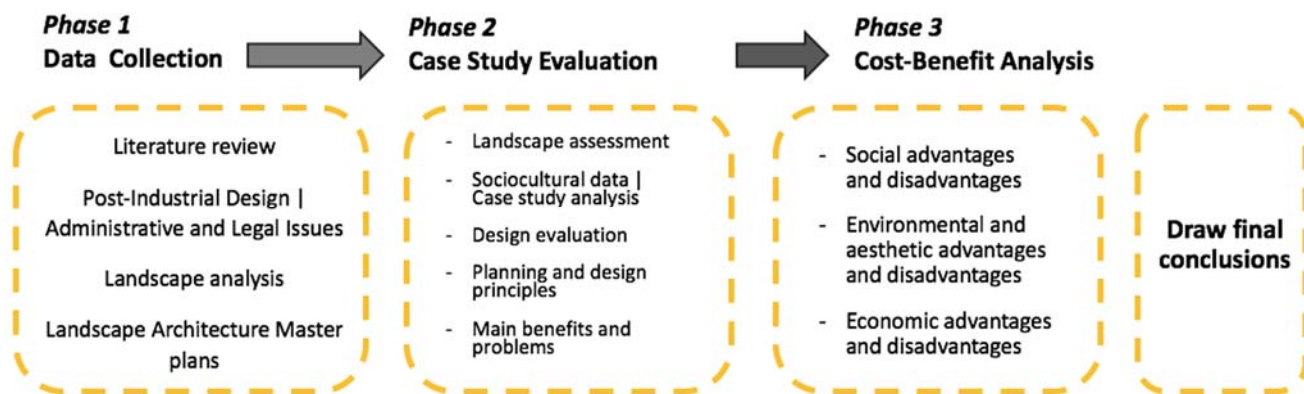


Figure 1 – Methodologic Diagram

2 Analysed Case Studies

Considering the objectives of the present research, the selected case studies will be used to explain/predict theory related to practice. In this case, as mentioned before, the selected case studies, briefly presented after, will be analysed/looked at with an eye for generalizable lessons regarding advantages and disadvantages of redeveloping post-industrial landscapes in spite of using Greenfields for future multiple purpose growth in urban areas.

2.1. 22@Barcelona - Barcelona, Spain

Designed by the Municipal Society 22 ARROBA BCN, S.A.U. -Coordinated by Jordi William Carnes, this project consists in the redevelopment of approximately 198 hectares of industrial land located at the *Poblenou* in Barcelona, on which the benefits span largely the costs of redevelopment. Developed with the objective of transforming this district into a high- quality environment for working, living and learning, the design team established a rational and compact use for this urban space, increasing occupation levels inherent to industrial areas. The new urban classification replaces the former definition, “22a”, used to classify areas used exclusively for industrial uses, by “22@”, which integrates different uses, such as, new green areas and subsidized housing, as long as former industrial activity is replaced by new offices and business associated with technology and knowledge (figure 2). Comprising an investment of 180 million Euros, the redevelopment proposal intends to increment the green areas by 114.000 square meters, generate 130.000 new jobs.



Figure 2 – Aerial view of 22@Barcelona district. Used by permission of Municipal Society 22 ARROBA BCN, S.A.U. - all rights reserved

2.2. 798 Arts District - Beijing, China

Located in the Northeast of central Beijing, the former industrial district has been converted into a cultural centre for the city by Sasaki Associates. The design strategy focused the development of a specific program which could contribute to revitalize the area, while keeping its industrial heritage and character. This approach aimed to develop an artistic and cultural district, creating the necessary conditions not only to attract artists and cultural organizations,

but also to transform the former factories into art centres, galleries, and suitable places for the newcomers. Additionally, considering the objective of integrating the study area with the city, the proposed design envisioned the creation of better connections, placing new plazas in strategic areas, adjacent to important buildings (figure 3).



Figure 3 – Master plan of the envisioned redevelopment proposal. Used by permission of Sasaki Associates, Inc. - all rights reserved

2.3. Bilbao Ria 2000 □ Bilbao, Spain

The city of Bilbao was developed as an industrial port city with its densely-industrialized river banks. With the 1980's industrial crisis the river side's were left with derelict factories, which led to the need of intervention in this important landscape. This fact led to the creation of Bilbao Ria 2000 in 1992, which investment until now is over 300 million Euros. The company focused on the redevelopment of several underused metropolitan areas, including the waterfronts, safeguarding the industrial heritage and relocating the ports and harbors in the outer bay, leaving these relevant areas to be used by Bilbao citizens and visitors. The design strategy in the Bilbao redevelopment project (figure 4) showed that one of the most essential elements for success in the transformation of post-industrial landscapes is the creation of a stimulating vision which must be disseminated in a dynamic and appealing way.



Figure 4 – Aerial view of the envisioned redevelopment proposal for Bilbao Ria. Used by permission of Bilbao Ria 2000 - all rights reserved.

2.4. Docklands Park - Melbourne, Australia

Inserted in the Masterplan for the Melbourne Docklands, the former industrial site has been transformed into a city park, forming together with the Grand Plaza redevelopment the new Harbor Esplanade. This 2,5-hectare project aims to be the green civic centre of Melbourne Docklands, providing a multifunctional area for the city waterfront. The proposed approach did not consider the industrial heritage; instead it arranged the site with a curvilinear line arranged from north to south which together with strong artificial landforms divides the park. Different design strategies were used for each side. While the east side is more artificial and includes most of the program, the west side is more natural and considers an ecological approach, as it is the case of the reed beds for storm water filtration (figure 5).



Figure 5 – View from the implemented project. Used by permission of Rush Wright Associates (RWA) - all rights reserved.

2.5. Lower Don Lands - Toronto, Canada

Considering the project developed by Michael Van Valkenburgh Associates, the former port lands and industrial wastelands have been converted into a new

urban park and mixed use areas. The proposed design strategy focused not only in naturalizing the river morphology by establishing a new organic channel the project site, instead of following the artificial and geo- metrical form created before (Keating channel), but also in mixing traditional square forms of the urban grid with the naturalized forms shaped by the Don River. In this regard, the project design used both typologies to develop two distinct but interconnected waterfronts, the urban and geometrical (Keating channel), and the naturalized and meandered (proposed channel). The proposal (figure 6) includes also a complex transportation and infrastructures system along with waterfront areas for residential use.



Figure 6 – Master plan from the proposed project. Used by permission of Michael Van Valkenburgh Associates - all rights reserved.

2.6. Nordhavnen Waterfront - Copenhagen, Denmark

The former 200-hectare harbor area in Copenhagen went through a design competition to develop the masterplan for this waterfront district. The winner of the competition was the Urban Delta, which design strategy envisioned a sustainable district which aimed to provide both housing and work- space for 40.000 inhabitants in the next 40 to 50 years. The design respects the industrial heritage of the site maintaining and adding a series of canals (associated with the former harbor) that will create smaller islets. These islets will enable the development phasing division along the site and also a constant water relation. Regarding circulation within the district, the proposed planning option intend to enable a balanced system composed by one third of cyclists, one-third of

modern public transportation, and no more than one-third of cars. Following the sustainable main feature of the project (figure 7), the masterplan also aims to develop a district with low-energy consumption, through the use of local renewable energies and creation of sustainable buildings.

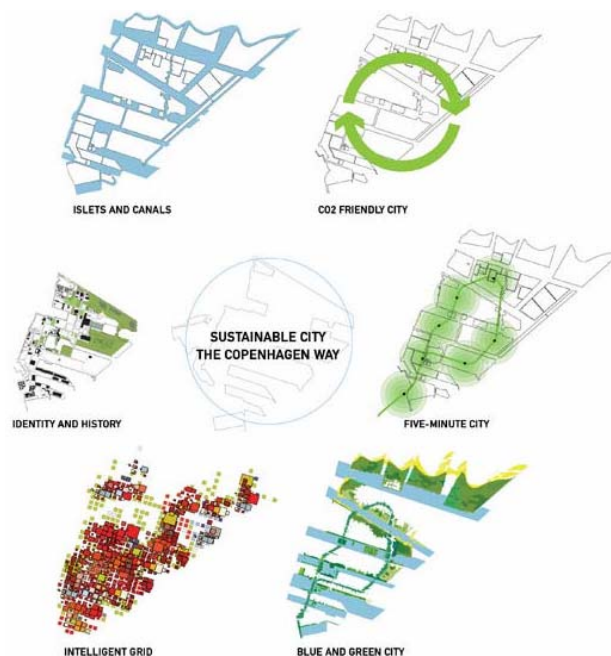


Figure 7 – Envisioned proposal. Used by permission of Sleth Modernism - all rights reserved.

3 Results – advantages and disadvantages of post-industrial redevelopment

Considering the analysis performed to the 6 case studies, according to the pre-established methodological framework it was possible to identify the main advantages and disadvantages of redeveloping post-industrial landscapes.

In this regard, even if post-industrial landscape redevelopment is often considered a positive approach towards urban sustainable development, it is a fact that these projects still face numerous problems regarding both regulation and liability issues, clean-up standards, and access to funding. Even if less evident than the advantages, that will be presented after, there are still several real or perceptual disadvantages associated to this type of project, namely:

- a perception of crime;
- ambiguity about liability and clean-up issues;
- an available but under-skilled labour force;
- indeterminate demand;
- local and regional lobbies;

- ownership structures;
- prohibitive redevelopment costs associated with site work and rehabilitation or demolition of obsolescent structures;
- scarce access;
- troubles in site assembly;
- unsatisfactory understanding of redevelopment interrelationships.

Regarding the advantages of redeveloping post/industrial landscapes, the performed analysis enabled the identification several benefits directly related redevelopment, which represent an important element towards sustainable urban planning, considering its three pillars.

At the sociocultural level:

- contributes to increase sense of belonging and pride in community;
- increase in park-land and open space fostering life quality;
- encourage recreation and connectivity, while enabling the protection and highlight industrial heritage;
- promote neighborhood revitalization.

At the economic level:

- contributes to the reutilization of existing infrastructure, to the reduction of urban sprawl and infrastructure cost,
- increase property values encouraging inner city investments
- promotes the creation of jobs and increasing income, investment and value of cultural assets.

Considering the environmental level:

- contribute to remove contaminants from the environment, creating wildlife habitat and increasing flora and fauna diversity;
- foster human - environment connections through the creation of green open space and recreational opportunities;
- reduce greenfield consumption;
- improve aesthetic quality of urban fabric.

4 Final considerations

The performed study enabled us to conclude that it is essential to continue studying the city and its post-industrial landscapes as an evolutionary entity, understanding that the values and the history of the city do not end in the eighteenth century [7], and that the products from industrial revolution are an integral part of our common history. For this reason, as shown on this research, the redevelopment of post-industrial landscapes should be seen as part of larger, ongoing processes of architectural preservation and sustainable urban design, that should include all the

additional elements and structures associated with the industrial activity.

In this regard, it is imperious that politicians, developers, stakeholders and planning professionals understand that the maintenance of the urban layout is one of the most important features for the cultural identity of a city, and that industrial landscapes constitute an important part of it. In this way, post-industrial redevelopment becomes more than the celebration of the past, as important as that is; it becomes part of reconstructing the future.

Regarding the analyzed case studies, besides the identification of a considerable number of advantages and disadvantages it was possible to conclude that even if the advantages are greater than the disadvantages, there are some disadvantages that rally limit the development of these landscapes. In this regard liability concerns are commonly believed to be one of the main responsible factors for retracting redevelopment, pushing capital away from postindustrial landscapes, thus limiting the possibility of redevelopment. This fact coupled with the lack of governmental ability to find a balance between economic and environmental issues, i.e. a balance which encourages redevelopment while ensuring that sites are adequately remediated and do not pose a danger to public and environmental health, constitutes normally a critical redevelopment barrier.

Still regarding the identified disadvantages, it is important to mention that the obtained data corroborate with the ones pointed out on previous studies [9, 12, 14, 16] highlighting the fact that regardless of all the work done on the last decades, there is still a long way to go, especially on less developed countries.

In conclusion and considering the performed cost-benefit analysis (advantages and disadvantages) it is possible to mention that in order to strengthen the attractiveness of these spaces for developers' specific legislation should be established in order to reduce uncertainty and to promote the state support to reuse previously developed sites or unused buildings ensuring a more compact development that enhances accessibility, affordability, and conviviality, while protecting environmental quality by avoiding the consumption of areas of ecological and cultural value.

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References

- [1] Aguilar, I., 1998. *Arquitectura industrial. Concepto, método y fuente*. Valencia: Diputación de Valência.
- [2] Alanen, A. and Melnick, R., 2000. *Preserving Cultural Landscapes in America*. Baltimore: The Johns Hopkins University Press.
- [3] Bergeron, G., 1996. *Le patrimoine industriel, un nouveau territoire*. Paris: Liris.
- [4] Cabral, F., 1993. *Fundamentos da Arquitectura Paisagista*. Lisboa: Instituto da Conservação da Natureza.
- [5] Carapinha, A., 1995, A escrita na Paisagem. In: *A escrita na paisagem - Festival de performance e artes da terra*, Portugal, Coleção B – Mimesis.
- [6] Casella, E. and Symonds, J., [eds.], 2005. *Industrial Archaeology: Future Directions*. New York: Springer-Verlag.
- [7] Custódio, J., 1991. *Cadernos de arqueologia industrial Série I*. Estudos, Lisboa: Associação Portuguesa de Arqueologia Industrial, 1991.
- [8] Drury, P., 2002. The historic and cultural dimensions of landscape. In: *Heritage and Sustainable Development – Council of Europe, Naturopa*. Belgium: Bietlot – Gilly.
- [9] Ekman, E., 2004. Strategies for Reclaiming Urban Postindustrial Landscapes. Master Thesis. Institute of Technology, Massachusetts.
- [10] Fadigas, L., 2007. *Fundamentos Ambientais do Ordenamento do Território e da Paisagem*. Lisboa: Edições Sílabo, Lda.
- [11] Loures, L., 2006. A Paisagem Industrial da Foz do Arade. In: APAP – Lisboa (eds.) *Congresso 30 ANOS APAP – A Paisagem da Democracia*. Santa Maria da Feira: Rainho & Neves, Lda.
- [12] Loures, L. 2014. Post-industrial landscapes as drivers for urban redevelopment: Public versus expert perspectives towards the benefits and barriers of the reuse of post-industrial sites in urban areas, *Habitat International*, 45:72-81 2014.
- [13] Loures, L. and Panagopoulos, T., 2007. Recovering Derelict Industrial Landscapes in Portugal: Past Interventions and Future Perspectives. Proceedings of the *Int. Conf. on Energy, Environment, Ecosystems & Sustainable Development*, July 24-26, 2007 Agios Nicolaos, Crete, Greece, pp. 116-121.
- [14] Loures, L., Panagopoulos, T., Burley, J. 2016. Assessing user preferences on post-industrial redevelopment. *Environment and Planning B: Planning and Design* 2016, Vol. 43(5) 871–892
- [15] Magalhães, M., 2001. *A Arquitectura Paisagista: morfologia e complexidade*. Lisboa: Editorial Estampa.
- [16] McCarthy, L., 2002. The brownfield dual land-use policy challenge: reducing barriers to private redevelopment while connecting reuse to broader community goals. *Land Use Policy*, 19(4): 287-296.
- [17] Smith, D., 1974. *Amenity and Urban Planning*. London: Crosby, Lockwood Staples.
- [18] Storelli, C., 2003. The city as heritage. In: *Towns and Sustainable Development – Council of Europe, Naturopa*. Belgium: Bietlot – Gilly.
- [19] Stratton, M. and Trinder, M., 2000. *Twentieth Century Industrial Archaeology*. London: Spon press.
- [20] Tandy, C., 1979. *Industria y paisaje*. Madrid: Instituto de Estudios de Administración Local.
- [21] Telles, G., 1956. O homem perante a paisagem, Portugal, Cidade Nova, nº4, pp. 240-246.
- [22] Telles, G., 1992. Um novo conceito de paisagem global: tradição, confrontos e futuro (Jubilação do Professor Ribeiro Telles) Évora: Portugal, Universidade de Évora, 1992.