

# REVIVING THE CITY BROWNFIELD INTERVENTIONS IN BILBAO, 1990 – 2005

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## Summary

*How, and in what terms, does the reintegration of derelict land in the social, economic, and environmental context of a city contribute to the reviving of the post-industrial city; to making it a better place to live.*

The paper presents the city of Bilbao as a case study of a European middle size city with a significant industrial footprint that has experienced urban revitalization – that has *revived* - mainly due to a series of brownfield interventions over the last decade. Through the physical analysis of the urban transformations in Ametzola, Abandoibarra, Galindo, and Zorrotzaurre, before and after intervention, the paper concludes that reclaiming brownfield sites for urban activity plays an important role in enhancing the sustainability and quality of life of the post-industrial city, both at the site scale as well as to the city as a whole.

## 1. Introduction: The Brownfield Challenge in the Post-Industrial City

Former industrial activity has left its trace in many cities in the form of derelict or underused sites of various sizes and shapes, often in core downtown locations served by infrastructures. At a site scale, these areas remain neglected and disconnected from the city's social and economic activity, frequently presenting real or perceived contamination. At the same time, they represent physical voids in the urban fabric, becoming barriers to the city networks and to city life. Thus, the

presence and potential reuse of these abandoned or underused sites – commonly known as *brownfields* - is a challenge within the post-industrial city.

The brownfield challenge may be broken down into three basic questions: *How is it approached?; What is the appropriate reuse for the sites?; and, How does the transformation(s) take place?* Regarding the first question, in order to address the issue effectively, there seems to be a clear need for data describing the scale and nature of the 'brownfield problem' as well as for a common definition of the term. Presently, there are two main understandings, related to its nature: as '*land potentially affected by contamination*' (US, Canada, Scandinavia), and as '*previously developed land*' (most of Western Europe), which encompasses a wider area and range of sites<sup>1</sup>. Once defined and identified, the questions around what and how the sites are brought back into urban activity face different obstacles and interests. Issues such as contamination and potential environmental hazard, land use and clean-up policies, multiple ownership, and community concern, among others, are seen above all as economic liabilities. However, although the reuse of the land and the reintegration of the sites into the economic cycle is a primary objective, successful brownfield redevelopments need the combination of environmental approaches with spatial and urban planning approaches integrated into policy approaches<sup>2</sup>.

## 2. An Opportunity for a more Sustainable Urban Design

Within the context of the current need for more sustainable urban design and planning

in an increasingly urbanized world, the case study presented intends to support the thesis that the reuse of brownfields – understood as *abandoned or underused previously developed land which may or may not be contaminated* – holds several physical potentials to enhance sustainability and quality of life in the city, not just in the site itself but also at a larger urban scale. The framework proposed<sup>3</sup> is based on the physical analysis of a series of brownfields within the same metropolitan area, before and after intervention, and their achievement of a series of objectives into which the opportunity for a more sustainable urban design has been condensed. The objectives are the following:

**1-Improve the Legibility of the City:**

enrich the existing and surrounding urban fabric, increase its compactness and diversity, and reveal its site-specific physical features.

**2- Improve Urban Integration and Mobility:**

enrich the existing and surrounding urban networks favoring transit and non-motorized modes of transportation.

**3- Greening the City:**

improve the quality, quantity, and accessibility to green public open space. For contaminated sites, reduce contamination [real or perceived] and potential environmental hazards.

**4- Build Complete Communities:**

improve housing affordability, social integration and proximity to goods and services, and encourage economic revitalization.

**5- Mitigate the City's Environmental**

**Impact:** use already urbanized land more efficiently by reusing previously developed land instead of Greenfield land.

**Context: Brownfields in the Bilbao Metropolitan Area**

The Bilbao Metropolitan Area holds a population of 900,000 people in an area of 50,000 ha, more than 40% of the total population of the Basque Country in 7% of its total area<sup>4</sup>. The city's urban development throughout history, since its foundation in the year 1300, has been linked to the Nervion River and the economic activity it has provided ever since. Following the industrial revolution, shipbuilding and steel and iron



Figure 1. The Bilbao Metropolitan Area and, south to north (north is up), the four brownfield interventions presented: Ametzola, Abandoibarra, Zorrotzaurre [in planning process] and Galindo.

industries along the riverbanks linked to the nearby mines generated intense economic activity, a dense railroad system, and enormous population growth. Due to its specialization in heavy industry, the European industrial crisis in the 1970s and 80s was especially acute in Bilbao, having to face a situation of used-up mines and abandoned industries and railroad layouts. Differentiating them from other contaminated sites such as wastelands, the sites resulting from the industrial crisis have been addressed as *Industrial Ruins*, and defined as *‘the sites, built or not, that having participated in an industrial activity are degraded in such way that a new use is not possible but through a thorough work of recovery’*<sup>5</sup>. In 1998, the Bilbao Metropolitan Area had 333 hectares of Industrial Ruins in 159 sites, 72% of the total Industrial Ruin area of the Basque Country. Over the last decade, the city has experienced an enormous urban transformation through the reuse of the former industrial and railroad sites and the transfer of harbor activities to the outer bay. It has reclaimed its waterfront and consequently the river, once the expression of strong industrial success followed by neglect and decay, now represents the city's new identity, providing public open spaces and new neighborhoods and business areas.



Figure 2. Ametzola brownfield intervention: before and after.

Source: Bilbao Ria 2000

Two planning initiatives towards the new urban model took place in the industrial crisis context of the 1980s. At a municipal level, a new City Plan (General Urban Plan) was developed between 1985 and 1995. Pursuing the shift from the industrial-based model to a service- mixed-use one, its main and most relevant proposal was the understanding of the large obsolete sites as an opportunity rather than an obstacle<sup>6</sup>. The sites would be used to restructure the city and its uses to alleviate the deficiencies from the former period. At the same time and at a metropolitan scale, between 1989 and 1992 the Metropolitan Bilbao Revitalisation Plan was developed. The Association Bilbao Metropoli-30 was formed in 1991 to launch and drive the revitalization process. It presently carries out planning, research and promotion projects through public-private partnerships<sup>7</sup>. In addition, to undertake the recovery of former industrial spaces around the city, the public company Bilbao Ria 2000 was created in 1992. Since then, the company coordinates and executes projects in relation to town planning, transportation and the environment, focusing on the urban directives drawn up by the planning authorities<sup>8</sup> (i.e. Ametzola, Abandoibarra, and Galindo projects).

### 3. Four Case Studies: Brownfield Interventions in Bilbao, 1990-2005<sup>9</sup>

#### 4.1. Ametzola: *Connecting and Greening at a District Scale*

*Ametzola Before:* The 11-hectare site (27.5 acres) was previously used by the railroad system, hosting three rail-freight stations. Located on the southern edge of the city core, the site represented a physical barrier between the surrounding neighborhoods.

*Ametzola After:* Although work is currently ongoing to cover the last remaining visible sections of railroad tracks, the intervention has transformed the site into a residential area that has brought the adjacent districts together through a 36,000m<sup>2</sup> (9 acres) urban park, a connected street system, and a new transit network. The railroad tracks have been covered and adapted for passenger use, with a new railway station that provides efficient transit connection with the rest of city and enhances the reclamation of the use of the train. The intervention is planned to house 900 new dwelling units and at the same time provide a new and needed green open space for the surrounding neighborhoods. 750 of the dwellings are already built in nine high-density residential buildings overlooking the park. The remaining 150 units are assigned for social housing.

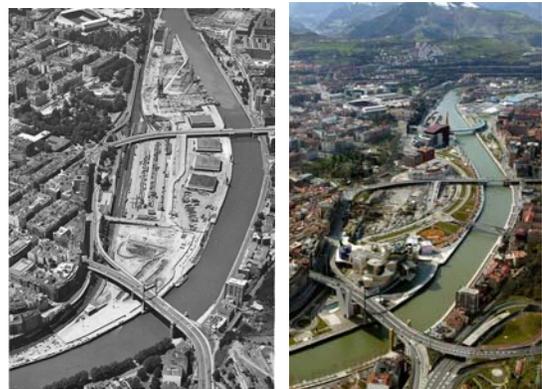


Figure 3. Abandoibarra brownfield intervention: before and after.

Source: Bilbao Ria 2000

#### 4.2. Abandoibarra: *Waterfront Reclaimed & Image Remade*

*Abandoibarra Before:* Located along the southern bank of the Nervion River, right in the city central district, the 35-hectare site (87 acres) was for many years an industrial

area served by rail infrastructure. As access to the river had been exclusively for former industrial activity, the city fabric had consequently developed as physically detached from the river, with no relation to it except through a series of bridges.

*Abandoibarra After:* The site of Bilbao's Guggenheim Museum, the city's international icon, Abandoibarra, due to its central location and scale, is now intended to become the new city center, integrating the city core with the riverfront. This long-term process began in 1998 and continues presently, but the city is already able to reach the riverfront through a new street network, bikeways, tramline, and new bridges and pedestrian walkways connecting the two shores. Within walking distance, a compact, diverse and open expansion of the city is taking place: the Guggenheim Museum, a Convention Center, office and residential buildings, a hotel, a shopping mall, and a University library. The intervention has provided public access to the waterfront with riverside promenades and green open space, with the extension of the existing park and the addition of a new park.

#### 4.2. Galindo, Barakaldo:

##### *Overcoming the Deficiencies from the Past*

*Galindo Before:* Down the river in the municipality of Barakaldo, a 60-hectare area (150 acres) was the site of a highly relevant iron and steel industry in the Basque Country, Altos Hornos de Vizcaya (AHV). The area has been named for its location - where the Galindo River meets the Nervion River. As in Abandoibarra, access to the riverfront was denied to the city, first by industrial activity and later by its remains.

*Galindo After:* The process began in 1998, seeking to bring Barakaldo to the waterfront and provide a series of amenities to the city that the former rapid growth period had not been able to supply. The new neighborhood extends the city fabric and networks down to the water, housing 2,200 new dwelling units - 525 of these assigned for social housing. The intervention also includes a business area, a sports complex, and a shopping and leisure area by the riverbank. 200,000 m<sup>2</sup> (50 acres) of greenery are provided by the riverfront parks. Several industrial structures have been restored as monuments to the region's

industrial past: a former AHV building is now the headquarters of a public business development initiative, and the riverside promenades host the Portu Wharf, formerly the AHV dock-side, and a restored ore loading facility - a homage to decades of local mining and at the same time a lookout over the river.

#### 4.3. Zorrotzaurre:

##### *Future Intervention in an Inhabited Site*

*Zorrotzaurre Before:* The 58-hectare site (144 acres) is located on a peninsula in the Nervion River, northwest of Bilbao's city core. With 60% of the land belonging to the Bilbao Port, the area was left underused when the port moved to the outer bay. With weak services and infrastructure, it currently holds some industrial activity and houses a community of 462 people.



Figure 4. Galindo brownfield intervention: before and after.

Source: Bilbao Ria 2000

*Zorrotzaurre After:* The area is presently at the beginning of the urban planning approval process of the project. A Management Commission representing the landowners (70% public, 30% private) is driving the development process, while the existing community, concerned about the future of their neighborhood, has organized a series of public forums and workshops for a sustainable urban transformation. As from the 2004 Master Plan, developed by Zaha Hadid, the program for the area was the refurbishment and construction of housing, new industries, tertiary uses, urban and recreational spaces and new connections, linking the peninsula with the city and surrounding areas. The project, mainly residential, proposed 5,300 new dwelling units (28% for social housing) in three distinct districts: north, central and south.

## 5 Reviving the City through Brownfield Interventions

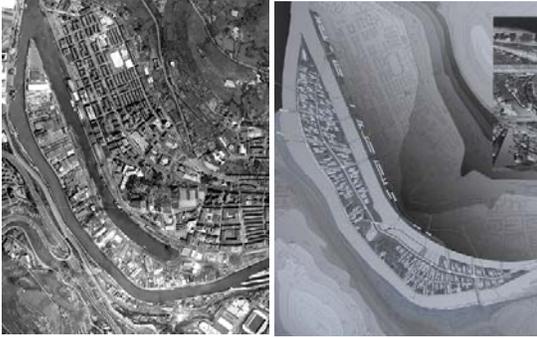


Figure 5. Zorrotzaurre brownfield intervention: before and after.

Source: [www.bizkaia.net](http://www.bizkaia.net) and Zorrotzaurre Master Plan Exhibition, Bilbao, November 2004

The four major brownfield interventions taking place presently in Bilbao – Ametzola, Abandoibarra, Galindo and Zorrotzaurre – represent a total of 163 hectares (409 acres), half the area of Industrial Ruins identified in 1998. Although the best known internationally is Abandoibarra with the Guggenheim Museum - introducing Bilbao as an example of *Remaking the Image of the City*<sup>10</sup> - the results of the analysis of the interventions with the proposed framework shows how all four are collectively playing an important role in reviving the city.

**Improve the Legibility of the City:** The four interventions presented have overcome physical barriers that formerly separated either surrounding neighborhoods, the city from its waterfront, or both. At the same time, the relatively compact developments (i.e. Ametzola 82uph, 33 dua; Zorrotzaurre 92 uph, 37 dua) have provided new open spaces that allow a better spatial understanding of the city.

**Improve Urban Integration and Mobility:** New streets have completed existing – and once disconnected - street networks, favoring pedestrian mobility. All four interventions include a relevant transit connection with the rest of the city (i.e. Ametzola and Galindo: train; Abandoibarra and Zorrotzaurre: tram).

**Greening the City:** Loosening part of the lack of green space within the city, the interventions in Ametzola, Abandoibarra, and Galindo have provided a third of each site for

greenery, a total of 351,714m<sup>2</sup> (88 acres). But it is not just an issue of quantity: accessibility within five minute walking distance to green public open spaces larger than one hectare (2.5 acres) has been granted to the surrounding neighborhoods (i.e. 5,000 existing dwelling units in Ametzola; 15,000 in Abandoibarra; 8,000 in Galindo).

**Build Complete Communities:** The mix of uses within each intervention varies depending on the site and the surrounding neighborhoods' needs, but all four cases guarantee accessibility to goods and services within walking distance to the new dwellings. When completed, the four brownfield interventions will have provided nearly 9,000 new dwelling units - 2,000 of these for social housing (24%) – and new services and amenities. Economic revitalization is encouraged through areas for economic activities mostly in Abandoibarra but also in Galindo and Zorrotzaurre.

**Mitigate the City's Environmental Impact:** At a metropolitan scale, the reuse of the four sites of already urbanized land for a total of almost 9,000 new dwelling units increases land use efficiency. Had the new housing taken place on greenfield sites in the periphery, with consequent lower densities, it could have occupied up to 4 times as much land – undeveloped land. At the same time, the interventions - when all completed - involve an overall reduction in the brownfield area per capita in the metropolitan area of 50%.

## 6 Conclusions

The case of Bilbao shows one way of dealing with the brownfield challenge faced by many post-industrial cities: using a *problem* – an important amount of brownfield area within central parts of the city – as a tool for reviving. The framework used for the analysis, although still being refined, has been useful to illustrate how the four interventions presented have, beyond the site scale, enhanced a series of components of urban sustainability and quality of life to the surrounding neighborhoods - to the city as a whole.

With a final look at the three introductory questions regarding the brownfield challenge (*How is it approached?; What is the appropriate reuse for the sites?; and, How does the transformation(s) take place?*), a key element in Bilbao's approach to the challenge was the understanding, back in the 1980's, of the large obsolete sites as opportunities. Although the term *brownfield* does not exist in Spanish, the issue was identified and defined. As a result, the sites have been reused to complement the surrounding neighborhoods, satisfying the needs of a city with lacking services and open spaces from the former rapid growth period while at the same time providing new housing and areas for economic redevelopment. Specifically through the reclamation of the waterfront, the interventions have allowed for a better spatial understanding and dwelling of the city with its river – its most specific natural feature that has influenced the city's physical and socio-economic development since its origins. However, such a metropolitan transformation is a long-term process, and the strong public sector support has been highly relevant to make it possible: from spatial and urban planning policy to the creation of a public company to undertake the works. And the result proves it worth the effort: brownfield interventions in Bilbao have not only helped it remake its outward image, but have also contributed to its environmental quality and economic revitalization, as well as to its identity and reconciliation with its industrial past.

## Endnotes

<sup>1</sup> Oliver, Lee; Ferber, Uwe; Grimski, Detlef; Millar, Kate; Nathanail, Paul; *The Scale and Nature of European Brownfields*, CABERNET (Concerted Action on Brownfield and Economic Regeneration Network) conference paper, University of Nottingham 2005, [www.cabernet.org.uk](http://www.cabernet.org.uk)

<sup>2</sup> Ferber, Uwe; Grimski, Detlef; *Brownfields and Redevelopment of Urban Areas*, Wien, Austria, published by Umweltbundesamt GmbH (Federal Environment Agency Ltd), 2002. CLARINET, Contaminated Land Rehabilitation Network for Environmental Technologies, [www.clarinet.at](http://www.clarinet.at)

<sup>3</sup> The framework proposed is part of a broader research currently being developed in the author's thesis in the Master of Advanced Studies in Landscape Architecture (MASLA) at the University of British Columbia, Canada.

<sup>4</sup> UDALPLAN 2005, Información de la Zonificación General del Suelo residencial, Actividades económicas y Sistemas Generales, Departamento de Ordenación del Territorio y Medio Ambiente, Eusko Jularitza - Gobierno Vasco, 2005 [www1.euskadi.net/udalplan/visor/viewer.htm](http://www1.euskadi.net/udalplan/visor/viewer.htm)

<sup>5</sup> Author's translation of the definition of *Industrial Ruin* in the 'Study – Inventory of Industrial Ruins in the Basque Country', taken from the *Technical Guide of Environmental Criteria for the Reclaiming of Industrial Ruins* [Guía Técnica de Criterios Ambientales para la Recuperación de Ruinas Industriales], IHOBE S.A. for the Basque Government, 1998

<sup>6</sup> Madrazo, Julia, Bilbao City Hall, '*La península de Zorrozaurre: Previsión y objetivos, conexiones con otros barrios*', in *Foro para un Zorrozaurre Sostenible*, September 2004. [www.zorrozaurre.org](http://www.zorrozaurre.org)

<sup>7</sup> Bilbao Metropoli-30, Association for the Revitalisation of Metropolitan Bilbao, 2006, [www.bm30.es](http://www.bm30.es)

<sup>8</sup> BILBAO Ria 2000, Public Company Responsible for the Urban Regeneration of Metropolitan Bilbao, [www.bilbaoria2000.org](http://www.bilbaoria2000.org)

<sup>9</sup> Data and aerial images for the case studies obtained from BILBAO Ria 2000, Public Company Responsible for the Urban Regeneration of Metropolitan Bilbao, [www.bilbaoria2000.org](http://www.bilbaoria2000.org); Zorrozaurre Management Commission, [www.zorrotzaurre.com](http://www.zorrotzaurre.com); Forum for a Sustainable Zorrozaurre, [www.zorrozaurre.org](http://www.zorrozaurre.org); Orthophotos and digital cartography from the Diputación Foral de Bizkaia [Provincial Council of Bizkaia], [www.bizkaia.net](http://www.bizkaia.net)

<sup>10</sup> Marshall, Richard, Editor, *Waterfronts in Post-Industrial Cities*, London, USA, Canada, Spon Press, Taylor & Francis Group, 2001