

Article

The Industrial Heritage of the City of Malaga: Analysis of Its Current Situation and Support for Its Activation as a Resource for Urban Development

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Abstract: This article forms part of the debate regarding the relevance of using industrial heritage as an engine for territorial and urban development. It begins by studying the concept of industrial heritage and recognition of the same as cultural heritage and, subsequently, using the city of Malaga as a case study, analyses the industrialisation process that the city experienced from the 19th to the end of the 20th century and the current state of conservation of its built industrial heritage. It also undertakes a study of the specific instruments, for the most part strategic planning, that have been implemented as a means to incorporate cultural heritage as an asset for a new urban model for the city in an effort to understand how these instruments envisage the revitalisation and recovery of industrial heritage. The study concludes that this heritage, despite constituting one of the city's principal hallmarks, has received only partial and biased attention in terms of the numerous urban reclassification projects that have been undertaken, and has yet to find its role in the new urban model. This raises the need to revitalise these heritage resources in an effort to encourage fairer, more equitable urban and economic development processes that contemplate the reasonable use of the industrial heritage that constitutes the bedrock of the city's identity.

Keywords: industrial heritage; urban development; strategic planning; Malaga



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1. Introduction

This article begins by introducing two types of necessary reflections or observations, one of which bears direct relation to the case study dealt with in the article, the other being of a more theoretical, conceptual nature relating to industrial heritage.

The first of these observations focuses on the city of Malaga and its industrial heritage (Figure 1). It may seem paradoxical that, while during the 19th century Malaga was the second most industrialised city in Spain, after Barcelona, much of the city's industrial fabric has now disappeared. Its industrial past, which was consolidated at the end of the 18th century and continued, albeit with successive crises, until the beginning of the 20th century, gave rise not only to the establishment of extensive industrial areas but also to a notable urban transformation linked to internal reform, port extensions, civil architecture, urban facilities, and so forth [1–4]. Despite this prosperous industrial past, however, in the final years of the 19th century, the crisis of the industrial model and the decline in power and presence of the Malaga bourgeoisie plunged the city into a profound crisis.

Following the dismantling of industry, the city sought resources, either new or revitalised, on which to base a project for the future and recover its prestige, and during the 1950s and 1960s the city experienced significant economic and demographic growth. A new industrial fabric developed and its administrative role was strengthened while tourism was consolidated on the Costa del Sol [5–7]. Attention to heritage and culture, however, was relegated to a secondary role, not being of interest to the speculative bourgeoisie of the day [8]. At the turn of the millennium, the city of Malaga, situated just on the periphery of the sun and beach tourism dynamics of the Costa del Sol, which was by then considered

a mature sector that lacked the burden of structural problems that many municipalities on the Costa del Sol were beginning to experience with regard to maintaining a quality tourism offer, and with abundant tangible and intangible cultural assets, focused on a more diverse cultural tourism offering with its own distinct identity within the Costa del Sol region, which had become consolidated in recent decades [9–13].

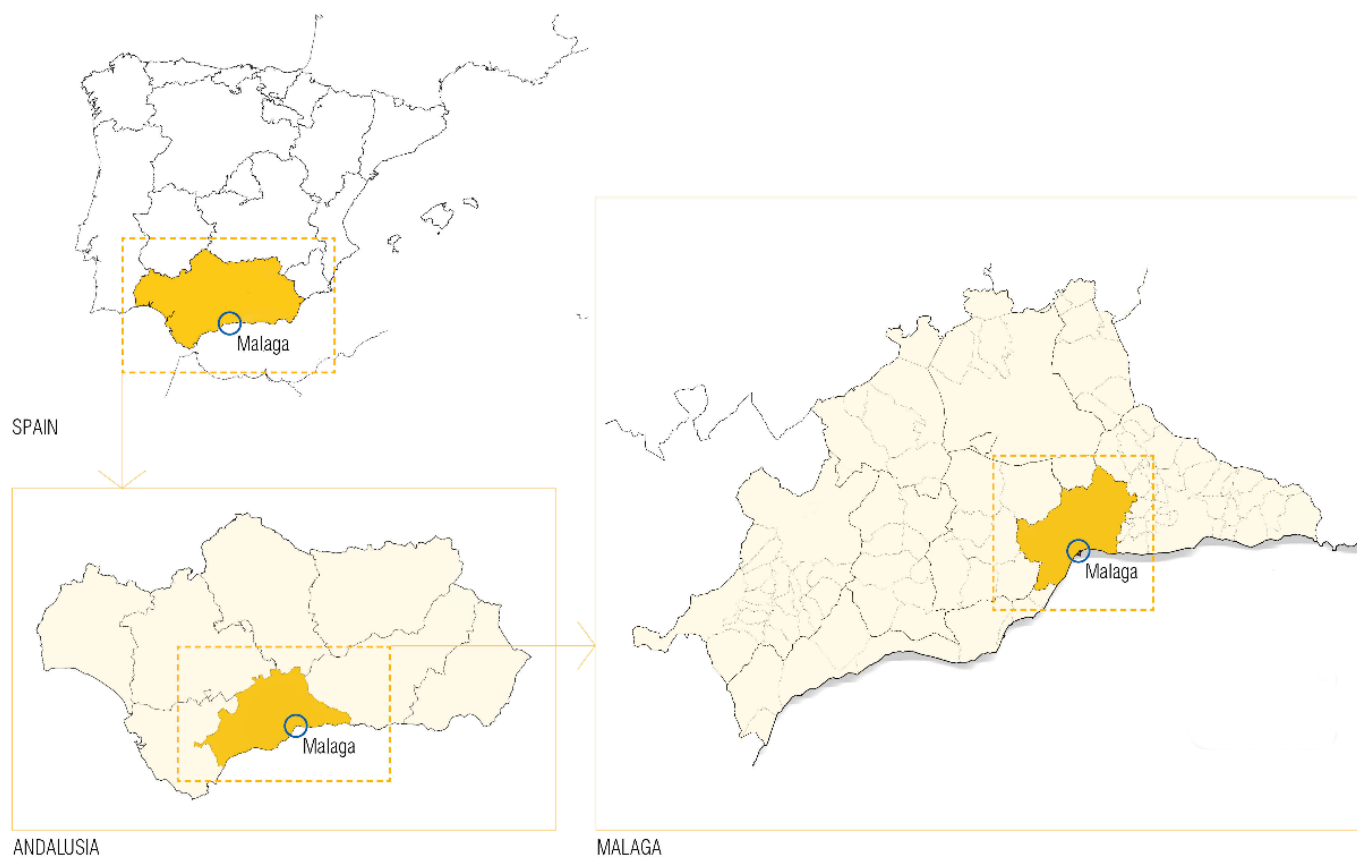


Figure 1. Location of the city of Malaga, Spain.

Cultural heritage, which was considered of little relevance in terms of urban economic logic until a few decades ago, acquired a very significant role in the more recent context of the city of Malaga insofar as these resources are incorporated as assets pertaining to a new urban model via specific instruments such as strategic planning. However, these recognised heritage assets still, for the most part, refer to monuments (fortresses, religious buildings, and gardens), most of which are located in the historic centre of the city [14], while the industrial heritage assets, which constitute some of the main hallmarks of Malaga's heritage, having left their mark on the character of the city, have hardly received attention. And while certain very specific elements have been protected and refurbished, principally those that possess a measure of impact and urban presence (chimneys, stations, cranes, etc.), many assets of great interest (facilities, machinery, constructions, industrial processes, testimonies to ways of life and work, etc.) have been ignored, relegated, demolished, and/or disposed of [15,16]. As a result, the heritage image projected by the city responds to an elitist, selective, and monument-focussed vision with significant absences in industrial heritage assets.

The second introductory reflection is more theoretical in nature and focuses on the concept of industrial heritage. This consists of a wide-ranging, varied set of elements, both tangible and intangible, that arise as a result of the development of production, extraction, and distribution activities in the various sectors of the economy. Factories, mines, infrastructure, housing, machinery, tools, objects, archives, etc., are all inserted into

a specific landscape together with testimonies relating to the influence of the work culture on society which defined this industrial heritage, the study of and intervention in which cannot be carried out in isolation, but they were also a part of its territorial, social and cultural context [17,18].

Many of these industrial elements have today been abandoned and left to deteriorate, exposed to major transformations and, in some cases, have completely disappeared [19–21]. The consequences of globalisation, deindustrialisation, relocation, urban renewal, and industrial reconversion have meant that a significant number of structures, facilities, and sociability systems relating to work culture, which emerged from the industrial revolution, have outgrown their usefulness and become obsolete.

From the 1960s onwards, industrial heritage began to constitute a matter of some concern in Europe and other territories such as the USA. In the case of Spain, this interest in industrial heritage did not begin until the end of the 1980s and its effect on the territory was widely dispersed, mainly being felt in those regions possessing greater industrial heritage. This was mainly due to the impact of the industrial crisis on these industrial regions and the consequent deterioration and abandonment of the architecture and landscapes associated with this activity.

Today, these elements acquire a heritage character as a result of the broadening of the concept of heritage that occurred from the second half of the 20th century on, meaning that this concept is no longer only linked to the idea of monuments or assets possessing some historical-artistic value, but also to assets, be they tangible or intangible, that contribute to the identity of a people. The concept of heritage is broadened to include heritage elements that until recently had not been given adequate attention, such as is the case with industrial heritage. The legacy left by our recent industrial past is the most representative element of a rich production culture, and one that must be preserved and restored as a heritage reality [22].

On an international level, interest in this industrial heritage and its numerous possibilities for use in relation to its context, not only territorial but also social, cultural, and economic, has given rise to a wealth of research and projects that have enriched the study and understanding of the same on a number of levels. In Spain, over the last three decades a significant number of contributions have emerged that have set a theoretical and practical standard for the treatment of this heritage. Along these lines the works of Sobrino Simal [23–25], Álvarez Areces [17,26,27], Benito del Pozo [20,28,29], Cruz Pérez [30], Pardo Abad [31], Casanelles i Rahóla [32], and Aguilar Civera [33,34] are worthy of mention, among others. Research projects addressing specific innovative methodological questions regarding the study of and intervention in this heritage from a landscape perspective have recently been carried out [35–37].

The different approaches to and reflections on industrial heritage have, over time, found their new home in the creation of practical instruments, regulations, recommendations, etc. of a regional, state, and international nature that have made it possible to establish guidelines, references, and/or framework standards for the revitalisation of and intervention in this heritage. In summary, mention should be made of the Nizhny Tagil Charter on Industrial Heritage, drawn up by The International Committee for the Conservation of the Industrial Heritage (TICCIH) and signed in Moscow in July of 2003. This charter is the first international reference text for the protection and conservation of this heritage. In it, a broad-spectrum approach is taken to industrial heritage that transcends monumental consideration and addresses not only material elements, but also those of an intangible, social, and natural nature. It also contemplates the need to address not only the study of and research into this heritage but also its preservation and conservation.

The Council of Europe, which focuses on the development of standards, guidelines, and recommendations for the identification, protection, and dissemination of heritage, specifically dedicates Recommendation No. R(87) 24 on European industrial towns [38] and Recommendation No. R(90) 20 on the protection and conservation of the industrial, technical, and civil engineering heritage in Europe [39] to industrial heritage, together

with a series of recommendations contained in Resolution 1924: Industrial Heritage in Europe [40], which includes the drawing up of inventories of industrial heritage and its revitalisation as an integral part of a social and territorial context. Likewise, the United Nations Educational, Scientific and Cultural Organization (UNESCO), at its 2011 meeting in Paris, established the Recommendation on the historic urban landscape, an instrument that lends shape to an innovative tool for heritage preservation and historical city planning in which industrial heritage, among others, has become one of the areas of research where it can be implemented.

The Dublin Principles for the Conservation of Industrial Heritage Sites, adopted in 2011, established the joint criteria of the International Council on Monuments and Sites (ICOMOS) and TICCIH for the conservation of industrial heritage: sites, buildings, areas, and landscapes. This document constitutes a conceptual advance in the study, revitalisation, and protection of this heritage by recognising both its particularity and the challenges and threats to which it is subject.

In the case of Spain, in addition to the aforementioned international and European regulatory texts and recommendations, there is the Spanish Historical Heritage Law 16/1985 and its corresponding regional regulations. These differ from one region to another, and while the protection of this industrial heritage is becoming increasingly important and being given legal recognition through a series of regulatory provisions that contemplate not only the protection of the asset itself but also the safeguarding of its landscape consideration, the fact is that, to date, only five autonomous regions (Catalonia, the Balearic Islands, Asturias, Andalusia, and Galicia) have specific regulations pertaining to industrial heritage [41].

On a national level the National Industrial Heritage Plan [42], the only one of its kind in a European country, is also significant. This plan has been promoted by the Cultural Heritage Institute with the aim of conserving and disseminating industrial heritage. Its original text was approved in 2001 and has undergone several updates in 2011 and 2016 with the aim of advancing the identification of these assets and deepening our understanding of the same through the preparation of inventories and the implementation of dissemination and training actions.

For its part, in Andalusia, the approval in November 2007 of the Andalusian Historical Heritage Law (Law 14/2007), which revises the previous law of 1991, introduces a transcendental change for Andalusian industrial heritage insofar as it establishes legal recognition. By doing so, it acquires theoretical depth, and aspects relating to its protection and revitalisation are defined in an effort to highlight the importance and interrelation between material and immaterial testimonies and the landscape. Article 65 of this law defines industrial heritage as: "The set of assets linked to the productive, technological, manufacturing and engineering activity of the Autonomous Community of Andalusia insofar as these constitute exponents of the social, technical and economic history of this community. The landscape associated with production, technological, manufacturing or engineering activities is an integral part of Industrial Heritage and its protection is included under the label Site of Industrial Interest" [43] (p. 20).

In addition to these tools and regulatory frameworks, it is worth highlighting the work carried out by a number of associations that have contributed to the understanding and revitalisation of this industrial heritage and have met with a committed response from society in general.

However, despite the growing importance that industrial heritage has acquired in recent years, the legal concern for its conservation; the fact that it constitutes a socio-economic resource capable of generating wealth and employment; and that it has a historical, cultural, and identity-related role of great relevance and growing importance for the quality of life of citizens; it remains subject to serious processes of deterioration and decline. Many of these elements, once they have lost their original functionality, are particularly at risk of disappearing.

This raises the need to implement actions for the study, recognition, and revitalisation of, and intervention in, this heritage in an effort to recover it as a valuable resource for society that is capable of driving processes of economic growth, as well as urban and landscape regeneration.

In this sense, this article forms part of the debate regarding the relevance of using industrial heritage as an engine of territorial and urban development. So, using the city of Malaga as a case study, the purpose of this research is to acquire a deeper understanding of both its industrial past and the current state of conservation regarding its built industrial heritage. It also proposes an analysis of those specific instruments, principally strategic planning, that the city council uses as a basis for the incorporation of cultural heritage as a resource in urban and economic development projects. The aim of this analysis is to reveal the extent to which these instruments have contemplated the revitalisation and recovery of industrial heritage. Finally, this research proposes the need to reflect on the city of Malaga's need to incorporate heritage processes that lead to the energising of the heritage resources of its industrial past with the aim of encouraging more equitable, balanced urban and economic development processes that contemplate the reasonable use of the industrial heritage resources that constitute the bedrock of the city's identity.

2. Methodology

This research begins with the premise that industrial heritage is a resource that must be correctly identified, protected, and administered. The city of Malaga has been chosen as a case study due to the fact that its industrial past, while of great relevance, has nevertheless been paid scant attention, with the result that a significant part of this heritage has disappeared [15,16], and that currently, under the auspices of the city council, selective depatrimonialisation processes are being carried out that affect this industrial heritage to a significant degree [14].

As a methodological procedure, the first step in the development of this research was to study the concept of industrial heritage and the recognition of it as cultural heritage. To this end, a clear understanding of the legal and regulatory frameworks and protection initiatives at an international, national, and regional level was essential. Secondly, a study of the industrialisation process experienced by the city of Malaga from the 19th to the end of the 20th century was undertaken in an effort to identify some of the most significant stages that led to the rise and development of industry in this city, and also to its decline. Thirdly, an analysis was made of the current state of conservation of the city's built industrial heritage in order to identify those buildings that have been restored and conserved, but also those that have been poorly conserved, abandoned, or have almost disappeared. Fourthly, a study was undertaken of the procedures implemented by the city council as a means of incorporating cultural heritage as an asset for a new urban model. This study has paid special attention to the analysis of the numerous strategic plans that have been proposed in an effort to activate the city's cultural resources and to the study of the heritage processes carried out and their relationship with the development of urban strategies in an effort to understand how these instruments contemplate industrial heritage, contribute to the revitalisation of the same, and incorporate these resources as assets in the development of new urban models. Finally, we have reflected on the need to establish heritage designation processes that are designed to both revitalise industrial heritage and incorporate it as a strategic resource for the urban development of this city.

In addition to the bibliography cited in the text and listed in the References section, in an effort to identify Malaga's built industrial heritage resources, existing archives and files relating to the city's remaining examples were consulted. Completion of this study included fieldwork that enabled information on heritage resources to be gathered in situ and their state of conservation to be ascertained via direct visits to the various elements. As part of the analysis of the city council's actions and ambitions, the various strategic plans for the city were consulted, along with relevant urban and sectorial planning documentation.

3. Results

3.1. Industrialisation in Malaga

In the last third of the 18th century, Malaga experienced considerable demographic growth and significant economic development on the basis of maritime trade relating to the export of agricultural products and their derivatives to the countries of northern and western Europe and the Americas.

Raisin and sweet wine production gave rise to a concentration of wine presses and raisin producers in the Montes and Axarquía regions, while the capital was home to ageing cellars for Malaga wines, sultana, and dried fruit export companies. Mills, presses, and stills for the production of flour, oils, and spirits were also located throughout the province.

In addition to commercial activity, Malaga was also notable for agricultural and manufacturing activities. Commercial exports from the port of Malaga, with close ties to speculative agriculture, gave rise to a significant accumulation of capital in the hands of an enterprising bourgeois core that was receptive to technological innovations from abroad, all of which established the conditions for the future industrial development of the city and province.

3.1.1. 19th Century Industry in Malaga: Boom and Development

In the 19th century, and up until the first decades of the 20th century, Malaga played an important role in the national industrial process [3,44]. In the mid-1850s, Malaga was at the forefront of national industry, experiencing its golden age during the decades 1830–1860 (Figure 2). It was the second most industrialised city in Spain after Barcelona and was prominent in sectors such as the iron and steel industry. In the field of technology, it was at the forefront in terms of the incorporation of the most modern technology of the day [45] and Malaga's economy, based on metallurgy, textiles, and wine, expanded internationally with the support of the port [46].

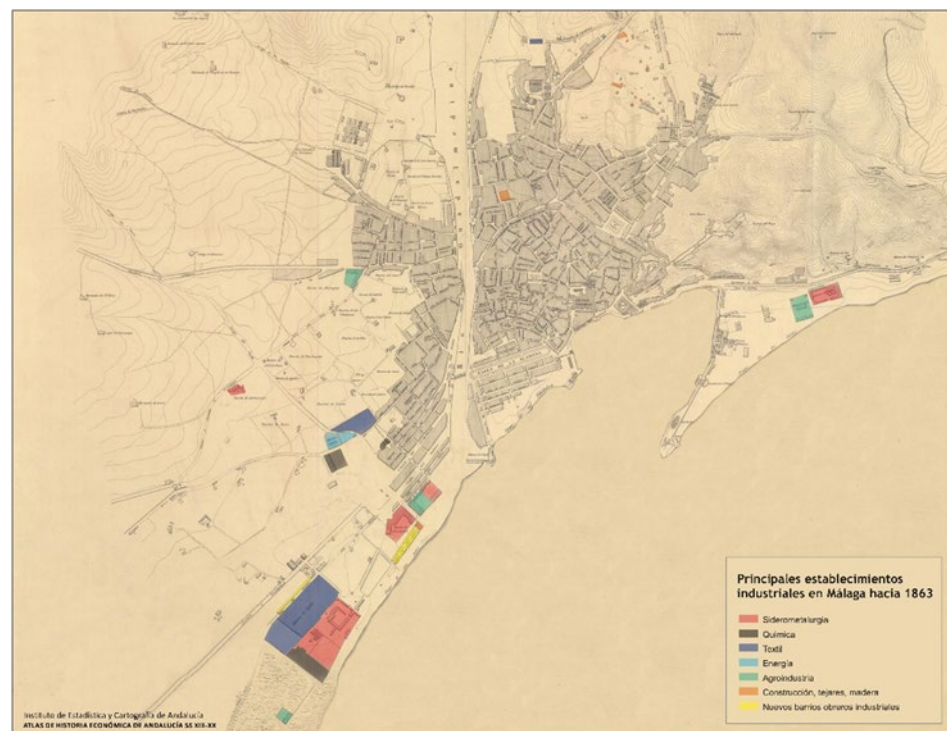


Figure 2. Main industrial establishments in Malaga around 1863. Accessed via Institute of Statistics and Cartography of Andalusia. Regional Ministry of Economy and Knowledge of Junta de Andalucía https://www.juntadeandalucia.es/institutodeestadisticaycartografia/atlashistoriaecon/atlas_cap_39.html (accessed on 14 December 2022).

Iron, steel, and cotton were the sectors that marked the beginning of this industrialisation in Malaga, though this was not limited to these sectors alone, spreading, as it did, to include all industrial sectors [4]. The commissioning in 1832 of the first national blast furnaces in Marbella, the La Concepción ironworks, marked the beginning of this intense industrialisation process in Malaga. In 1883, the decision was taken to divide the iron manufacturing process between Marbella and Malaga, where the first furnaces were built in the Constancia iron and steel complex [47]. The success of iron and steel production meant that Malaga soon became the country's leading centre for cast iron production, and one of the basic sectors of 19th century industrialisation was well developed before the 1850s [48], one of the key figures in this industrialisation process being Manuel Agustín Heredia [47,49]. As a consequence of this iron and steel activity, numerous foundries and mechanical construction companies were established in the city and subsequently in other towns in the province from the likes of Antequera and Vélez-Malaga.

Another characteristic sector of Malaga's first industrial revolution was the cotton textile industry [50]. In 1846, Martín Larios, who played a fundamental role in 19th-century industry in Malaga, founded a modern textile factory equipped with the latest British technological advances, La Industria Malagueña, which was to become one of the first modern factories in Spain. This was followed by other textile factories, such as La Aurora, in 1856, which, though smaller, employed the same technology.

Iron, steel, and cotton industries were subsequently joined by the chemical industry; Malaga being at the forefront in national soap production. Together with Barcelona, the city was also a pioneer in the manufacture of artificial soda, which contributed to the birth of the base chemistry industry.

In an similar fashion, the agri-food industry, which is linked to the farming trade, consolidated itself as the most powerful sector in the province during the 1840s and 50s, the traditional exportation of sweet wines, brandies, and sultanas reaching the highest levels of the century during these decades, placing it at the forefront in terms of national production [51]. Sugar was another major industrial sector in the province, and while its origins date back to the Middle Ages, it was not until 1845 that it began its process of modernisation, mainly due to the efforts of Ramón de la Sagra, who founded the Torre del Mar sugar factory, which boasted the most state-of-the-art technology of the day. In 1851, this was acquired by the Larios family, who developed and modernised the sugar industry along the entire Mediterranean coastline [52].

All this intense industrial production, in particular that linked to the agri-food sector, stimulated and lent prominence to port traffic in the city of Malaga, which in turn had an impact on other towns in the province, so industrial activity was not limited to the capital, but rather spread to provincial towns, albeit with varying intensity. In this context, worthy of mention are manufacturing activities in Ronda, Marbella, Vélez-Málaga, and Antequera, extractive activities the likes of lead mining and smelting in Estepona, white jasper quarries in Ronda, marble quarries in Coín, the iron and steel industry in Marbella; the sugar mills in Torrox and Vélez-Málaga; the cork stopper factories in Gaucín; as well as extensive flour mills, distilleries, tanneries, and potteries, among other enterprises, scattered throughout the province.

The area of greatest industrial expansion was along the coastline to the west of the river Guadalmedina. Malaga's industrial space was structured into four main areas, Bulto, Huelin, Pelusa, San Andrés, as well as the new Perchel area. At the time, the historic centre of Malaga also featured a wealth of crafts and manufacturing establishments totalling more than a hundred small- and medium-sized businesses covering all industry sectors.

3.1.2. Late-19th and Early-20th Century Industry in Malaga: Decadence

Industry in Malaga experienced its first major crisis, one that was to affect all sectors, at the end of the 19th and beginning of the 20th centuries [3,53]. The lack of coal and the high price of importing the same, the rivalry with other iron and steel areas in Spain such as Vizcaya and Asturias, which were favoured and backed to a greater extent by foreign

capital; the late implementation of the railway, phylloxera, which appeared in 1878 and led to the collapse of wine production from the 1880s onwards, problems relating to the marketing of cotton textiles and difficulties with marketing sugar cane were, among others, some of the reasons for this crisis, one that led to the closure of many businesses [4,54].

As a result of this crisis, the end of the 19th century saw a general decline in economic activities [55] as well as a demographic decline in both the capital and the province [4], a situation that meant that many Malaga residents had to look for other sources of income.

3.1.3. Industry in Malaga in the First Half of the 20th Century

The beginning of the 20th century saw a recovery of Malaga's economy, though it would no longer hold the hegemonic position of the previous century [4] (Figures 3 and 4). Changes in the manufacturing, commercial, and financial structure led to the birth and consolidation of new sectors, and the agri-food sector continued to play a significant role, having ties to agricultural production in the eastern part of the region. The production, refining, and export of olive oil, the flour industry and the ageing and export of wine and sultanas were some of the sectors that experienced a new period of expansion in the first decades of the 20th century, while the packaging, cardboard, typography, and lithography sectors, with ties to the production of olive oil containers, enjoyed a golden age [56].

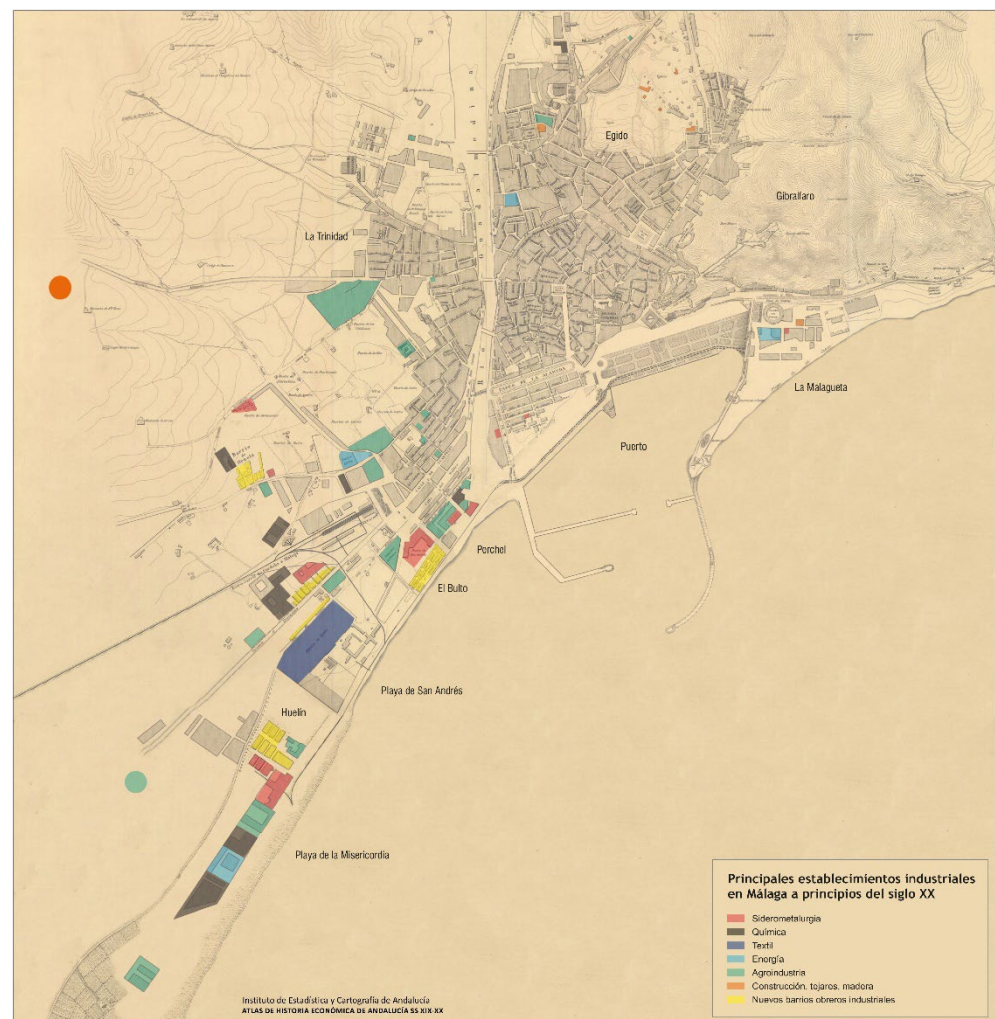


Figure 3. Main industrial establishments in Malaga at the beginning of the 20th century. Accessed via Institute of Statistics and Cartography of Andalusia. Regional Ministry of Economy and Knowledge of Junta de Andalucía https://www.juntadeandalucia.es/institutodeestadisticaycartografia/atlashistoriaecon/atlas_cap_40.html (accessed on 14 December 2022).



Figure 4. Industrial establishments in the center of Malaga around 1930. Accessed via Institute of Statistics and Cartography of Andalusia. Regional Ministry of Economy and Knowledge of Junta de Andalucía https://www.juntadeandalucia.es/institutodeestadisticaycartografia/atlashistoriaecon/atlas_cap_40.html (accessed on 14 December 2022).

Together with the agri-food sector, the chemical sector, with the production of fertilisers for agriculture, was one of the basic pillars of industry in Malaga at the time. Similarly, the construction sector experienced high levels of building activity due to the need for new workers' housing. The demand for this construction activity led to the appearance of local industries providing ceramic materials (bricks, tiles, etc.), hydraulic tiles, and cement, among others. Likewise, metallurgy and mechanical construction enterprises were in full swing.

3.1.4. Industry in Malaga in the Second Half of the 20th Century

In 1959, with a National Stabilisation Plan that aimed to both stabilise and liberalise the Spanish economy, factories were opened in industrially underdeveloped provinces where unemployment was significant. In the case of Malaga, this marked the beginning of an era of opportunity and stabilisation, and a series of companies were founded that have constituted the industrial sector up to the present day [57].

The need to resolve one of the most urgent problems, namely the insufficient electricity supply, led to the creation, in 1955, of the San Patricio thermoelectric power station on Misericordia Beach, known as La Térmica. This was inaugurated in 1958 and remained in operation until 1980, when it closed due to technological obsolescence and the high price of oil.

Around this time, the Intelhorce textile company was established by the National Institute of Industry (INI), thereby helping to sustain an industrial sector with a long tradition in Malaga [58]. In the 1960s, the Spanish Ammonia factory, located opposite Intelhorce and dedicated to the production of nitrogenous fertilisers, was founded in an effort to satisfy national agricultural demand and fitted with the most advanced technology of the day.

The establishment of the Compañía Internacional de Telecomunicación y Electrónica S.A. (CITESA) was approved on the Martiricos site, and equipped with modern technology. In 1995, it moved to the Parque Tecnológico de Andalucía following rezoning of the site, and since 2000, the company has passed through the hands of various multinationals. The Martiricos building, despite its listing as a unique example of the modern architectural movement in Spain, was demolished between 2009 and 2010.

3.1.5. Industrial Decadence in Malaga

In the aftermath of the civil war, the economic situation in Malaga was one of recession and stagnation within a context of unemployment, strikes, and violence [59], and the few industries that arose during Franco's developmentalism period disappeared in the 1980s and 90s. In this situation of crisis in the mid-20th century, few significant industries still operated in Malaga: Industria Malagueña, the La Araña cement factory, the La Trinidad fertiliser factory, the Amoniaco Español factory, the Vers foundry, and the Los Guindos lead foundry being among them.

The disproportionate, chaotic growth of the city from the 1960s onwards, coupled with the shifting of its main function from an industrial to a service-oriented, residential city meant that many of the remains of this industrial heritage, mostly 20th century companies that had survived to this date, disappeared. In addition, at this time, the percentage of the working population engaged in local industry was very low and the first major tourist developments were taking place [44,60]. The 1971 general plan moved productive activities away from the city and encouraged the conversion of industrial land into residential land, an event that sparked the notable speculation-construction operation of the 1970s.

As many as 121 Malaga companies closed in 1972, many of these industry related. Other developments in the city, such as those that occurred during the 1990s and 2000s, all but erased what remained of the industrial Malaga of the 19th and first decades of the 20th century, with Intelhorce, CITESA, the fertiliser factory La Trinidad, Metalsa, and Tabacalera, among others, closing down.

All of this has led to the fact that, today, hardly any architectural evidence of this rich industrial past remains, and those elements that have survived are in a very poor state of conservation. The same can be said of the blue-collar and industrial districts, which have either been demolished or have seen their structure and buildings drastically altered.

3.2. *The Built Industrial Heritage Situation in the City of Malaga Today*

The 1980s and 90s coincided with years of rampant speculation that led to the rapid disappearance of many of these industrial sites [61]. Faced with this situation, in 1999 an inventory study was carried out of the remains of the industrial facilities in the municipality of Malaga. This study was entrusted to the architect José Ignacio Díaz Pardo, who presented a catalogue of some 300 industrial constructions from which he selected 47 elements, including buildings, chimneys, and even entire neighbourhoods, that he considered worthy of protection measures and proposed the following priority lines of action for these [62]:

A. Non-optional architectural protection with absolute priority:

This line of action envisaged the comprehensive protection of 12 existing chimneys and their restoration as the only possible means of intervention. The records pertaining to the chimneys should contain some conditions relating to the environment and their administration with a view towards their conservation should be foreseen.

B. Urban design interventions:

The creation of an urban design project, such as the Park Museum of Industry.

C. Non-optional architectural protection with absolute priority:

The drafting of urban planning regulations for the protection of residential complexes the appearance of which were linked to the industrialisation process, for example the blue-collar neighbourhoods of El Bulto, La Pelusa, Huelin, La Isla, Colonia de Santa Inés, La Saucedá, and La Araña.

D. Non-optional architectural protection with absolute priority:

Architectural protection for 16 buildings, some of which at the time were already protected, while others were classified as public utilities or infrastructure, meaning their future use could be made compatible with their conservation.

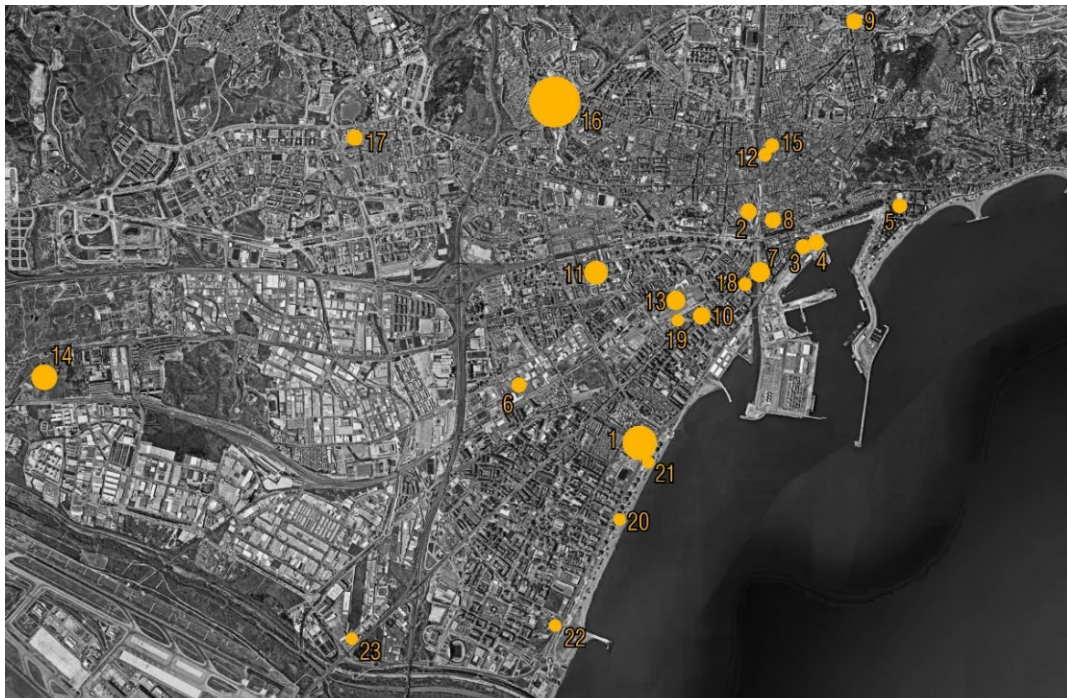
E. Active industries:

Thirteen elements were identified for which their proposed change in use was not acceptable and the protection of their architectural elements was considered.

F. Creation of the Museum of Industry:

The creation of the Museum of Industry in the Corchera del Tarajal.

The report filed by the town planning department on this inventory assumed almost all the proposals that architect Díaz Pardo included in this inventory. Many of these, however, have not been carried out, such as the creation of the Museum of Industry or the Park Museum of Industry. Neither have the protection actions proposed in this document been implemented, with the result that the condition of these elements is very different today. The truth is that more than a third of the 47 buildings proposed for protection by the architect no longer exist [63], and the Silo del Puerto (port silo), the Tomás Trigueros foundry, Olivarera Peninsular olive oil factory, and Santa Inés ceramics factory chimneys, the house of the director of the La Araña cement factory, the Campsa warehouses, a Renfe workshop, the railway station itself, the ammonia factory and the Aceites Minerva plant, among other constructions for which the inventory advised protection, have disappeared. Thus, without being exhaustive, we find the following main examples (Figure 5).



1. Tobacco factory | 2. Italcable | 3. Former Port Railway Station | 4. Port Board of Works | 5. Maestranza Power Plant | 6. Bodegas Barceló | 7. Wholesale Market | 8. Atarazanas Central Market | 9. EMASA Offices | 10. Metalgraf Española, S.A | 11. Municipal Slaughterhouse | 12. Bodegas Mata | 13. Former Renfe workshops | 14. El Tarajal sugar factory | 15. Former Fiat Lux power plant | 16. Salyt brick and tile factory | 17. Santa Inés Factory | 18. Larios olive oil factory | 19. The Ramírez y Pedrosa foundry | 20. Los Guindos lead smelting factory | 21. La Trinidad fertiliser factory | 22. San Patricio Thermoelectric Power Station | 23. Cooperativa Lechera Malagueña (COLEMA)

Figure 5. Location of the main elements of industrial heritage in Malaga today.

3.2.1. Restored and Well-Preserved Industrial Buildings

- Tobacco factory

The former tobacco factory, known as Tabacalera, is located in the Huelin neighbourhood, a 19th-century industrial expansion, and was designed by engineers Juan Francisco Delgado, Carlos Dendariena, and Fernando Guerra. Its construction in regionalist style began in 1923 and ended in 1927. The factory was conceived based on the layout of 11 pavilions around a central landscaped space whose location was planned to allow the different phases of production to be independent, but also to optimize productivity, avoiding unnecessary transport and manoeuvres. Six of these pavilions are arranged symmetrically with respect to the central space and the other five, dedicated to storage, are arranged on the southern edge of the plot. In this symmetrical composition, the two buildings dedicated to Offices and the Registry advance to mark the main access to the complex. Both are topped with a tower marking the entrance.

From 1929 to 1975, this industrial complex operated as a tobacco leaf fermentation centre until 1975 and subsequently as a production centre up until 2002. It closed its doors in 2002 and, in 2004, passed into public, municipal ownership of the Malaga city council, which decided to recover this industrial complex for cultural and administrative uses.

Following refurbishment by architect Francisco Eguirior, the former drying sheds were opened to the public in 2007, housing the public tax administration office (Gestrisam) as well as other municipal bodies the likes of the municipal computer centre (Cemi), the social welfare department, the women's services department in 2010 and the centre for unified control in 2015 [15]. In 2010, the main building became home to the Automobile Museum of Malaga and, since 2015, has housed the headquarters of the St. Petersburg Russian museum collection. The different recovery and reuse actions carried out have respected the original exterior spaces and integrated new constructions without distorting the initial configuration of the complex (Figure 6).

The tobacco factory is currently a fundamental testimony of Malaga's industrial past and an icon of the city. In addition to its historical and ethnological value, this industrial complex has a high architectural value represented in the large scale of its intervention, in its functional architecture, and in its different buildings built with a careful Andalusian regionalist style [15].

- Italcable

The Italcable building, located in the Perchel neighborhood, was the headquarters of this Italian company whose objective was to install submarine cables to facilitate telephone communications between Italian emigrants in Latin America and Italy.

The building, a large warehouse that had formed part of the Santo Domingo convent until its seizure and sale, was adapted in 1925 to house the company's headquarters until it closed in 1970, possibly due to technological obsolescence [64]. It remained abandoned until 1999, when it was refurbished by the Cofradía de la Buena Muerte (Brotherhood of the Good Death) as an exhibition hall under the direction of Álvaro Mendiola and Antonio Díez Casado. The Italcable Room, located on the first floor, currently hosts plastic arts and photography exhibitions as well as works by established local artists. Likewise, the Italcable building currently houses the Technological Headquarters of the International University of Andalusia (Figure 7). This building, in addition to its architectural value, has a historical and ethnological value as a witness to the industrial past of the city.

- Former Port Railway Station

The former suburban railway company station is located in a building at the entrance to the port area. This building, which was constructed by the architect Enrique Verdú together with the engineer Leopoldo Werner, dates to the first decade of the 20th century. It is a two-story free-standing building with a floor area of 335 square metres located on a plot of almost 500 square metres. Its function was to provide coverage for the local railway network linking Malaga capital with Coín, Ventas de Zafarraya, and Fuengirola.

The building has two well-differentiated façades, on the one hand, the one that opens onto Avenida Manuel Agustín Heredia that defines an angle at whose vertex the accesses are located and, on the other hand, the one that opens onto the sea, which is more functional and whose layout responds to the layout of the narrow tracks through which the suburban railways of the port circulated. The façade on the ground floor is formalized with a stone finish and on the first floor brick. The building is topped with a cornice and a stone balustrade.

All the lines departing from this station were closed in the 1960s, with the exception of the Fuengirola line. The disappearance of its lines and many of its elements such as passenger ticket offices, offices, waiting rooms, lockers, platforms, etc., made that only the stations and halts stand as testimonies of this past.

The Malaga Suburban Railway station building became the property of the port authority and after years of neglect, it was decided to carry out a restoration and rehabilitation project. In 1996, the building was restored by Juan Pablo Gómez de la Fuente and now houses the headquarters of the Port Studies Institute. The different interventions focused mainly on the conservation of the façade, on the assembly of a metallic structure to guarantee the stability of the building and the conditioning and rehabilitation of its interiors.



(a)



(b)

Figure 6. Tobacco factory, Malaga, Spain: (a) Former distribution warehouse; (b) Former workshops.



(a)



(b)

Figure 7. Italcable, Malaga, Spain: (a) San Jacinto Street façade; (b) Fray Alonso de Santo Tomás Square façade.

- Port Board of Works

This building was designed by the civil engineer Manuel Aceña González. Its construction began in 1932 and ended in 1936, although its final reception did not take place until 1943 due to the events of the civil war. This free-standing rectangular building is located in the port area in the Plaza de la Marina. It has three heights and is finished off in the central area of each of its façades by a coronation body that incorporates a clock. On three of its faces there is an access body on the ground floor that is finished off on the first floor with a balustrade. The design of its facades, inspired by the emblematic Lonja de Barcelona, has a classicist appearance. In them a very accentuated order of pilasters between holes can be observed, both on the ground floor with a stone plinth, and on the first and second where the pilasters are continuous. Likewise, crowning finishes with pinnacles and decorative details can be observed. The main façade is oriented to the east. The set presents a classical, symmetrical, and harmonic design. Inside, the imperial-type staircase that borders an interior patio stands out. All these elements give this building an architectural value that adds to its historical and ethnological value as a witness to the industrial past of this city. It currently houses the Malaga port authority (Figure 8).



Figure 8. Port Board of Works, Malaga, Spain.

- Maestranza Power Plant

The former power station of The Malaga Electricity Company, commonly referred to as the *Compañía de los Ingleses* (The English Company), was the first electricity production company to be established in Malaga and distributed energy to four areas of the city. In 1888, the city council authorized this company and the French *Elctrecité Industrielle* to lay public lighting in Malaga. In 1896, the English company acquired the site for the construction of the electricity factory on it. The project signed by the architect Eduardo Strachan in November 1896 is Neo-Mudéjar in style and very simple. On the plan, the patio, the chimney, the engine room, and the boiler room for burning coal stand out, as well as the administrative units. The thermal power plant stopped working at the beginning of the 20th century.

In 1921, due to the numerous losses that the company had suffered in recent years, a new company was formed, *Eléctrica Malagueña*, which took over the factory and, in 1922, promoted the construction of new premises. This new company moved its official headquarters to the building on Maestranza Street, designed by Eduardo Strachan and Viana-Cárdenas, which was extended and modified according to a project design by engineer Juan Brotons [65].

In 1958 the factory suffered a fire that rendered it completely unusable, the section of the building designed and constructed by Brotons being the only part that was preserved. This was located next to the old chimney, which continued to be used sporadically for the burning of scrap metal. The building remained in ruins until, at the end of the 1970s, the *Compañía Sevillana de Electricidad* signed an agreement that included its restoration. In the early 1980s a housing development was built on the large rectangular site and only part of the courtyard and delimiting corridors were preserved, these being refurbished for use as the offices of the company. The original piece of the chimney from the old electricity factory is of great value as it is the only vestige that remains of the first electricity producing factory in Malaga. This remains one of the few examples of the incorporation of electricity in public lighting in the city.

- Bodegas Barceló

The wine company *Hijos de Antonio Barceló* was founded in 1914 and, in 1967, moved to the Ronda exterior industrial estate, where the building to house the *Bodegas Hijos de Antonio Barceló S.A. (Bacarlés)* was built in 1968. The main building built to house the offices of the winery and the aging cellar with a capacity of about 10,000 barrels of wine is an excellent example of a regionalist–historicist-style building belonging to the industrial past of this city of great value.

This building built in exposed brick has a symmetrical façade with historicist lines with two lateral bodies with two floors and a central one with three. The entrance door is flanked by columns that are placed on high pedestals on the ground floor. Inside there is a central patio with a square plan delimited by porticos with semi-circular arches peralted in exposed brick supported on white marble columns.

This building housed the *Bodegas Barceló* until 1998, when the company relocated to Valladolid and closed its facilities. The building was acquired in the same year by the *Illustrious Official College of Doctors of the Province of Malaga*, when it was refurbished and adapted as the headquarters of the college by architect Enrique Mañas Millán.

- Wholesale Market

The former Malaga wholesale market (*Mercado de Mayoristas*) was designed by architect Luis Gutiérrez Soto and is located on the left bank of the Guadalmedina estuary. This building, in addition to its historical and ethnological value as a witness to the industrial past of the city, has great architectural value as it constitutes one of the foremost examples of Andalusian rationalist architecture [66]. Its origin is framed in the context of avant-garde architecture supported and promoted during the Second Republic. It was originally conceived as a free-standing building with a trapezoidal floor plan that adapted to the singularity of the site on which it was erected.

It has three floors, one of them, the basement, below ground level that partially occupies the site. It is built with a structure of pillars, beams, and a reticular-reinforced concrete slab. Volumetrically, two parts can be distinguished, a header piece that is located on the smaller side of the trapezoid where the main access is located and that runs through the administrative offices and, on the other hand, the central body of the market that constitutes an open-plan empty space. Some lateral bays enclose this central space whose roof is located higher than the rest of the naves. In this way, the roof of this part of the building is solved in a terraced way, the highest level coinciding with the central area. Both parts, the head and the central body, intersect, leaving the head body slightly raised above the rest of the building. On the axis of symmetry, coinciding with the point where both pieces meet, is the prismatic tower that rises above the rest of the building. On the

outside, the building is surrounded on the perimeter by an unloading platform protected by a concrete canopy. In its design, horizontality predominates, which is broken by the presence of the tower.

The commission for the construction of the building was carried out in 1937 by the architect Luis Gutiérrez de Soto, although the construction management was supervised by the municipal architect Eduardo Estévez Monasterio, and the work was received in 1944. It is, therefore, one of the few projects whose start and completion takes place between the end of the civil war and the first post-war years.

In 1944 it opened its doors and remained in use until 1980 when, due to the changing needs of the city, a new market was built. From then until the year 2000, it served a variety of ends that led it into a process of abandonment and deterioration. In 1998, the architect Miguel Ángel Díaz Romero was entrusted with the rehabilitation project of the building to turn it into the headquarters of the Contemporary Art Centre of Malaga (Figure 9). From 2000 to 2003, the building was refurbished and adapted for this use following a project based on simplicity and respect for the original project. The different actions focused on the recovery of the façade and the exterior spaces of the building and the adaptation of the interior space as an exhibition area.



Figure 9. Wholesale Market, Malaga, Spain.

- Atarazanas Central Market

The Atarazanas central market was built on a site formerly occupied by a naval workshop of Nasrid origin, hence the origin of its name (atarazana–boatyard).

The building was designed in 1871 by the architect Joaquín de Rucoba and its construction took place between 1876 and 1879. It is one of the first metallic projects designed entirely in Spain [67]. Its design was marked by the need to integrate into the new building the old arch of the Atarazanas gate, from the Nasrid period, on whose site the market was to be built. This exceptional circumstance in those first years of safeguarding the architectural heritage makes this project acquire a peculiar and unique character, with few examples from that time in which both aspects can be seen together. This project, a symbol of progress and modernization, also became a benchmark for recovery and respect for a Muslim past [67].

The slightly trapezoidal building is structured in three naves. Its metal structure was made with industrial castings from the Sevillian steel industry. In the enclosure, stone and brick masonry are also used. The door of Nasrid origin is located on its main façade while on the back of it there is another metallic door in the shape of a triangular pediment to which a large semi-circular arch opens with a decorated stained-glass window.

From 2008 to 2010, the market was refurbished in an effort to improve facilities by the company Sacyr Vallehermoso. These works included replacing the roof with a translucent covering of similar appearance to the original, revitalising of the Atarazanas port area, and excavation of the archaeological remains found in the subsoil (Figure 10).

- EMASA Offices

In the Olletas district, which at the beginning of the 20th century was the most highly populated area of the city, a series of tanks and buildings for the supply of drinking water were built in the 1920s and 1930s. The building housing the water distribution control centre was refurbished and now houses the EMASA (Malaga Municipal Water Company) administrative offices.



(a)



(b)

Figure 10. Atarazanas Central Market, Malaga, Spain: (a) Sagasta Street façade; (b) Main façade with the door of Nasrid origin.

3.2.2. Restored Industrial Buildings in More or Less Acceptable Condition

- Metalgraf Española, S.A.

Notable in its day for its use of cutting-edge lithography technology on metal, this industry, dedicated to the manufacture of metal containers for food products, arose as a result of the boom in the olive oil refinery sector in Malaga and the need for solid containers for export that displayed the manufacturer's stamp [68]. This factory became the undisputed leader in the sector, not only in Malaga, but throughout Spain.

The original building housing the company offices, designed by architect Fernando Guerrero Strachan in 1918, was U-shaped, adapted to the rectangular shape of the site and bordered by the streets Ayala, Góngora and Héroe de Sostoa. The factory was organized around two naves of different lengths with a double-pitched roof to which were attached two shorter side naves with a mono-pitched roof. These two main naves were connected by a central nave where the main access was located, followed by a large courtyard. The main façade facing Gongora Street had three bodies: the lower central one and the two higher and equal ends that were arranged to form a symmetrical façade. On the outside, the different openings were framed by lowered brick arches.

When the factory was destroyed by a fire, the building was rebuilt and extended by architect Enrique Atencia Molina in 1946 [69]. In this reconstruction, the smaller nave was extended until it coincided in length with the nave on the right, and the uralite roof was removed from the two naves, replacing it with a cement one. Likewise, some façade elements were altered with respect to the original project.

This industry remained in operational until 1982, when it closed due to competition from new packaging materials, the emergence of new production technologies, and high production costs. In 1987, it was acquired and rehabilitated as a shopping center. As it is a building designed by the renowned architect Fernando Guerrero Strachan, it enjoys urban protection, so it has not undergone major changes in its structure and façades. In 2000, it was acquired by another large company for commercial use, which respectfully restored its façade and the section of Góngora street where the main entrance to the shopping centre was located. In 2017, the Tax Agency temporarily located its headquarters in this building where it continues today (Figure 11).



Figure 11. Metalgraf Española, S.A., Malaga, Spain.

- **Municipal Slaughterhouse**

The Municipal Slaughterhouse was designed by architect Fernando Guerrero Strachan in 1928 and built between 1929 and 1937 on the Carranque estate, now Conde de Guadalhorce Street, with the aim of replacing the former slaughterhouse. This project contemplated an innovative model with respect to the slaughterhouses projected in the city to date. Within a walled enclosure, the building integrated a series of warehouses, each having a specific function, and gardens.

All the warehouses were projected with a rectangular floor plan and a single height with a gabled roof. They had large windows to provide sufficient ventilation and a longitudinal skylight on the deck. Although each of them contemplated a different external image, they all responded to the same eclectic and historicist imprint; however, the building that housed the management offices was designed by the architect under a Neo-Mudéjar imprint, also typical of the time. This one contemplated two stories high, except in one of the corners that reached three. The roof was hipped and the openings in the façade were solved with semi-circular arches.

At the end of the 1980s, the slaughterhouse closed as a result of changes in health legislation and remained in disuse until 1998, when it was occupied by an association that used one of its buildings as an exhibition space for youth art. Shortly afterwards, several buildings were demolished in order to build housing, and today only four buildings have been preserved, these having been adapted by the town hall to house various municipal services.

3.2.3. Poorly Preserved and/or Abandoned Industrial Buildings

- **Bodegas Mata**

The Bodegas Compañía Mata–Unión de Bodegas Andaluzas emerged in 1917 as a winery group after the acquisition of the veteran Adolfo Pries wineries by the businessman José Mata Marrodán in 1916. The latter, associated with his brother, transferred the wineries located on the beaches of La Caleta to a large two-story industrial building built in 1917, dedicated to the aging of wines and the preparation of nuts for export located at the corner of San Rafael and Purificación streets. Its exposed brick construction attends to aspects of rationality and industrial functionality. Its typology is similar to that of many European factories from the late 19th and early 20th centuries. The most relevant façade is the one that presents Purificación street organized by wide lintelled openings. It should be noted its design that starts from the purification of a certain 19th-century historicism to approach the then nascent rationalism of the Modern Movement [70].

These cellars remained in use until the 1970s. Following cessation of this activity part of the area was used for the construction of the headquarters of the pharmaceutical cooperation COFARAN. The rest of the facilities are still standing today, albeit in a state of abandonment.

- **Former Renfe workshops**

This building was constructed in the early 20th century to house the central workshops of the former Compañía de Ferrocarriles Andaluces (Andalusian Railway Company) in Malaga, the third most important railway company in Spain at that time, whose national headquarters were in Malaga. After this company was nationalized in 1936, it changed its name to house the Renfe workshops. These are located close to the railway station and are formalized in a rectangular-shaped warehouse that includes a constructed area of more than 3100 square metres. They are entirely built with stone and steel and have a gabled metal roof.

This building is currently owned by the Administrador de Infraestructuras Ferroviarias (Adif). Despite their architectural relevance, these workshops do not have protection and are not included in the catalogue of protected buildings of the general plan for urban zoning.

In 2010, in celebration of the Malaga metro works, the façade was dismantled stone by stone and its length shortened under the promise that once the works were completed, the façade would be replaced. This promise, however, has not been kept, and today the building remains abandoned and in disuse.

- El Tarajal sugar factory

The El Tarajal sugar factory is currently the only example preserved in the city of a steam-powered sugar mill and one of the most relevant examples of the industrial past of the city of Malaga. Its creation was promoted by prominent members of the city's business and political oligarchy. The building, the work of the architect Manuel Rivera Vera [71], began construction in 1925 and came into operation at the end of 1931. It was technologically prepared for the transformation of both sugar cane and beets. However, it was only in operation for a few years, since in 1939 it was dismantled and put out of use. From 1945, it was used as a cork factory, maintaining this activity until the 1960s. Hence, it is also known as "La Corchera". Later, the building was abandoned, being used sporadically for the stay of animals.

This factory is located on the outskirts of the city of Malaga, to the west of the municipality, occupying a trapezoidal plot. The main building, with a rectangular floor plan, measuring approximately 22×60 m, four stories high and a single bay, is located in the centre of the complex. Two rectangular naves are attached perpendicular to both ends. The nave attached to the north has dimensions of 20×50 m, four stories high, a single bay, a gabled roof, and a metal structure. The nave attached to the south has approximate dimensions of 40×17.5 m and is four stories high with a gabled roof. The access to the factory is located in the central axis of the main nave in a body two stories high and with a gabled roof that extends 10 m above the façade.

The building acquires a classicist component in its composition. The extensive use of exposed brick and the patterned distribution of vertical rectangular proportions with lowered arches offer homogeneity to the whole and a certain harmony and aesthetic quality. The chimney with a height of about 85 m is located in the rear space of the main building, to the south of the complex. In this same space, but to the northwest, is the water tank built entirely of reinforced concrete. Other constructions that complete this industrial complex are the management house, with a single floor and an area of about 240 square metres, various warehouses and a small entrance control building located at the main access to the factory.

At present, the factory building is preserved in its entirety, but devoid of its auxiliary and complementary facilities such as the houses for the guard, workers, and the scale house that were demolished and the machinery that was looted by junk dealers. This has architectural protection in the current general plan for urban zoning of Malaga. Likewise, the Regional Ministry of Culture of the Junta de Andalucía is advancing in the drafting of a protection file as a place of cultural interest based on the historical heritage law of Andalusia [71]. However, its current state of neglect is accelerating its deterioration (Figure 12).

- Former Fiat Lux power plant

The construction of the former Fiat Lux power plant dates back to 1896. It was built following a project by the Italian architect Carlo Tartolentino or Tealentino [70]. The site on which this factory was built had belonged to the convent of San Francisco Luis el Real and was delimited by Purificación, Wad Ras, and Don Rodrigo streets. This was for years the most important electricity factory in Andalusia and, together with the Malagueta plant, it was one of the first two thermoelectric plants in the city [72]. Hence its great value as one of the most representative examples of industrial architecture of the early 20th century. The company, initially created with Italian capital, was acquired by German capital in 1903, then by Eléctrica Malagueña in 1920, and is currently owned by the utilities company Endesa.

This factory, made up of a two-story warehouse and a brick chimney with a cylindrical shaft, is currently one of the few in Malaga that has preserved part of the original building. It is useless, except for the site where a distribution substation was built in the 1970s.

The special plan for the protection and interior reform (PEPRI) for the centre of Malaga proposed demolition of the building, leaving only the chimney, which is listed, and therefore protected (Figure 13). However, the allegations presented by the College of Architects and the Andalusian Industrial Heritage Foundation against its demolition have opened up the possibility of maintaining this factory for mixed use as a social and commercial facility.



Figure 12. El Tarajal sugar factory, Malaga, Spain.

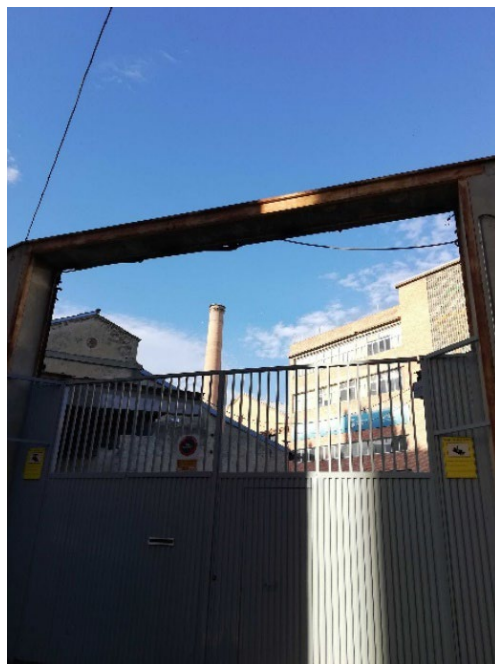


Figure 13. Former Fiat Lux power plant, Malaga, Spain.

- Salyt brick and tile factory

The Salyt brick and tile factory, located on a plot with a total area of about 62,000 square metres next to the Málaga ring road, northwest of the city, near Granja de Suárez, was established for the production of bricks in 1945, and featured small kilns, each with a small chimney. At the end of the 1970s, the company changed owners and was modernised, all the kilns being replaced by a single Hoffman kiln. Production continued until 2008 and finally ceased in March 2011, since which time the factory has been completely abandoned and left in a state of disrepair, despite the fact that it has outstanding values such as the fireplace, associated with the Hoffman oven, the only one preserved in Malaga. In 2017, a Dutch group proposed the construction of a 30.000 m² shopping centre on the grounds of this former brick factory, though no agreement has so far been reached.

3.2.4. Industrial Buildings on the Verge of Disappearing

- Santa Inés Factory

In response to the high demand for building materials resulting from the increase in construction activity in the last third of the 19th century, the Santa Inés factory was established by José María de Uribe y Tamarit and his wife in 1879 for the manufacture of bricks, plinths, vases, tiles, and mosaics. The complex of the factory and the houses for workers made up an interesting architectural ensemble on the outskirts of the city. This was conceived as an autonomous unit that integrated the labour, residential, and social aspects of the worker. Likewise, it was inspired by some elements of the Garden City. Apart from the houses and the factory, this industrial colony included a parish church and a library.

By 1890 it featured 24 state-of-the-art furnaces and two steam engines. In 1920, following acquisition of the factory by Modesto Escobar Acosta, production increased and diversified. This factory was one of the most important in Andalusia of its time. At the time of greatest activity, it had 170 workers and produced 20,000 bricks a day. It remained in operation until 1993, when dismantling commenced. The developer who acquired the factory demolished it in order to build villas and the highest chimney was razed using explosives. Today the factory has completely disappeared and only a minor chimney, the factory entrance on Juana de Castro Street, and the workers' housing remain as the only witnesses of this interesting example of the industrial architecture of the city.

- Larios olive oil factory

The El Sol de Andalucía olive oil factory was established on the Constancia Street premises where the Jiménez Lamothe cellars had been located before being moved to the neighbourhood of La Aurora in 1918. In the 1930s the factory was adapted for soap production and remained in operation until 1976 when it was decommissioned. In 1997, its remains were demolished for the construction of housing and only its chimney was preserved, due to pressure from citizens' groups, although this is now practically hidden in a small square surrounded by buildings. This cylindrical shaft chimney rests on a square section base. The shaft is reduced in section as its height increases and is finished off with a crown of circular section. At present it has a historical value as a testimony of this industrial past.

- The Ramírez y Pedrosa foundry

The Ramírez y Pedrosa foundry was established in 1916 and located in the Huelin district near the port, in what is now Ferrocarril del Puerto Street. At first it specialised in the production of machinery and presses for wine, olive oil, and sugar production. Following the death of Rafael Pedrosa in 1920, the foundry focused more on boiler repair and machine part production, which continued until 1998, when the owner died and the factory closed down. A large number of oil factories emerged from its workshops, which came to be spread throughout the entire geography of Malaga and Andalusia. In the 60s and 70s of the last century, they had more than 50 workers on their payroll. The foundry

building was subsequently demolished and housing built in its place. Today, only the chimney remains, standing somewhat extraneously on a triangular traffic island. This is built with reddish brick and has a square section shaft. This rests on a base or pedestal and is crowned with a square section finish. Its dimensions are modest, reaching a height of 11.5 m. This chimney is included in the catalogue of protected chimneys of the city of Malaga prepared by the town planning department of the Malaga city council.

- Los Guindos lead smelting factory

Located in the blue-collar neighbourhood of Los Guindos to west of the city, this factory was designed by architect Fernando Guerrero Strachan, with the exception of the chimney, which was designed and built by German engineer Baron Felix von Schlippenbach. Los Guindos constituted an industrial complex. In addition to the processing facilities, it had housing for workers, a commissary, and a vocational training school.

The facilities included a smelting furnace, several refinery furnaces, muffle furnaces for obtaining silver, and an electrostatic gas purifier. Construction was completed in 1923 and operation commenced the following year. While the factory experienced its heyday in the mid-20th century, the decline in demand for lead products slowed dramatically in the 1970s, forcing closure in 1979. Subsequently, the buildings remained abandoned until they were demolished in the early 1990s, except for the chimney, which remains standing following a series of restoration works that took place in 2008 to ensure its stability [73]. Its conservation obtained the special mention of the Europa Nostra Awards in 2009.

This chimney became the highest in the province at 106 m. Its height was conditioned by the special toxicity of the gases and the sandy nature of the terrain on which it is located. It has a powerful reinforced concrete foundation base 8 m deep and its circular section shaft is reinforced by 38 metal rings that guarantee its stability. It rests on a circular section base pierced by four semi-circular arches. Currently, this chimney, witness to one of the most representative examples of Malaga's industrial past and an icon of the city, has been integrated into the design of the new Pacífico street (Figure 14).

- La Trinidad fertiliser factory

This factory, built adjacent to the La Concepción oil factory, was used for the treatment of phosphates of animal origin and superphosphates of mineral origin with sulphuric acid for the production of fertilisers, a product that was in great demand for agriculture at the time. It was acquired by the Sociedad General de Industria y Comercio in 1910, the Unión Española de Explosivos in 1936, and, finally, by the chemical company Cros, who maintained it until the 1990s, when it transferred production. Today, the factory has disappeared and only the chimney remains as testimony to this period. This dates from the late 80s of the 19th century. Made of exposed brick in different shades, it has a circular section shaft whose diameter decreases with height. It rests on a circular section base that presents a semi-circular opening on the south side. The shaft is crowned with a circular section finish.

This chimney constitutes an important reference of the industrial past of the city. It has been registered in the catalogue of protected buildings of the general plan for urban zoning with comprehensive protection that extends over an area of 28 m in diameter centred on the chimney. However, at present it shows a poor state of conservation.



Figure 14. Los Guindos lead smelting factory chimney's, Malaga, Spain.

- San Patricio Thermoelectric Power Station

The San Patricio thermoelectric power station, known as La Térmica, was built as a result of the INI (National Industry Institute) programme for the development of Andalusian coastal thermal power stations in the period of 1955 to 1965 [44]. It was designed by industrial engineers E. Sánchez Conde and J. L. Conde, its principal objective being to boost energy production in response to the increased demand from new industries that had been established at the time.

From the time it closed in 1980 due to obsolescence, it suffered a process of deterioration, especially due to vandalism. In 2004, it was demolished with only the chimney being preserved. This is currently protected as a cultural interest asset and is the only element that remains.

Unlike other chimneys on the coast, this one is built with reinforced concrete blocks. It has a height of 65.10 m and its shaft is circular in section, reducing its dimensions with height. It rests on a circular section base built in reinforced concrete. The chimney has an external metallic staircase that allows access to the upper part, where a circular platform is arranged. Also, at an intermediate height another metal platform is located.

- Cooperativa Lechera Malagueña (COLEMA)

This cooperative originated from the association of producers for the marketing of milk and other dairy products, and the pasteurisation and packaging of the same. This industrial complex was built in the 50s of the last century by the Domínguez construction company. This cooperative took over practically the entire market in the province. In 1971, the company became a sector leader and updated its technology over subsequent years. It

was taken over by the Granada-based company Puleva in 1987/88, however, and ceased trading a few years later. In 2001, the building was demolished and only the chimney was preserved. It currently has historical value as evidence of an important industrial complex in the province during the second half of the 20th century. A commercial establishment was built on the site a few years ago.

This chimney built in solid brick has a circular cross-section shaft crowned in its last section by a cornice and rests on a square cross-section base. Its height is 30.42 m. It currently has a degree of comprehensive protection by the general plan for urban zoning. However, its state of conservation is poor due, among other things, to the graffiti that is done on it.

3.3. Cultural Heritage Consideration in Urban Development in Malaga

Over the last two decades, the incorporation of cultural heritage as a strategic resource in urban development projects has been a recurrent strategy in cities of varying rank and size. In the current context, cultural heritage, which until recently was considered an element of little relevance in terms of urban economic logic, acquires unexpected prominence and comes to constitute the backbone of urban development projects [14,74–76].

If we analyse the trajectory of the city of Malaga in terms of planning, it is possible to observe how, for more than twenty years now, it has paid special attention to cultural resources as fundamental protagonists of the urban and economic development of the city. So, without detracting from the role of urban and special plans, such as the 2011 general plan for urban zoning [77] and the 2014 advance document of the special plan for the protection and interior reform of the historic centre of Malaga [78], it is the Malaga strategic planning (PEM) that are more openly committed to the activation of cultural resources. These form part of the local initiative of the centre for strategic research and economic and social development (CIEDES), which is a private, non-profit foundation consisting of the city's principal institutions and social entities.

The first PEM (1992–1996) [79] established culture as a key factor in the future development of the city in a firm commitment to a speculative tourism model and the reinvention of heritage. Strategic Line I “Metropolitan city of Mediterranean scope” pursued the improvement of infrastructures. Strategic Line IV “European tourist and leisure capital” contemplated various projects that sought, on the one hand, to help the city occupy a central role in the Costa del Sol tourism offer, but also sought to implement an urban model based on cultural tourism [80]. To this end, measures such as the creation of a Malaga film festival and/or a network of thematic museums were proposed. For its part, Strategic Line VI was oriented towards the recovery and revitalisation of the historic centre of the city, and contemplated numerous actions involving heritage assets with potential for tourist use, such as the cathedral, the citadel, the Roman and Cervantes theatres, among others, and the creation of the Picasso Museum.

The second PEM (2006–2020) [81], revised in 2010, advanced along these same lines with the proposal “Malaga, city of culture”, the aim being to consolidate culture as a core element of social development by promoting the ties between tourism and culture. Likewise, this strategic plan proposed an urban model based on reinforcing the metropolitan character of the city via the Strategic Line “Malaga, open metropolis”. In this case, the proposal was to improve the international appeal of the existing cultural offer via a speculative tourist model that sought to boost the city's cultural industry by contemplating heritage reassessment processes that broadened the scope of action by transcending the limits of the historic centre to include the peripheral neighbourhoods and extend towards the coastal axes [82]. This second strategic plan included projects such as “Sea and metropolis. Integrated port and coastline” which dealt with the creation of promenades and the construction of an auditorium, “Mediterranean Agora. The city as a space for culture”, which focused on the conversion of the historic centre into an extended open museum, and the Soho Málaga Barrio de las Artes project, for which a Master Plan was drawn up in 2012.

In 2010, the second PEM for the 2012–2014 period was revised in an effort to adapt it to the context of the economic crisis [83]. It proposed a reorganisation of the content of previous documents and focused on the city's traditional commercial port, proposing, among other projects, the creation of the Euro-Mediterranean centre for knowledge, innovation and training in tourism.

In 2021, the formulation of a new Strategic Plan entitled *Estrategia Málaga 2030* was approved. The proposal in this case was to continue along the lines set out in the previous document and present a vision of a metropolitan Malaga that was both open to the physical and virtual world and attentive to the development and promotion of projects in each of its districts.

In each of the Strategic Plans defined, it is possible to observe how different heritage elements are recovered or revitalised according to their adaptation to the political rhythms of the municipality. In other words, different approaches to urban development also give rise to differentiating considerations regarding the city's heritage.

In this manner, it is possible to observe how, in recent years, and from the viewpoint of the city council, monument-related assets, the historic complex, and the museums have constituted the principal examples of the reinvention of Malaga's heritage, while other assets have received unequal, lesser consideration to say the least [14]. This is the case with industrial heritage, which, despite being one of the main hallmarks of the city's heritage past, and having helped to forge its identity, has received only partial, biased attention, a fact that is reflected in the actions described above. It is also significant that, despite the city of Malaga's strong commitment to museums, there is not one dedicated to industrial heritage, as the Association in Defence of Malaga's Chimneys and Industrial Heritage has been demanding for some time [44,84]. Likewise, the manifestations and intangible heritage assets relating to work culture receive far less consideration as a result of an elitist vision of heritage in which manifestations of popular culture are less welcome [14]. All of this has led to industrial heritage assets being undervalued, remaining on the margins of the city's urban development actions, and being subjected to a process of de-patrimonialisation or, at least, to far less consideration than they deserve.

4. Discussion and Conclusions

We are currently witnessing a significant loss of industrial heritage elements on a national level, as verified in the National Plan for industrial heritage overseen by the Spanish Cultural Heritage Institute [18]. The lack of awareness regarding the heritage value of these elements on a social and institutional level, the delay in the design of protective legislation and, in many cases, the strategic location of these facilities in the urban environment as they are absorbed by urban growth, has meant that, on numerous occasions, the development of urban planning strategies has not taken this heritage into consideration [15,85]. This has resulted not only in a lack of actions aimed at their revitalisation and preservation, but has often led to their demolition or adulteration. So, despite the fact that industrial heritage constitutes a resource capable of revitalising its surroundings on a socio-economic level, and of possessing a cultural and identity-related value in the collective memory of the city, the truth is that industrial heritage is currently subject to serious processes of deterioration and decline that emphasise its fragile nature.

In the case of the city of Malaga, despite the existence of some industrial buildings that have been recovered and reused, examples of elements relating to the city's industrial past that have been preserved are scarce, and practically all the remaining architectural industrial heritage consists of isolated, decontextualised elements [15,16], making the need for protection and conservation of this heritage even more evident in terms of our understanding of a key period in the city's recent history [44].

The incorporation of heritage resources as assets in a new urban model implemented by Malaga city council through certain specific instruments, mainly strategic plans, has had both positive and negative aspects. Although these strategies have led to the mobilisation

of heritage resources and the revitalisation of the urban spaces linked to them, they have also acted in a differential manner insofar as they have either failed to include all heritage typologies or have not always acted to preserve their integrity and authenticity, but have rather lent priority to the activation of those elements with the potential to attract visitors and forge a modern, attractive, and competitive urban image [14].

In this sense, it is possible to observe how the plural, diversified urban development strategies implemented in this city in recent years have allowed for the recovery and reinvention of conventional heritage, the expansion of the museum offer with the opening of new museums, some in former industrial facilities, such as the Russian Museum in the former tobacco factory, and even the rehabilitation of some degraded neighbourhoods, which has had a positive result in terms of tourist inflow. Malaga has progressed from constituting little more than a complementary destination to the Costa del Sol sun- and beach-oriented tourism to a destination that stands out in its own right on both national and international circuits.

However, this has been accompanied by a series of functional, morphological, and social changes in the city. This commitment to certain heritage elements has also brought with it a great deal of destruction of the same. The implementation of urban reclassification operations in the historic centre and the rehabilitation of a large part of its monumental heritage has been carried out selectively and not always with the aim of preserving its assets, but rather to activate them in order to transform them into competitive resources. So the focus has been on those elements that contribute to making the *Malaga* brand more competitive, and other elements that either pose problems or stand in the way of the development of large-scale urban works have been ignored [14]. The result is the recovery of the historic centre through the revitalisation of its cultural heritage by creating new cultural spaces that, while they have bestowed the city of Malaga with an undoubted attractiveness that sets it apart from other cities in terms of culture and tourism, they have also turned it into a city lacking in its own identity, a city devoid of history [86].

In the various urban reclassification projects, it is possible to observe how a large part of the industrial heritage has not yet found its role in the new urban model. Only those industrial heritage elements with a certain impact and urban presence, such as stations, chimneys, cranes, etc., have been taken into consideration and afforded recognition, while others that relate more to constructions, facilities, machinery, and so forth, elements with less urban impact but equal or greater importance than the former, are ignored and relegated to secondary consideration, or destroyed. In the same way, those immaterial elements that have resulted from the culture of work and are less easily transformed into products for tourist consumption or are not in keeping with the city's image suffer a process of oblivion and decline as they are not perceived as having any value.

In this sense, this research proposes the need to revitalise the heritage resources of the city's industrial past in order to encourage urban development processes through innovative proposals that tend to the interests of a citizenry who are demanding fairer, more equitable city models, as well as reasonable and reasoned use of the industrial heritage that constitutes the very bedrock of their identity.

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