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**The Challenge of Transforming Post-
Industrial Landscapes in Greece**

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The Challenge of Transforming Post-Industrial Landscapes in Greece

Antonia Koukouvelou

Abstract

In the Greek-Mediterranean context, the implications of industrialisation for the landscape have not yet been thoroughly discussed and researched. This paper exposes the current problem of brownfield's appearance resulting from the decline of Greek heavy industries and indicates the most important strategies for successfully transforming brownfields. These strategies depend on cultural, social, economic and ecological characteristics when investigating successful landscape transformations of other European industrial brownfields. Industry developed in Greece without the support of the state and with no proper strategic plan which led to a chaotic expansion of the sector. As several authors have pointed out, there is a lack of understanding of the post-industrial context and how to confront it. This lack has been actively ignored by the Greek state which still does not have a plan for de-industrialising these sites and reacts only when necessary. Therefore, the Greek industrial heritage, identity and landscape are rotting and are being buried under new developments. Brownfield's deterioration and alteration and its loss of identity are now clearly evident. Greece has an industrial past which has not been accorded the importance it deserves and consequently, its industrial heritage has further degraded. These terrain vagues offer a fertile ground to re-establish and regenerate the relationship between humans and nature, cities and surroundings, heritage and future strategic design. The challenge of transforming brownfields will require a new vision and growth to the Greek cultural landscape and will influence the future cultural transformation. The Greek post-industrial landscapes must no longer be hidden and new strategies must be formulated for their transformation.

Keywords: *Mediterranean cultural landscape, post-industrial landscape, transformation, heavy industry, Greece*

Greek Industrialisation: A Brief Historical Review

The Greek industrial sector has been under stress for the last ten years. One of the biggest cement factories, Heracles General Cement in Chalkida, closed and abandoned one of its eight Greek facilities in 2013 and the largest steel manufacturer, Chalyvourgiki in Aspropyrgos, closed in 2019. By 2028 almost all lignite-power plants will be shut down and potentially transformed into biogas plants leaving more than 30,000 people unemployed and more than 500 hectares in need of transformation. These are only three out of thousands of brownfields that keep emerging every year in Greece. Is this the end of heavy industry in Greece and the beginning of its post-industrial era? What will happen to the industries that are not renovated or reused? These events signify important economic, social and ecological implications that are already affecting the Greek cultural landscape. A shift of Greek industrial activity towards more sustainable and environmentally friendly solutions is necessary, but the economic, social and ecological consequences are now visible. Post-industrial landscapes have been abandoned for many years without having a clear strategic planning, jobs have been permanently lost, and the Greek government is lagging behind developing a holistic strategic plan to tackle all these challenges.

In the Greek-Mediterranean context, there is a lack of understanding of the post-industrial implications for the landscape and how to redevelop it. One reason for this lack is the insufficient knowledge of the Greek industrial history and heritage and its poor public communication. The history of heavy industry and its impact on the landscape is largely unknown¹ and only a few researchers have explored it. The country's industrial identity is decaying and progressively being buried under new developments which do not acknowledge achievements and failures of the past. The misconception that Greece does not have an industrial past has led to and continues to lead to poor architectural and landscape planning of many wastelands. This attitude will eventually generate conflicts and may result in a loss of an important part of Greek identity. In the following, Greece's industrial past is briefly explained in order to understand why the country did not advance as much as other European countries and why it does not celebrate its industrial past.

Greece was characterised by small family agricultural businesses before it finally entered the era of industrialisation in the late 19th century. The country unexpectedly found itself undergoing this change and without social, economic, and ecological preparation. As a consequence, the average Greek was rather fearful of the new industrial era and mythologised it as a monster which would destroy villages, houses, agricultural land, and the landscape. One group of people, mainly industrialists² who did not see this change in a

¹Zacharopoulou, Georgia. *The Industrial Landscape as a Cultural Value. Historic (Dis)Continuities and Modern Interdisciplinary Approaches. Το Βιομηχανικό Τοπίο Ως Πολιτιστικό Αγαθό. Ιστορικές (α)Συνέχειες Και Σύγχρονες Διεπιστημονικές Προσεγγίσεις.*, 2014. <https://doi.org/10.13140/2.1.1065.6324>.

²Term used in Greece to indicate people who own an industry.

negative way, seized the opportunity to build industries and brought the country one step closer to industrialisation. At the beginning of the industrial era therefore, the Greek people were divided into two groups which caused political and social instability.

Industrialisation in Greece, according to Pepelasis-Minoglou³, developed over three periods. The first signs of industrialisation in Greece appeared around 1867 and lasted until 1875. Small textile factories were some of the first industries to appear and the phenomenon continued with the debut of heavy industry. The Gasworks in Athens (Gazi) and mines in Milos were some of the first heavy industries which marked the beginning of heavy industrialisation in Greece. Immediately after the appearance of the first heavy industries, some problems, such as the economic crisis in Vienna in 1873 and the first raisin crisis⁴ which lasted until 1900, delayed the development of the sector.

The second phase of industrialisation, which started in 1922, after 20 years of stagnation, and lasted until 1938, was more dynamic and spurred on by an influx of educated and capable refugees, who travelled from the east during and after the Greco-Turkish War, bringing with them their advanced know-how. This new experienced workforce assisted the industrial production economically and technically. Another marker of the second industrial phase is the attempt to create a first systematic inventory of all Greek industries (1920⁵). The inventory showed that Greece had at that time 33,704 industries⁶ but only 1.3% represented the big industries which employed more than 25 workers. The rest were small, family businesses with little financial capital.

After the 1930s, industrialisation in Greece paused once more due to the Interwar period. The Greek government at that time did not focus on the development of the industrial sector. I. Metaxas (prime minister of Greece from 1936 until 1941) shifted his focus from industry to the primary economic sector, the agricultural domain. The import of raw materials was limited by the state, which negatively affected the production and thus heavy industry. The Second World War (WWII) found industrialisation slowly expanding, but then interrupted it. As Kefalas⁷ notes, the industrial production rate⁸ dropped more

³Pepelasis-Minoglou, Ioanna. 'Greece: From Rent-Seeking Protectionism to Direct Intervention'. In *European Industrial Policy: The Twentieth-Century Experience*, by James Foreman-Peck and Giovanni Federico, 295–318. Oxford University Press, 1999.

⁴Corinthian raisin was the first Greek exported product. In 1875 an overproduction of the product resulted in inflation of raisin' price in Europe and Greek producers could not sell their product. The raisin crisis climaxed at the end of the century as a consequence of the monoculture of the Peloponnesean agricultural fields. In: Kaiti Aroni Tsihli, 'Ο πόλεμος της σταφίδας (Transl.: The war of raisin)', *Vima Newspaper online*, 24 November 2008, [https:// www.tovima.gr/2008/11/24/opinions/o-polemos-tis-stafidas/](https://www.tovima.gr/2008/11/24/opinions/o-polemos-tis-stafidas/) (visited on 05.04.2022).

⁵Matrapazis, Athanasios. 'The process of industrialisation in Greece: 1870-1970 (Orig. Title: Η διαδικασία εκβιομηχάνισης στην Ελλάδα: 1870-1970)'. 2003, 29.

⁶Matrapazis, 'The process of industrialisation in Greece: 1870-1970 (Orig. Title: Η διαδικασία εκβιομηχάνισης στην Ελλάδα : 1870-1970)', 29.

⁷Kefalas, Antonis P. *Πτυχές εκβιομηχάνισης 1945-2010 - Μια ιστορία (transl. Aspects of industrialisation 1945-2010 - A story*. Athens: I. Sideris, 2019.

than 50% during WWII and consequently half of the industrial sector closed down.

In the post war period Europe, and Greece, received financial aid (the Marshall plan) from the United Nations and the USA to reconstruct and rebuild after the destruction of WWII. Germany, for example, managed to establish very quickly more than 200 industries which supported the rest of Europe (including Greece) with construction materials. The third industrial phase of Greece started after the war and ended in 1973 with the end of the Greek military Junta (1967-1974). During this third wave of industrialisation in Greece, the government focused for the first time on making a strategic plan to support the industrial sector. Heavy industries, such as chemicals, steel and petroleum, were established and grew with time. Some of the most important included: an oil refinery in Aspropyrgos, Athens (1958), the elastics factory of Pirelli in Patras (1959), the telecommunication factory of Phillips (1961), nitrogenous fertilisers in Ptolemaida (1960), the aluminium industries of Leyman and Pechiney in Delphi and many more.

With the end of the Junta (July 1974), the Greek industrial sector stopped developing and it either remained stable or declined. De-industrialisation had officially started. In comparison to the rest of Europe, Greece experienced fragmented⁹ industrial development which suffered from many discontinuities and some destruction. European industry, with its progressive and constant development, created an industrial culture which expanded over a period of 200 years. In contrast, Greece's industrial culture developed sporadically and concluded after 60 fragmented years (8 years in phase one, 16 years in phase two, 36 years in phase three). Due to the constant changes in its political situation, the country did not manage to sustain a continuous economic, social, political, and industrial development.

During the third wave, Greece experienced a chaotic expansion of its industrial activity. Industries were located around urban centres due to the proximity to roads, trains and harbours. As a result, big city centres, such as Athens, Patras and Thessaloniki, expanded and encompassed the factories. This symbiosis did not prove to be beneficial for either of the parties. Factories did not have the space to expand their activities and the cities suffered from air and noise pollution. This conflict resulted in a deterioration of the quality of life in those districts and in a limitation of the economic prosperity of the industries. A prime example of such a case is Elaionas in the west of the city centre of Athens. The industrial activity of Elaionas dates back to the 18th century and until the middle of the 20th century it was diverse and profitable. In the 1990s the factories were employing 40,000 workers in around 9,000 facilities¹⁰. Due

⁸It is worth mentioning that in the rest of Europe, industrialisation continued developing right after the end of WWII. In Greece though, the development had to wait for at least 7 more years due to the civil war.

⁹Greek industrial development was not continuous but happened rather in stages and with big pauses in between them.

¹⁰Σαπουντζάκη, Καλλιόπη. 'Ο Ελαιώνας της Αθήνας', 2010 2008. <http://www.greekscapes.gr/index.php/2010-01-21-16-47-29/landscapescat/34-attica/100-elaionas-athina>. (Visited on 08.05.2022).

to the fact that the area was not zoned until 1991, most of the factories were illegally located and eventually had to close or resettle outside of the city limits. Nowadays, the remaining factories are barely surviving and their industrial activity has either changed to communications and transportations or they have closed if they could not transfer their activities to legal industrial zones. The urban area around Elaionas is deteriorating and has been waiting for social and economic development for years. Elaionas is only one example of the conflicted relation between cities and industries in Greece, but the consequences are paradigmatic.

Greek industrial activity became more organised around 1965 (see Figure 1), when the first attempt was made to create concentrated areas of industries located outside the city centres, the so-called industrial zones. The company of Greek Industrial Zones (*BIIE*) has established 27 industrial areas¹¹ (see Figure 2). According to the calculations in 2006¹², 429 factories have been recorded as occupying 24,321 ha. The largest industrial centre is situated in central Macedonia (Greece) with 8,593 ha, and that of Attiki in central Greece follows with 4,500 ha. There are more industries scattered around Greece, but they do not belong to the organised industrial zones (see Figure 3). Some of them are still located outside the industrial zoned areas. The lack of strategic planning of the location of factories is the beginning of the chaotic expansion of the sector and one of the main reasons why it is difficult to establish a common strategic plan for the landscape transformation after they close.

¹¹‘ETVA VIPE Homepage | ETBA ΒΙ.Π.Ε.’ <https://www.etvavipe.gr/> (visited on 28.05.2022).

¹²Πιπεροπούλου, Χαριτώ, Σύνθια Σταθάκη, Γεώργιος Δρόσος, Ουρανία Πάνου/Διμαντή, and Ειρήνη Βοττέα. ‘ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΣΧΕΔΙΟ ΓΙΑ ΤΗΝ ΑΝΑΠΤΥΞΗ ΕΠΙΧΕΙΡΗΜΑΤΙΚΩΝ ΠΑΡΚΩΝ ΣΤΗΝ ΕΛΛΗΝΙΚΗ ΕΠΙΚΡΑΤΕΙΑ, ΣΥΜΦΩΝΑ ΜΕ ΤΟ ΑΡΘΡΟ 42 ΠΑΡ. 3 ΤΟΥ Ν.3982/2011’. Σύνοψη/Συμπεράσματα. n.n.: Υπουργείο Ανάπτυξης και Ανταγωνιστικότητας. Γενική Γραμματεία Βιομηχανίας (Γ.Γ.Β.), 2018, 17-19.

Figure 1. *Distribution of Industries in 1960*

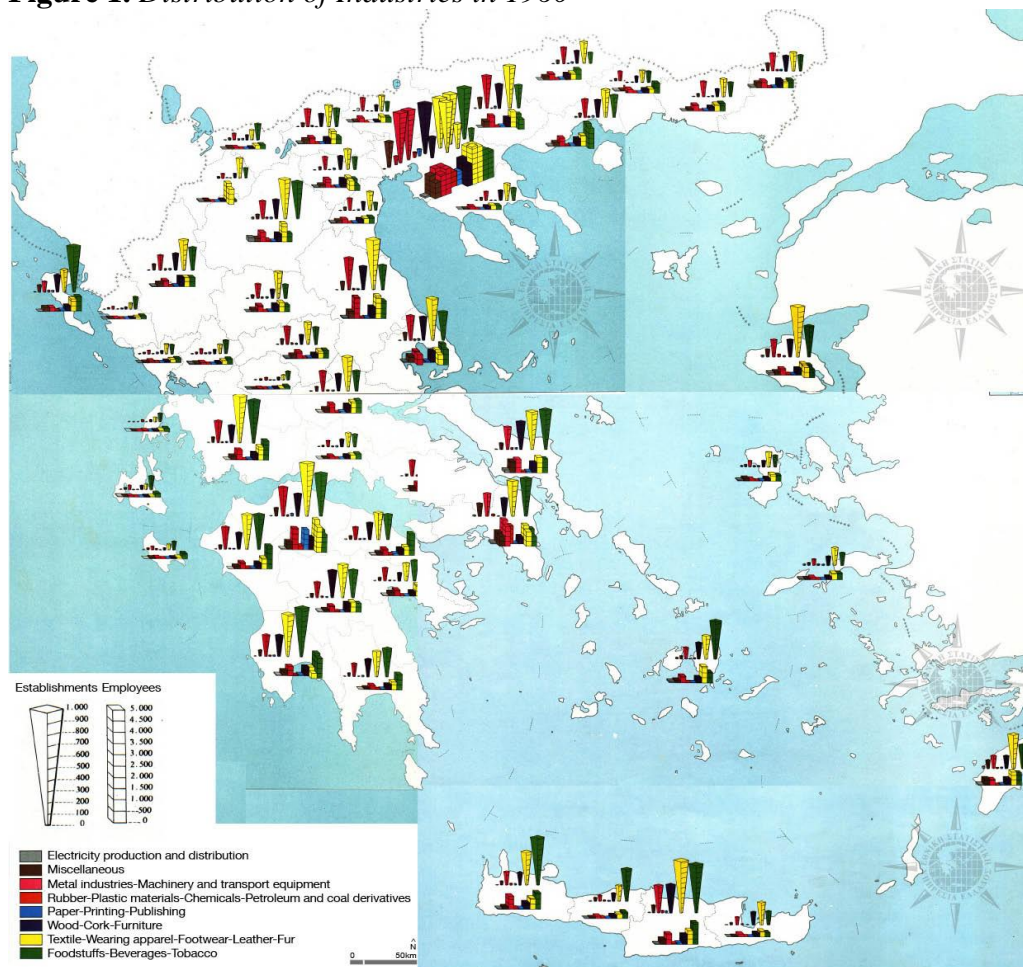


Figure 2. 27 Greek Industrial Zones (BIΠΕ): 1 IZ Orestiada, 2 IZ Alexandroupoli, 3 IZ Sapes, 4 IZ Komotini, 5 IZ Xanthi, 6 IZ Kavala, 7 IZ Drama, 8 IZ Serres, 9 IZ Kilkis, 10 IZ Thessaloniki, 11 IZ Edessa, 12 IZ Florina, 13 IZ Kastoria, 14 IZ Ioannina, 15 IZ Larissa, 16 IZ Karditsa, 17 IZ VIOPA Volou, 18 IZ Volos A', 19 IZ Volos B', 20 IZ Preveza, 21 IZ Lamia, 22 IZ Amfissa, 23 IZ Patras, 24 IZ Tripoli, 25 IZ Meligalas, 26 IZ Kalamata, 27 IZ Heraklion

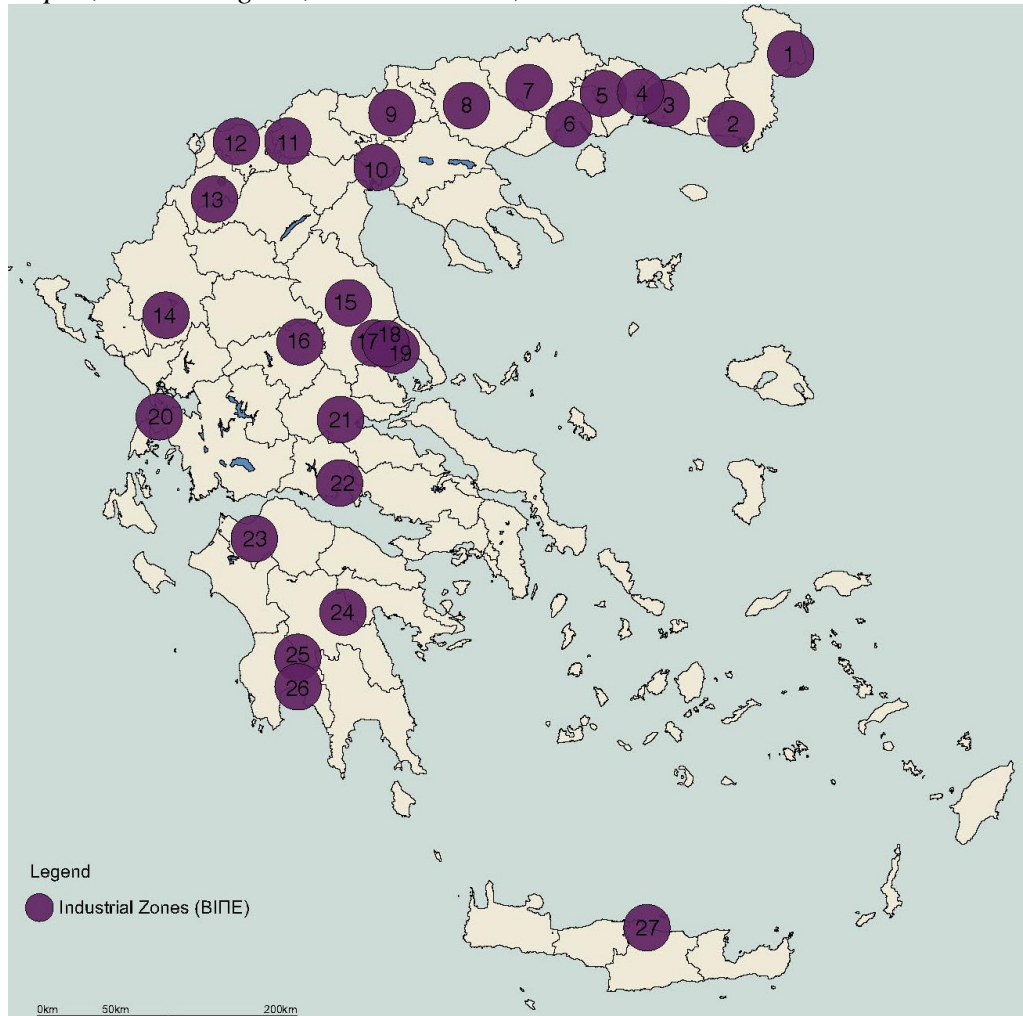


Figure 3. *Distribution of Greek Industries in 2022*



Greece is in a constant race, trying to catch-up with the rest of European industrial development, but too often it lags behind¹³. As Axelos¹⁴ prophetically noted in 1954, if the Greek state continues to lag behind, it will be always referred to as *“the poor relative who will be visited once in a while by its rich relatives in order for them to experience the rustic way of life”*¹⁵. He also claimed that Greece (meaning after WWII) lacks modern traditions and that

¹³Kefalas, *Πτυχές εκβιομηχάνισης 1945-2010 - Μια ιστορία* (transl. *Aspects of industrialisation 1945-2010 - A story*), 50.

¹⁴Axelos, Kostas. *Η μοίρα της Σύγχρονης Ελλάδας* (Transl.: *The fate of modern Greece*). Translated by Katerina Daskalaki. Nefeli, 2010.

¹⁵Original text: “Να ζήσουν σαν φτωχοί συγγενείς τους οποίους από καιρό σε καιρό έρχονται να επισκεφθούν οι πλούσιοι συγγενείς, για να γευτούν τη χάρη της γραφικής τους ζωής.”

Greeks are not critical thinkers. They often take European seeds of knowledge but they do not always manage to cultivate them, so they do not grow roots, trunks, and branches¹⁶. The sharp, critical words of Axelos at that time described the post WWII situation of Greece and carefully warned the government that it should focus on understanding its problems, recognising and appreciating its traditions, its historical origins, and political and social structures in order to secure a prosperous development.

Greece did not become a strong industrial Mediterranean power for a number of reasons. These include political failures (such as wars, corrupt internal politics, the failure of the Greek state to actively support industry), social, and cultural discontinuities (such as the negativity towards industry, and the uncontrolled expansion and shrinkage of the industrial sector). Despite the short industrial history of Greece though, the post-industrial challenges are equally important to those of the rest of Europe and need to be addressed. Since Greece missed the opportunity to take part in the European industrial revolution, the country now needs a new revolution¹⁷. This change should not only be a spiritual one, as Kefalas wrote, Greece also needs a cultural and landscape revolution. Greece has been complacent about what has been achieved in the past (Greek's ancient spiritual heritage, the independence from the Turks and Italians etc.) and does not seem to have the urge and will to develop in the future. The society should see the benefits of the past (industrialisation) and recognise and face the challenges of the future (post-industrialisation). Post-industrial landscapes can strengthen the weak connection between the past, the present, and the future if they are designed strategically.

The Term of 'Industrial Landscape' in the Greek Laws

Although Greek industrialisation was of short duration in comparison to other European countries, it intensively affected the country's economy, ecology, culture, and landscape. Does the Greek state acknowledge the existence of its industrial heritage? Are these industrial and post-industrial landscapes protected by law or are they ignored? In the following, the relation between industrial heritage and Greek laws is examined.

In the revision of the Greek constitution in 2008, article 24¹⁸ declares that the state is responsible for the protection of natural and cultural environments.

¹⁶Axelos, *Η μοίρα της Σύγχρονης Ελλάδας* (Transl.: *The fate of modern Greece*), 18.

¹⁷Kefalas, *Πτυχές εκβιομηχάνισης 1945-2010 - Μια ιστορία* (transl. *Aspects of industrialisation 1945-2010 - A story*).

¹⁸Βουλή των Ελλήνων. 'Άρθρο 24: Προστασία του περιβάλλοντος (Chapter 24: Protection of the environment)'. In *Συνταγμα της Ελλάδας. Όπως αναθεωρήθηκε με το Ψήφισμα της 27ης Μαΐου 2008 της Η' Αναθεωρητικής Βουλής των Ελλήνων* (Greek Constitution. As it was revised by the vote of 27th May 2008 of the revised Greek Parliament), 39–40. Athina: Vouli ton Ellinon, 2008.

The Law N.3028/2002¹⁹ ‘*For the protection of antiquities and cultural heritage*’ claims that the cultural environment is evidence of human existence and of individual and collective activity. In the same law under article 2, industrial areas can also be defined as historical areas, and in article 6 cultural goods which are less than 100 years old can also be industrial in nature. Consequently, the state calls directly for the protection of cultural, historical, archaeological, and highly valuable ecological sites. However, only in an indirect way can one argue that the law sees industrial landscapes through the lenses of archaeology and culture and proposes their protection. There is no official definition or Greek law that specifically refers to industrial landscapes per se nor their importance in culture or calls for their protection.

Since these industrial landscapes are not concretely defined, the country treats them in a non-sustainable way, which leads to their exploitation, according to Zacharopoulou²⁰. She argues that historical discontinuities have occurred due to incorrect use, re-use, and abandonment of industrial areas. Some discontinuities can be so stark that the historical sequence of the development of the industrial landscape can no longer be read. Because industrial landscapes are not protected, Greek law allows for inappropriate and impulsive uses and re-uses of these sites. As a result, their constant misuse will eventually lead to the permanent loss of their historical identity as well as their economic and cultural value, which will threaten their historical and future existence.

Generally, industrial landscapes have been defined in many ways in the academic world. Some scholars have described them as cultural landscapes which have been altered by a human activity²¹, that of industry²². Industrial landscapes have been categorised as archaeological sites, due to the nature and time span of their activity, and the archaeological evidence (old machines, historical buildings, ruins and more). Although it seems easy to understand industrial landscapes as those home to industrial activity, their precise identification is much more complex. As Stuart specified, it is difficult to find a general and universal methodology to identify these landscape types. This difficulty also lies in the fact that the phrase contains the word ‘landscape’ which is complex on its own and has been defined very differently. The industrial heritage of these landscape types though is unquestionable and is

¹⁹Minister of Greece. ‘Νόμος 3028/2002 - ΦΕΚ Α-153/28-6-2002 (Κωδικοποιημένος)’. *e-nomothesia.gr* / *Τράπεζα Πληροφοριών Νομοθεσίας*, no. 153 (2002): 28. <https://www.e-nomothesia.gr/kat-arxaiotites/n-3028-2002.html> (visited on 05.04.2022).

²⁰Zacharopoulou, *The Industrial Landscape as a Cultural Value. Historic (Dis)Continuities and Modern Interdisciplinary Approaches*. *Το Βιομηχανικό Τοπίο Ως Πολιτιστικό Αγαθό. Ιστορικές (α)Συνέχειες Και Σύγχρονες Διεπιστημονικές Προσεγγίσεις*.

²¹Stuart, Iain. ‘Identifying Industrial Landscapes’. In *Industrial Heritage Re-Tooled: The TICCIH Guide to Industrial Heritage Conservation*, 30 November 2012. https://www.academia.edu/2205125/Identifying_Industrial_Landscapes.

²²Definition of the word industry as it is given by the Britannica Encyclopaedia: “**industry**, group of productive enterprises or organizations that produce or supply goods, services, or sources of income. In economics, industries are generally classified as primary, secondary, tertiary, and quaternary; secondary industries are further classified as heavy and light.”, <https://www.britannica.com/technology/industry> (visited on 05.04.2022).

officially defined by the international charter of ICOMOS, published in 2003²³. This charter provides the following definition of industrial heritage

“Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.”

Landscapes of industrial heritage are important landmarks in the history of humanity and they have to be recorded before any change can be made to them.

In conclusion, the Greek state is still in the process of defining and recording industrial landscapes. At the moment these landscapes are indirectly placed under the protection of cultural and archaeological sites, which is not a wrong way to proceed. However, these landscapes have gained great importance since Greece entered the post-industrial era and they need to be acknowledged separately and in accordance with international charters and laws in order to secure their economic, ecological and social value.

Temporality of Landscape: The Definition of Landscape in Greece

Landscape is a complicated term. Many theorists, scientists, sociologists, geographers, and other researchers have attempted to define what landscape is. Each person and each discipline has a different understanding of what landscape is because it is inextricably linked to culture, social environment, language, and history, giving it a polysemic nature. J.B. Jackson claimed that

“A landscape is not a natural feature of the environment but a synthetic space, a man-made system of spaces superimposed on the face of the land, functioning and evolving not according to natural laws but to serve a community – for the collective character of the landscape is one thing that all generations and all points of view have agreed upon. A landscape is thus a space deliberately created to speed up or slow down the process of nature.”²⁴. Alternatively, the European Landscape Convention defined “Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.²⁵

²³ICOMOS, and TICCIH. ‘The Nizhny Tagil Charter for the Industrial Heritage’, 2003, 2. <https://ticcih.org/about/charter/> (visited on 05.04.2022).

²⁴Jackson, John Brinckerhoff. *Discovering the Vernacular Landscape*. Yale University Press, 1984, 8.

²⁵Council of Europe, ‘Council of Europe Landscape Convention as Amended by the 2016 Protocol’ (Florence, 2000), <https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treaty-num=176> (visited on 15.05.2022).

Both definitions are well established and widely used among researchers to define the landscape.

Landscape is not only defined differently among researchers, but its meaning also changes from country to country. Each civilisation understands and perceives the landscape in its own way and some civilisations do not even have a one-word definition but rather expressions. For Greece, landscape is translated as *τοπίο* (topio). The etymology of the word derives from the noun '*topos*' which means place. Consequently, landscape for Greeks is mostly linked to the earth they walk on; their memories of the land where they grew up; to the place where they feel, dream, smell, see, and touch. Greek academics, however, typically use the definition of the European Landscape Convention. Since Greeks understand landscape mostly linked to their memories, their birth place, and their experiences, the fact that different generations are living, acting, and changing the landscape is evidence that each specific *topos* has many landscape definitions, depending on the person asked to define it. Consequently, the understanding and definition of landscape is linked to the concept of temporality.

The landscape is an active element of a complex system, the world. It is inextricably related to culture and to natural processes, but it does not only set the scene for these processes to occur. Landscape is part of these processes and it is itself a process. Therefore, it is necessary to question what landscape *does* rather than what it *is*. The landscape is, therefore, temporal²⁶. Dwellers (all actors of the world) are active on the landscape and constantly change it over the course of time. The landscape that humans (as one group of dwellers) experience today represents only a glimpse of this process. The results of these activities and tasks may be visible immediately, but they might also be visible in time. For as long as dwellers are acting and producing sounds, the landscape will be under construction. Our world consists of sounds, which form the "*taskscape*" (activities) and the dwellers (all actors) which make these sounds are the landscape. All movements, sounds and actors are interacting with each other and generally the whole world is in constant movement and interaction. Landscape, according to Ingold, is a nexus of all interactions, movements, ruins, left-overs, tasks of all the dwellers that passed by in the world²⁷.

The First Attempt of Post-Industrial Transformation in Athens, Greece

Having approached the definition of landscape, the meaning of the word combination industrial landscape is now better understandable. This type of landscape would define all the activities and tasks that were needed to create, develop and shrink an industry. To explain though how the Greek state understands this complex term, we will focus on one of the first cases of post-industrial transformation in Athens, the Gasworks 'Gazi' and observe how the state took decisions about its re-use and future. Through this example the

²⁶Ingold, Tim. 'The Temporality of the Landscape'. *World Archaeology* 25, no. 2 (1993): 152-174.

²⁷Ingold, 'The Temporality of the Landscape', 152-174.

attitude and insecurity of the Greek state towards industrial landscapes will become clear.

The Gaswork factory in the centre of Athens is part of a larger industrial development along the Peiraeus Street which leads to the main harbour of Greece, Peiraeus. Along this axis, Athens developed some of its first industries.

The area around Gazi was poor and was constantly deteriorating, so when in 1984²⁸ Gazi closed, the state was asked to deal with this brownfield and its surrounding neighbourhood. In the 1990's the transformation of Gazi started and the goal was to eliminate the industrial negativity, which was strong due to the character and ambiance of the area around it, and embrace a new, more artistic character. Athens began to undergo gentrification at the beginning of the 21st century. The ideas behind Gazi's transformation were innovative at that time and focused on promoting Greek culture through art and making the area accessible to everyone. The problem though was that the planning was done only with ephemeral cultural activities and there was no long-lasting and sustainable perspective. As a result, the area of Gazi was once more abandoned shortly after its artistic transformation in 2001. Only after the implementation of a new regulatory plan for the city of Athens (2006) which connected the area of Gazi with the surrounding historical neighbourhoods (such as Keramikos) did Gazi become a promising neighbourhood to live in and begin to evolve economically, socially and culturally.

This example shows that once the state had to act fast and methodically, it reacted with typical solutions, such as cultural and artistic developments, but without analysing and testing if this is what the area needed. Only after the new regulatory plan of 2006, when the area was analysed as a whole, together with its attached neighbourhoods and uses, was the transformation effective. Monovalent and inflexible solutions for the transformation of post-industrial sites are often not the right tool. A brownfield transformation can only be effective if it is regarded as one landscape and not as fragmented realities. The temporality of planning and the constant change of political, cultural, economic, and social situations must be taken into consideration. These edge-lands ask for personalised, site-specific, specialised and sustainable solutions which respond to current problematics, such as a lack of open and public spaces in the cities, condensed city plans, lack of solutions countering climate change and high temperatures, lack of shade, lack of places to meet safely and interact. Planners cannot deliver a finished project, but they should be ready to propose a process with a stable structure and maximal flexibility.

Greek industrial landscapes have not yet been defined through the current state laws and there is no strategic planning to steer their future development and landscape transformation. They can be called archaeological sites, heritage sites, monuments or landscapes of high ecological value but their industrial identity is not yet linked to their landscape identity. Not having a clear

²⁸City of Athens and Industrial Gas Museum, 'HISTORY GAS FACTORY ATHENS | HISTORY INDUSTRIAL GAS MUSEUM | TECHNOLIS CITY OF ATHENS | <https://gasmuseum.gr/>', 11 April 2022, <https://gasmuseum.gr/index.php/en/the-museum/history-of-industrial-gas-museum> (visited on 15.05.2022).

definition is not always a problem; it can also be an advantage. These landscape types can be adapted, their meaning can be changed and transformed. Post-industrial landscapes represent important parts of our society, history and culture. Their sustainable development has already been discussed at the academic level²⁹ and the issue of their insufficient re-use has been reported. Planners and politicians have been aware of the problem for a while, but solutions are yet to be found, which will mobilise new ways of acting, reacting, visualising and constructing.

Post-Industrial Landscapes: Ugly Scar or a Beautiful Mark?

Having briefly reviewed the history of Greek industrialisation and de-industrialisation and specified the lenses through which landscapes can be seen, I will now analyse other international examples of post-industrial landscape transformation and study their cultural, social, ecological, economic, and landscape characteristics. Some of the major examples of post-industrial transformations can be found in Europe and the US. Germany recovered quickly from the disastrous events of World War II and soon became one of the leading forces in the industrial sector. As a consequence, though, it was also one of the first European countries to face environmental and ecological problems. In the mid-1970s³⁰, due to the overproduction of steel and the closing of furnaces, one of the most prosperous industrial districts of northern Germany, the Ruhr area, closed its factories and the need for a transformation was evident.

The Ruhr area in Germany was one of the largest industrial areas in Europe, with coal mines and the steel industry. It is bordered by the Ruhr river to the south, the Lippe river to the north and the Rhein river to the west. In both world wars, the Ruhr district was one of the main targets of bombing and consequently suffered major destruction. After WWII, the USA's support through the Marshall Plan helped to reconstruct the industries and the Ruhr district restarted its engines as early as the 1950s. From the mid-1950s on, coal mining was in a crisis due to overproduction, international competition, and the emergence of new energy sources such as gas and oil. In the 1970s, most coal mines closed and the market was economically affected by the oil crisis. More than 50% of the industries closed³¹ and the fall of the Ruhr-Giant was evident and unavoidable.

The landscape park of Duisburg-Nord in the Ruhr district is a product of the international building exhibition (IBA= Internationale Bauausstellung)

²⁹Zacharopoulou, Georgia. *The Industrial Landscape as a Cultural Value. Historic (Dis)Continuities and Modern Interdisciplinary Approaches. Το Βιομηχανικό Τοπίο Ως Πολιτιστικό Αγαθό. Ιστορικές (α)Συνέχειες Και Σύγχρονες Διεπιστημονικές Προσεγγίσεις.*, 2014. <https://doi.org/10.13140/2.1.1065.6324>.

³⁰Duisburg Kontron Hallenmanagement GmbH. 'Closure//Background Knowledge|Landschaftspark Duisburg-Nord', <https://www.landschaftspark.de/en/background-knowledge/closure/> (visited on 24.05.2022).

³¹Storm, Anna. *Post-Industrial Landscape Scars*. New York: Springer, 2014, 104-105.

which was set up along the polluted Emscher river. The purpose of the IBA was to transform the wastelands along the river and promote urban, social, economic, and ecological development as well as to remediate the river itself and promote the concept of industrial nature and heritage. More than 8,000 hectares of the Ruhr district were abandoned for more than a decade, and the beginning of the 1990s with the IBA initiative the transformation finally began.

Under the IBA initiative an expert evaluation procedure was launched for the industrial area of Duisburg-Nord and the office of Peter Latz won a bid to design a landscape park. Their proposal gave a new vision for the area and focused on transforming it into a park, hence the name 'Landscape Park Duisburg-Nord'. The park provided free access to all its industrial elements, which had not previously been possible. With this gesture they received a positive reaction from the citizens and their acceptance of the project. By encouraging visitors to climb on the blast furnaces of the former ironworks, a different view of the area was revealed and the landscape office showed that the former 'industrial monster' had been tamed and was ready to be culturally, socially and ecologically integrated into everyday life.

One big advantage of their proposal was the use of the existing overgrown vegetation. They preserved the traces of time and heritage on the landscape, and used them as tools to transform it. They recognised the natural processes that had already taken place and enhanced them with their design. The experiences that they created through making industrial infrastructures available for leisure activities, taking advantage of the heights to see the broader landscape, and allowing vegetation to grow in contaminated areas, were some of the office's ways of engaging with the heritage and culture of the place, maintaining its industrial character, and reversing its previously negative image.

Through their design, the industrial landscape park is always open to multiple interpretations. It is an open project³², according to the definition given by Umberto Eco. By letting vegetation grow with little or no maintenance, even people who visit the park twice can discover something new; they will find a new plant, a new colour, a new smell. Nowadays, the Landscape Park Duisburg-Nord is mostly appreciated as a place to walk, to have a picnic, to enjoy a day excursion and so on, but the traces of the past are visible to those who look closely. The history of this park has not been erased; it is still there to be read through the appropriate lenses of interpretation.

Latz and his office did not attempt to freeze time³³ in their post-industrial park Duisburg-Nord. They did not choose to capture an instant historical moment from the industrial past; instead they recognised the industrial wound and converted it into something positive. They created a new togetherness with all the industrial elements which suddenly were given a second life. They staged the industrial ruins and integrated them into the landscape processes.

³²Eco, Umberto. *The Open Work*. Harvard University Press, 1989, 90.

³³Thorbjörn, Andersson. 'The Good, the Bad and the Ugly'. In *Learning from Duisburg-Nord*, First edition, 14-16. Munich: Chair of Landscape Architecture and Industrial Landscape, Faculty of Architecture, Technical University of Munich, 2009.

Ruins offer the freedom of interpretation and they represent the idea of an unfinished and open project. They are an authentic view from the past to the future and an important symbol of the temporality of landscape. Like landscape, they are not stable in form, shape, or sound: they will constantly form a part of the landscape.

The Landscape Park of Duisbourg-Nord might be one of the best-known examples in the world, but it marked only the beginning for such transformations. Almost 10 years later in 2001, the Fresh Kills landfill in Staten Island closed. Fresh Kills had been up to that point the largest landfill of garbage in the world and covered almost 900 hectares. After its closure, a competition was launched for its transformation and was won by the office James Corner Field Operations. Freshkills³⁴ was not home to productive industrial activity as Duisburg-Nord had been, but it served to collect all the products of industrial activities. It was used for more than 45 years and received about 10 million tonnes of garbage and debris³⁵ annually which led to tall mountains of ruins, some of them more than 100 metres tall.

The winning office was assigned the mission to design a public eco-park over the course of thirty years by using sustainable energy infrastructures. These infrastructures could include solar panels and biogas collectors (such as methane from decomposing garbage), wind turbines and others to be used in the future for the heating and cooling of more than 22,000 neighbouring houses. The goal of the project was and still is threefold. The first task of the planners was to remediate the area and generate healthy, unpolluted soil for future use. Another one was to counter the ecological disaster which was a result of more than 45 years of contamination and to focus on the production of bio-energy. Finally, one of the most important tasks was to landscape the park in such a way that in the future it would strengthen the New York coast line and protect it from severe weather phenomena (such as the Hurricane Sandy in 2012). Freshkills Park is a highly engineered and landscaped project designed to tackle the many challenges of our times.

Freshkills Park's landscape design also includes the methodology used for the Landscape Park Duisburg-Nord for waste-lands. The methodology is based on the concept of "lifescape"³⁶ which aims to remediate polluted land and restore the ecology and biodiversity of the site's ecosystems as well as to stimulate visitors' imagination. This is a flexible strategy which will slowly transform the landfill into a public park and clean it up. Employing renewable energy strategies, educating people on ecological processes, implementing air, wind and vegetation technologies, stimulating new forms of interaction between humans and non-humans, and creating alternative ways of understanding and perceiving the passage of time are some of the goals the State and City of New

³⁴The landfill changed its name to "Freshkills" after its closure. Previously it was called Fresh Kills, where "Kills" stands for stream.

³⁵Lippard, Lucy R. 'New York Comes Clean: The Controversial Story of the Fresh Kills Dumpsite'. *The Guardian*, 28 October 2016, sec. Cities. <https://www.theguardian.com/cities/2016/oct/28/new-york-comes-clean-fresh-kills-staten-island-notorious-dumpsite> (visited on 07.05.2022).

³⁶Field Operations, 'Fresh Kills Park: Draft Master Plan', 6.

York hope to accomplish with the completion of the project. Living in the era of densification and mass construction, the fact that the landfill operations occupy 45% of the Staten island, contributes to protecting the area from building activities and urban sprawl. The other 55%³⁷ of the land is covered by wetlands, creeks, meadows and other highly ecologically valuable spaces. The landscape design of the park is intended to further protect the natural habitat and ecology through engineered ecological reclamation.

A comparison of these two brownfield transformations highlights many valuable outcomes for the strategic development of wastelands as systems. Both projects respond to the demands of the site by analysing and designing the landscape and its processes. Industrial nature and lifescape are two methods of transforming an industrial site by using the existing landscape elements and allowing them to develop on their own. The fact that these two brownfields are not similar and do not have the same industrial use did not influence the general landscape strategy for their transformation. Duisburg-Nord was an active coal and steel production plant where big machines occupied a significant part of its architectural language and horizon. In contrast, in the landfill Fresh Kills all of these industrial products formed large and tall mounds which changed the topography of the island. In both cases the modelling of the topography was a key design element and transformed the future image of the sites. The spontaneous vegetation was valued in both cases and was nurtured. The key element for both transformations seems to have been the fact that the planners read the landscape through lenses of temporality as a system and process. Finally, both designs enhance the social, ecological and economic features of the sites and their surroundings in order to better integrate them into people's everyday lives and imaginations.

Emerging Greek Brownfields

The industrial history of Greece is gradually becoming visible to the general public. The results of de-industrialisation though have not yet been thoroughly investigated and the country is slowly reaching a point where it will have a large amount of unused land. Greek industrial sites were usually built close to urban centres and nowadays are part of the urban network. The landscape characteristics and the potential uses of wastelands, located in the urban landscape, need to be examined as a system and not as individual isolated cases. A systematic analysis of their cultural, social, ecological, economic and landscape features is needed in order for planners to act.

Industrial and post-industrial landscapes are scattered across the Greek landscape. The first industrial zones were constructed around big cities and harbours, like Athens, Patras, Thessaloniki and Korinthos but nowadays many of these areas are threatened with closing. The most recent brownfield is Chalyvourgiki, which is located in Elefsina on the west coast of Athens. The

³⁷Field Operations, 'Fresh Kills Park: Draft Master Plan', 8.

most significant Greek steel factory shut its doors in 2019 and since then there have been many scenarios for its future. One scenario is that the National Bank of Greece will buy Chalyvourgiki as an investment, and another is that the brownfield will be renovated and transformed for another type of industry. Yet another scenario is to close the factory forever. The future of the 231 hectares remains speculative, and the factory is untouched and unused. According to the Greek newspaper 'Kathimerini'³⁸ the steel industry had unofficially closed in 2013, but it continued to operate at a slower pace without producing a sufficient amount of products and by obtaining loans to pay its workers. Recent economic estimates show that the company owes more than half a billion euros³⁹ to Greek banks and to the public electricity company (DEH). At the moment, the future of the industry depends on the Greek courts which is discussing whether to sell the industry or to keep it open but under other management. The future is unclear and the industrial 'Giant' has not yet been tamed which shows the complexity of the situation and the difficulty in taking such an important decision: to close the biggest steel industry of the country and find a suitable transformation strategy or to keep it open.

Pyrkal⁴⁰ (Industry of Hellenic Defensive Systems -ΕΑΣ-) is a similar case. In 2021 a new design was presented by the Ministry of Development and Investment, which proposed transforming the 35 hectares of Pyrkal (located in Dafni, a district of Athens) into a new public city-park that would also include nine ministerial buildings. Although the new proposal is not yet finalised, the design does not incorporate any landscape processes. If the government proceeds with this plan, important historical and landscape discontinuities will emerge. Pyrkal has a strategic position near the centre of Athens and its transformation is crucial for the future integration of this suburb into the Athenian urban network. The current planning fulfils some social, economic and ecological needs, such as combining green public spaces and public uses, but the connection to the past activity conducted on the site is not acknowledged and its full potential is unexplored. Preserving the industrial ruins is not always necessary, but when they are of high cultural importance, their future should be analysed by specialists in order to avoid erasing a part of the local history and culture. Moreover, the location of the brownfield is also important since Athens is in need of more green public spaces. The plan has already raised many questions regarding its effectiveness, and citizens have questioned whether it will create more problems, such as increased traffic, gentrification, and urban areas in the district. According to Ethnos⁴¹

³⁸Ηλίας Μπέλλος, 'Αδηλο το μέλλον της Χαλυβουργικής', Kathimerini, 24 December 2018, <https://www.kathimerini.gr/economy/business/1001591/adilo-to-mellon-tis-chalyvoyrgikis/> (visited on 07.05.2022).

³⁹Karas, Petros. 'Χαλυβουργική: Ποια ήταν και γιατί έκλεισε'. Protagon.gr, 2018. <https://www.protagon.gr/epikairotita/xalyvourgiki-poia-itan-kai-giati-ekleise-44341748712> (visited on 07.05.2022).

⁴⁰Pyrkal was the first Greek factory of explosives and played a leading role during the two world wars.

⁴¹Liliopoulou, Maria. Σφοδρές αντιδράσεις προκαλεί ο κυβερνητικό πάρκο στην ΠΥΡΚΑΛ (Strong reactions to the government park in PYRKAL). In Ethnos Newspaper. Athens. 2021. In

newspaper, there have already been many demonstrations against this design. This small ‘Giant’ has also not been tamed and its full potentials have not been explored.

Pyrkal and Chalyvourgiki are only two urban brownfields among many⁴² which are badly in need of economic, ecological, social, and landscape strategic planning. The demand for such transformations is increasing and the government must act quickly and targeted. There are several international precedents for such transformations which have applied various strategies to integrate them into the city network. These planning approaches (such as the industrial nature preservation and enhancement approach, the implementation of green energy strategies for the remediation of the ground, the holistic and systematic analysis of the brownfield and its territory to eventually integrate it into the modern way of life, and more) have to be studied and tested for their transferability to the Greek context. In order for this transfer to be successful, the brownfields must be assessed as a system and as part of the urban context by which they are surrounded. Greek cities are experiencing problems due to densification and brownfields can offer some solutions to these problems. City-industrial wastelands offer the opportunity to release the pressure from the city network and to offer new green lungs for it. The negative ambiance closed factories have in city centres will be resolved, once these waste lands become again a lively part of the urban landscape and heal the wounds created over the years. If these wounds are treated carefully and holistically, then they will eventually be transformed into beauty marks -scars⁴³- which will serve to remind us of the past and lead us to look towards the future with hope.

Transforming the Landscape Wound

Industries, as mentioned above, often have a negative connotation in the Greek context. A closed factory not only causes landscape disturbances to the society, but also negatively affects the social, economic and ecological processes. In addition, landscapes need to be recovered from their industrial past (for example by remediating polluted soil), and people who were working in or living next to it must be reacquainted with this new changed reality. Before the brownfield undergoes the healing process, the preparation of its social and landscape context is needed. As time passes, the industrial wound turns into a beauty mark which then symbolises the past and present changes of the landscape. This landscape beauty mark will always be an open portal between the past and the future.

<https://www.ethnos.gr/greece/article/153671/sfodresantidraseisprokaleitokybernhtikoparkosthnpyrkal> (visited on 13.03.2022).

⁴²Insider. ‘Κατεβάζουν ρολά οι βιομηχανίες στην Ελλάδα’. Accessed 13 January 2022. <https://www.insider.gr/epiheiriseis/104961/katebazoyrn-rola-oi-biomihanies-stin-ellada> (visited on 03.04.2022).

⁴³Storm, *Post-Industrial Landscape Scars*, 8.

The two aforementioned examples of brownfield transformations were briefly presented and strategies for confronting them were highlighted. Both examples focus on preserving some of the infrastructural characteristics of the industry, enhance industrial ecology and integrate modern cultural activities, which have direct economic and social impacts on society. Although it is often desirable to retain some or all elements of the industrial identity of a brownfield, some brownfields must undergo a drastic change. A thorough multifaceted analysis must be done before any change takes place in order to create an updated portrait of the region and its brownfields and to identify the main problems and challenges. The majority of the brownfield transformations presented in this paper have been designed to change in stages. Progressive change is a valuable design approach because it gives planners and stakeholders the opportunity to re-evaluate and reauthorize the initial design and eventually adapt it if necessary. The temporality of landscape will always be a protagonist in such transformations and should always be taken into account during planning. In the case of Greece, brownfields located in an urban context are of high importance since they represent a new location for social interaction, economic profit and ecological enhancement. Especially in Athens where densification, lack of green public spaces and of an effective transportation network, and pollution are among many problems that planners must confront, brownfields appear as *deus ex machina* offering solutions.

Future transformations should be planned to respect and incorporate the heritage and history of the place. This does not mean though that the industrial elements must be kept as a whole. A holistic and systematic analysis, and a multidisciplinary approach are needed to secure a sustainable future. Greece has an industrial past which has not been accorded the importance it deserves and consequently, its industrial heritage and future potential have further degraded. These existing and future terrain vagues offer a fertile ground to re-establish and regenerate the relationship between humans and nature, cities and surroundings, heritage and future strategic design. The Greek post-industrial landscapes must no longer remain hidden, and new strategies must be formulated to transform them.

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