

Recycling urban wastelands in Greek cities.

Challenges and opportunities

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Introduction

Urbanization and deindustrialization have shaped to a huge degree the way cities are functioning, expanding, and planned. Urban shrinkage is a phenomenon occurring in Europe and North America, being expressed by population decline and strongly related to economic, demographic, or settlement system

development as well as to environmental issues and changes in the political or administrative system (Haase, et al., 2014).

The emergence, of large-scale abandoned areas due to deindustrialization, in conjunction with society's interest in entertainment, the expression of ideas, culture, and education, turn the attention to the revitalization of degraded areas, which today constitute wastelands, empty areas of land, in or near a city, that are not built on, or used in any way. Among the authors that explore the theme,

This paper examines the regeneration process of wastelands in Greece by screening two of the most important regeneration projects that occurred in the country, i.e. the Technological and Cultural Park of Lavrio and the former airport of Hellinikon. After the 2009 economic crisis this has been a topic subjected to public discussion and resulted in new tools for their regeneration, so it is important to understand the procedures and pinpointing the partial results achieved. The inquiry evaluates in particular the role of the existing spatial planning framework, highlights the factors that define the processes and procedures of wastelands regeneration and their effectiveness to make these

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areas new sustainable zones in the urban tissue. The two case studies represent valuable examples of projects developed in different periods, with the application of a different legislative framework, being emblematic examples of the challenges and the difficulties that Greek regeneration projects in Greece usually face.

Koolhaas' 'Generic city' (1995) showed the potential of these areas to enable processes of regeneration and become new psychological spaces (Koolhaas, 1995). Successively, he considers urban voids as the human remnant, simulating it essentially with the human remains left as spaces that have fulfilled their existence purpose (Koolhaas, 2002). Additionally, he underlines that these empty spaces, as flexible areas, full of possibilities and ready to receive a new role.

The recent economic crisis experienced by many European cities leads to a gradual reuse and reintegration of wastelands into urban fabrics results (Pallagst, et al., 2022). Still, the disruptive changes in transport infrastructure systems (ports, railway stations, airports) as well as the displacement of the military and other nuisance uses in distant zones led to a different approach to the wasteland. The

changes in the center-periphery relationship contributed to the creation of socially, politically, and economically isolated urban areas. This fact led to the obsolescence of the industrial and residential stock while cities experienced shrinking economic base, racial and class ghettos, poverty, and crime (De Solà-Morales Rubiò, 1995).

The presence of empty, unproductive, undefined, without clear boundaries, empty areas is one of the most remarkable characteristics of modern cities. Abandonment in shrinking cities is challenging at all scales, from the building block to the whole city (Lopez-Pineiro, 2020). These spaces appear both inside and off the city's borders alongside its continuous development. Their meaning is a permanent state of suspension and often emerges "accidentally" in the occurrence of occasional events, so there is an urgent need to significant reconfigurations in the intermediate inner-city voids (large urban voids, withering industrial estates/transformations of old ports/railway stations and service hubs) (Berger, 2006).

The structure of the paper

The paper examines the Greek framework for wastelands regeneration with the use of two of the few big-scale projects occurring

The wholesale center in Rotterdam

Fig. 1

<https://www.sosbrutalism.org/cms/16339099>



in the country, i.e. the Technological and Cultural Park of Lavrio and the former airport of Hellinikon. The work describes the categories of wastelands and their diachronic regeneration policies by focusing on the Greek legislative framework. This examination and the comparison of two case studies show the factors that influence wasteland-based urban regeneration processes and the inefficiencies that have made these programs difficult to implement.

Literature review

Since the 1970s, most of European cities started to face huge transformations strictly tied to deindustrialization (Byrne, 2002). As cities were gradually shrinking, many sectors were converted into wastelands, such as railway stations and lines, airports, and industrial, commercial, or storage facilities. There are also cases of undeveloped plots of land which, which for various reasons, were never constructed creating a visual contrast with the surrounding built environment (Pronina, 2021). Urban transformation, thus, takes place in the form of different policies depending on the country for *“new life and vitality into an ailing community, industry and area bringing sustainable, long term improvements to local quality of life, including economic, social and environmental needs”* (Evans & Shaw, 2004, p. 5) in order to create attractive places for the new arising creative class that prefer to live in

areas close to their workplace (Florida, 2002). Urban transformation took place in three different forms from WW2 until today:

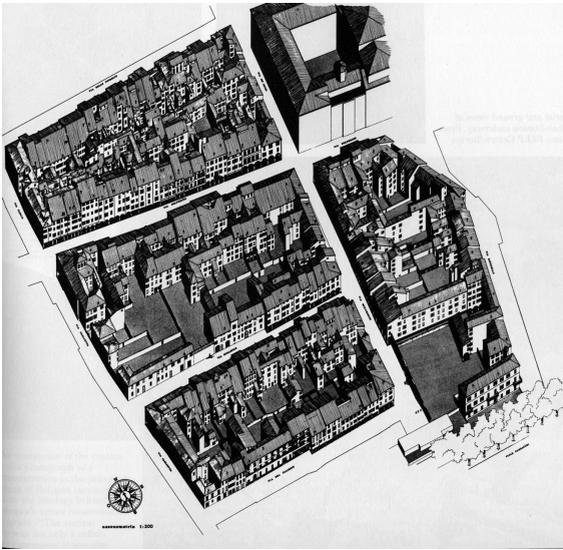
- Urban renewal and renovation interventions prevailed between the 1950s and 1970s and involved the radical demolition of the existing urban fabric and the successive reconstruction based on the principles of the modern movement, with the implementation of residential (labor) programs and social facilities (Gosselin , 1974). The increased urgent housing needs caused by the urbanization led to big scale and low aesthetics projects funded by public sources which in the next years led to gentrification issues due to the increase of land values of the regenerated areas (Economou , 2004).

A characteristic example of this period is the reconstruction of Rotterdam after the severe damages because of German attacks. In the next decades the city's center was reconstructed with large-scaled buildings inspired by modern architecture, such as the wholesale center (Fig. 1) implemented in 1953

Plan for Bologna: restoration of a model quarter

Fig. 2

<https://i.pinimg.com/originals/69/63/8b/69638bce9276b4bab2eae6e24844790a>



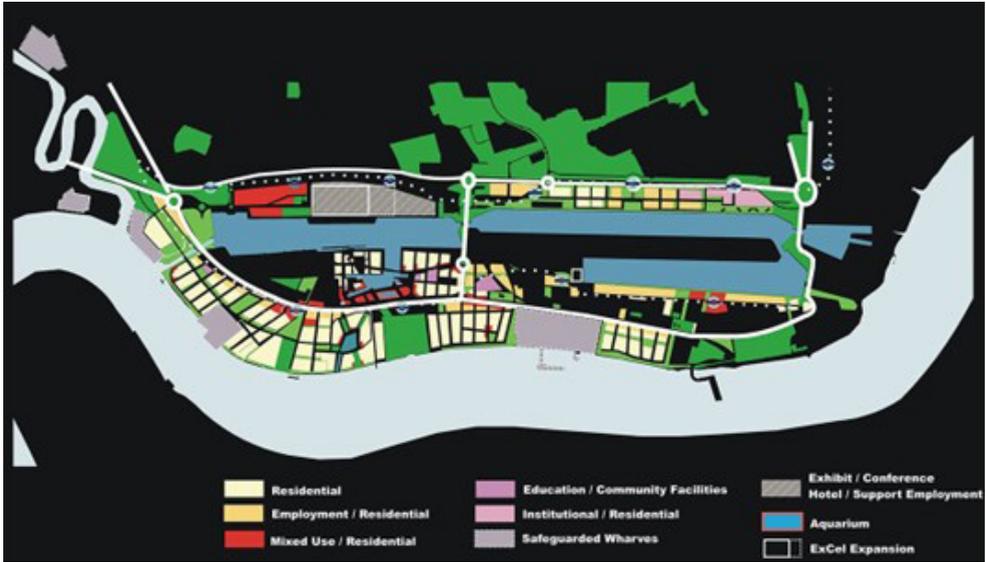
(Elser, et al., 2017).

Rehabilitation and requalification prevailed between the 1970s and 1980s and focused on selective replacement of the existing tissue or reconstructions with respect to the local morphological and typological characteristics. They mainly concerned degraded residential areas that were converted into commercial and business zones, with the improvement in public spaces through organized interventions and extensive beautification programs (Economou, 2000). The Pier-Luigi-Cervellati-designed Plan for Bologna in 1973 (Fig 2) is indicative of the trends of this period as it proposes small-scaled interventions with respect to the historic city's morphology and historic values (De Pieri & Scrivano, 2004). Interventions of urban regeneration and renewal occurring from the late 80s until today emphasized on the recovery of abandoned urban areas (e.g., old industrial areas, port and railway facilities, military lands, etc.) for the revival of the economic dimension of cities and their tertiarization with trade, recreation, and cultural activities. Despite the political,

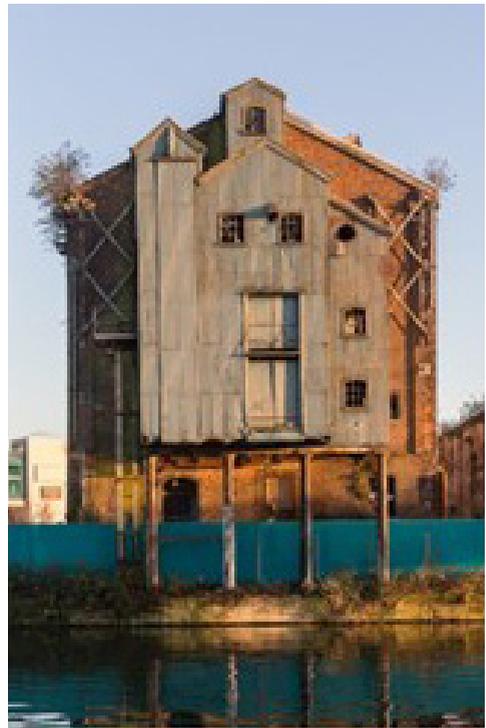
economic, or administrative differences of the European countries, the regeneration procedures follow similar objectives and have a parallel development (Rey, et al., 2022). In the wake of global and neoliberal urbanization policies during the 1980s, industrial heritage became the subject of culture-led regeneration projects (Pelín, 2012). A typical example is the regeneration program for London's Docklands for the creation of a multi-functional area (Fig. 3). After more than a decade from its beginning in 1981, the area hosted 75% of its previous residents and attracts many workers and visitors (Hobhouse, 1994).

The development strategy of wastelands implies upgrading the urban, environmental, economic, and social landscape. As wastelands are degraded areas, their new uses may improve urban environments and their cultural image. Wastelands regeneration must face spatial dilemmas such as the debate between city center and periphery and the risk of gentrification, consumption over production, and activities as events and festivals or infrastructures (Garzia, 2004), (Garcia, 2007). According to their location, wastelands can be classified in three categories following the classification of brownfields (Grimski & Ferber, 2001).

Wastelands in industrial areas (Fig.4) include the extensive abandoned pieces of land resulting from the bankruptcy or



the relocation of large industries. The real estate market in these areas was unable to cope with the problem and government intervention was deemed necessary (Jiang, et al., 2009). The first policies started in the early 1980s and included guidance and subsidies. Initially, programs were developed to favor the recycling and reuse mainly in the United Kingdom, France, and Germany (Economou , 2004). These programs were initially financed with regional, national and community funds and then with tax revenues (Chatzopoulou, et al., 1995). Due to the growing importance of the protection of open spaces and the environment, the complexity of the problem, the unskilled local government staff, special programs, and policies with more specialized and sectoral objectives have been added to the main policies (Aravantinos, 2007). Key goals of these programs have been economic development through business attraction and reuse of these zones for residential areas (Grimski & Ferber, 2001).



Warehouses of Gloucester Historic Docks

Fig. 4

<https://blog.quintinlake.com/2015/01/18/warehouses-of-gloucester-historic-docks>



South Bronx as an urban wasteland in 1970s

Fig. 5

<https://www.bloomberg.com/news/articles/2017-02-17/a-cultural-history-of-wastelands>

Wastelands in metropolitan areas (Fig.5) refer to land resulting from the displacement of secondary sector activities from the centers of large cities to their fringes, as well as to large, abandoned transport infrastructures (ports, airports, and railways). Europe's metropolitan areas have experienced a dynamic real estate market activity, with significant relocation of industry in distant from the city zones. The strategies followed focused mainly on the application of large-scale interventions in the form of flagship projects (Southworth, 2001). Wastelands in rural areas (Fig.6) refer to small-scale abandoned manufacturing units that processed products of the primary sector. The necessity of developing programs in these areas is underestimated both at regional and national level (Grinski & Ferber, 2001). Under these conditions rural areas remain inactive and declining (European Commission, 2008). In most wastelands' transformation programs, the role of public consultation is a very important process to avoid social exclusions and achieve public consent. According to each area's spatial and social characteristics

different policies and strategies must be applied. The main issue for the recovery of these spaces is the relationship between place and time.

Wastelands regeneration in Greece- a brief history.

The term "urban regeneration" first appeared in Greece around the 1970s due to the social interest in environmental upgrading (Aravantinos, 2007). Until then, the transformation of the built environment was at a very early stage and the lack of experience was a typical problem in the implementation of these programs. The transformation was limited to the renovation of historic buildings and complexes and to pedestrians' networks to connect important monuments of the Athens historic center (Voulgaris, 1998). The basic characteristic of this period was the development of fragmental renovation and regeneration programs and the lack of a regulatory urban regeneration framework. In 1976 the Public Urban and Housing Company was founded in the context of the



A wasteland of lost farm work near Amaravati city

Fig. 6

<https://ruralindiaonline.org/en/articles/a-wasteland-of-lost-farm-work/>

Greek state's interventionism (Emmanouil, 2006). Three years later, Law no. 947/1979 "For urban areas" defined the mechanisms for urban regeneration, Properties owners could either pay money contribution, or give a part of their property for the creation of public urban infrastructures. Article no. 25 defined the development of "mixed economy companies" in which private investors could collaborate with the public organizations for the implementation of urban regeneration projects. The application of these mechanisms was limited, due to the existence of many small scale properties , so consequently many owners which in most cases had different interests (Economou , 2004).

Law no. 1337/1983 defined two categories of regeneration zones, the Special Reinforcement Zones - in which the Greek State could proceed to the areas regeneration with public funding -

and Special Incentive Zones - in which specific urban or financial reasons are provided to landowners for the application of regeneration and renovation works (Chatzopoulou, et al., 1995). According to this Law, while the State kept a dominant role in the regeneration projects, joint ventures of private/public sectors could be introduced for the management of the implementation process. The Greek planning system was not flexible enough to promote regeneration projects and the bureaucratic and time-consuming procedures acted as barriers. At that time, large-scale radical regeneration programs were not applicable due to problems in financing

and planning. The local authorities had little experience on regeneration processes and management of European funds. This resulted in the implementation of only small-scale projects (Tasopoulou & Lainas, 2017).

The first - and current - Greek legislation for urban regeneration was launched in 1997 (Law no 2508/1997 on the sustainable urban development for the cities and the settlements of the country). This Law defined the regeneration of an area as the set of urban, economic, and special architectural directions, measures, interventions, and procedures which aim mainly to improve the living conditions of the inhabitants through the built environment, and protect and promote the cultural, historical-morphological, and aesthetic elements and characteristics of the area.

According to this definition, the urban areas that require regeneration are those facing problems of degradation or alteration of the residential environment, which cannot be dealt with the usual urban planning procedures. This legislative framework works differently for public-owned and private land. On the one hand, areas such as as railways infrastructures and military environments are subjected to the jurisdiction of public authorities and their maintenance or regeneration is not supported by a steady framework, but the disposal is tied to political decisions. Instead, the regeneration

of industrial premises was mostly tied to private stakeholders and their disposal was thus not subjected to public control and political decisions like the first case.

The most comprehensive attempt to regenerate the center of Athens was the Unification of Archaeological Sites in 1998, with the organization of routes that connect the important monuments of the capital's center with pedestrian and green routes (Economou , 2004). Until today the many small-scale projects implemented by municipal authorities show the realistic perception of the regeneration application in the Greek cities due to bureaucratic and time-consuming procedures and the limited funding opportunities. Big-scaled projects are avoided although they would have a greater impact compared with the small-scaled impact, especially in Greek central urban zones, due to the complexity of the procedures, the financing difficulties and the lack of vision by the local authorities (Lainas & Tasopoulou, 2016).

The 2009 economic crisis resulted in the significant modification of the roles of public and private sectors in urban regeneration projects. As the lack of public funding recourses was a barrier for Greek cities' revitalization, the private sector seemed the trigger for funding regeneration. The Greek state tried to facilitate the involvement of private agents by the launch of decrees that allowed the



construction of large-scaled projects in case they would provide new jobs and therefore support the country's economy. According to these decrees (Law no. 3894/2010 for public properties and Law no. 3986/2011 for private properties) due to the economic crisis conditions, a project that was not foreseen by the existing urban and regional plans could be approved if it created new jobs. Although this new framework tried to facilitate the role of the private sector in a complicated legislative environment, still many complaints were formulated as in many cases the pretense of development could result in environmental degradation (Dimelli, 2016). Only few interventions on industrial wastelands have been completed, being mostly focused on the restoration of existing heritage and environmental restoration in areas with severe

The Technological and Cultural Park of Lavrio.

Fig. 7
Google Earth

pollution problems. The most characteristic examples are the operations carried out to convert olive mills and wineries into museums and other cultural uses, along with the recovery of abandoned urban quarries to open theaters (Economou , 2004).

The case study areas

Two of the most-known cases of wastelands regeneration in Greece are the Technological and Cultural Park of Lavrio and the Hellinikon airport. The first regeneration began in 1991 and proceeded with fast rates as its basic infrastructures were completed in 2000. The

second case study started in 1995 but due to its scale, its role in the urban area of Attica's basin and its strong identity as a landmark of Greece's capital, followed different procedures. Until today the progress of this project's development is very limited. This analysis examines the basic planning ideas, the involved parties funding mechanisms and the spatial planning framework, and eventually evaluate the factors that lead to the implementation of a wasteland's successful regeneration.

4.1. The Technological and Cultural Park of Lavrio

The Technological and Cultural Park of Lavrio (T.C.P.L.) is a set of 45,000-sqm-former industrial facilities located in eastern Attica Lavrio (Fig. 7) tied to an economy entirely based on mining activity. The area was under the exploitation of the French Mining Company of Lavrio during the period 1876-1980 (Skarpelis, 2007). At the end of the 19th century, the area developed as a proper industrial zone in which workers owned their houses, while health care and education were provided by the Mining Company. In the 1880s and 1890s, however, the industry began to decline due to the decrease in the price of lead. Although there was a revival of this kind of industry with the arrival of refugees in 1922, the decline of the area continued after World War II (UNESCO, Tentative Lists, 2014). The abandonment

of the whole area occurred following the deindustrialization process that affected the whole country in the 1980s (Papadaki-Lappa, 2015).

The first attempts for the regeneration occurred between 1977 and 1989 by local authorities, businesses, and the academic sector of the region. The cooperation of these agencies to find the best way to develop the area resulted in two main patterns.

The first way was oriented towards the reuse of the existing shells aiming at highlighting their social and cultural character, while the second proposal focused on developing the technological character in connection with the existing industrial heritage. In 1986, the first proposal for the creation of a Technology Park was formulated by the National Technical University of Athens (NTUA), but it was not implemented. The reason was the debate between the stakeholders, as some of them believed that the area should develop cultural uses while others promoted the conservation of its technological character (Lavriou Technological Cultural Park, 2023).

The National Technical University of Athens submitted in 1991 a new proposal for the development of a Technological Park which was finally accepted. Between 1994 and 1997 the final plans were developed, and the restoration and preservation works were

finalized in 2000. For the area's regeneration private, and public (Greek and European) funds were used. (Lavriion Technological Cultural Park, 2023)

The regeneration searched initially for the environmental upgrade under the so-called "Soil Remediation and Supplementary Projects" program (Lavriion Technological Cultural Park, 2023). The whole compound was declared as monuments of "industrial archeology" and "architectural heritage" by the Greek Ministry of Culture (Vlazaki & Gouliauou , 2017), so the project had to preserve the historical and industrial value of the existing shells and added modern infrastructure and uses.

It was relevant that the whole buildings should maintain their industrial character and architectural identity. The project was carried out in different stages, according to the available funding for each stage. For this reason, the reconstruction of the entire complex is not until today completed as some conservation works are not yet completed due to the lack of financial sources (Papadaki-Lappa, 2015).

The connection of T.C.P.L. with its surrounding area was planned through the main road axes to create a network with the "Eleftherios Venizelos" international airport and the new port of Lavrio, which further enhance the arrival of visitors (Lavriion Technological

Cultural Park, 2023).

The proposal of NTUA divided the area into two zones (for education and culture and nature) that included 13,000-sqm-18 building units. The educational zone included uses related with research, innovation and education to lease to companies and non-profit organizations with educational and technological character (Fig.8). The project emphasized the co-existence of research with culture and nature so in the other sector, the new uses were museums, a conference center and recreational area (Vlazaki & Gouliauou , 2017)

T.C.P.L.'s management committee comprises the Technical University of Athens committee of Professors and has gradually developed a strong cooperation with the stakeholders of Lavrio's municipality for the organization of cultural and educational events (Vlazaki & Gouliauou , 2017)). The regeneration of the former industrial complex of Lavrio and the creation of the Technological and Cultural Park of Lavrio is considered successful as the goals set during its planning were achieved. In particular, the connection with the surrounding areas through networks and uses that have both local and supra-local character are important factors that lead to high number of workers and visitors. Furthermore, the intervention highlights the industrial and architectural identity of the complex both by



preserving the existing shells and highlighting all the facilities and machinery of the old metal factory in the new cultural center. A negative element of this redevelopment is the absence of local workforce as most of the workers in the area are not locals. So the regeneration project has promoted the renovation of the existing identity but it has not assisted the low levels of employment in Lavrio's post-industrial wider area (Vlazaki & Goulianou, 2017).

4.2. The former airport of Hellinikon

Athens's Hellinikon International Airport comprised two runways of 2,250 meters and 3,000 meters (Air Traffic Safety Electronic Engineers, 2023) (Fig.9) and worked for over 60 years until 2001 when the new "Eleftherios Venizelos" International Airport entered into function. Its building started in 1938 and was successively occupied by the Germans who used it as a military air base.

The site is associated with historical memories as in the post-war Hellinikon was the "window" to the outside world, a place of

personal memories tied to the diaspora (Lab of Regional Planning and urban environment, 1995), and summertime memories of people enjoying as the nearby Saronic coasts, and Vouliagmeni and Glyfada beaches (Hellinikon SA, 2011).

The vantage point of the former airport is the particularly favorable climate that, combined with the Mediterranean landscape and environment, create ideal conditions for a high quality of life and attracting visitors all year round. On the contrary, a negative characteristic was the intense degradation due to heavy road traffic, multiple incompatible uses, the old airport facilities, and the lack of free green spaces.

While approaching the 2004 Olympic Games in Athens, the area was devoted to two baseball fields with a capacity of 8,700 and 4,000 seats each, a Canoe-Kayak Slalom Center, a 14,100-seat indoor stadium and a 5,000-seat Fencing Hall and an Olympic Sailing Center built on the coastal front in Agios Cosmas (International Olympic Committee, 2004). Although these new infrastructures changed the northwest



part of the airport, the southeast and other parts remained still. In 2007 the Olympic Sailing Center of Agios Kosmas was converted into a private Marina. In April 2011, the new museum of Olympic Aviation (with the jet planes that had been stored at the airport since its closure) was opened in the former West Airport, while in the same year, the Hellinikon SA company was founded (Hellinikon SA, 2011). Eventually, the 953 buildings of the former airport that accommodated main and auxiliary activities of the airport are totally or partially destroyed.

4.2.1. Proposals for the area's regeneration

In 1995, after the Greek State decided the relocation of the Airport, the National Technical University of Athens conducted research for the regeneration for six years by focusing on three basic pillars, i.e., green areas, cultural activities, and research facilities. The regeneration scenario promoted the creation

of thematic parks, museums, recreation and cultural facilities, centers for national and international exhibitions libraries and other uses related with technology and the areas previous use as museum of air aviation (Lab of Regional Planning and urban environment, 1995).

Meanwhile, in 2003 an international competition for the creation of the Metropolitan Park in Hellinikon proposed a different kind of development for the area (Lionaki, 2016). The winner, Serero architects, proposed the restoration of the natural streams that ran throughout the area before the construction of the airport (DZO Architecture Team, 2003) (Fig.10). These streams (Softscapes) were used for the spatial organization of both green spaces and new urban development. More specifically, the idea was based on the development of a park in the central core of the airport (78% of the

The Hellinikon airport

Fig. 9

https://www.news247.gr/img/4330/6423527/369000/w660/660/genikh_ellhniko.jpg

area) and the construction of houses and hotels (22% of the area). This proposal was integrated in 2007 in the final version of the 1995 research programme that was updated, as the 2004 Olympic infrastructures and the plan of the Architectural Competition created new conditions (Lab of Regional Planning and urban environment, 2010).

According to the 2007 updated plan (Lab of Regional Planning and urban environment, 2010) the total area that will be developed is 4.000.000 sqm which would include a total of 1,215,000 sqm for residential and commercial uses (Lab of Regional Planning and urban environment, 2010).

The area will be developed in the following five zones:

- 315.000 sqm with offices, administrative buildings, social and cultural functions;
- 460.000 sqm, as mixed residential areas;
- 20.000 sqm, for tourist facilities;
- 300.000 sqm, for residential uses; and
- 120.000 sqm for tourism, cultural and recreational uses.

As for the existing buildings, only 41 out of 953 would be preserved (Lab of Regional Planning and urban environment, 2010).

In 2010, the Local Union of Municipalities and Communities of the Prefecture of Attica assigned a new research program in the "Laboratory of Regional Planning and urban environment" of the National Technical

University of Athens, as for the first time a public debate for the development of the area with the involvement of private investors began (Lab of Regional Planning and urban environment, 2010)). The program included consultation procedures between the involved parties highlighting the existing green spaces, and proposed the development of new green areas and the preservation of the existing building stock without any additional construction (Fig.11). As for the uses, it proposed a cultural center, education, and research. The development was based on the public character of this new park and free access. The main strategy of the program is the gradual utilization of the existing building potential and the revenues from the granted facilities for the operation and maintenance of the park (Lab of Regional Planning and urban environment, 2010).

In 2011, the Spanish architect Josep Acebillo was entrusted with the task to plan the redevelopment of the Hellinikon area by the Anonymous Company for the Management and Exploitation of the Former Airport Hellinikon, which was formed to proceed to the regeneration of the area (Acebillo, 2011). The plan was based on a strategic model that combined ecological principles with the development of a regional center for business, economy, culture, and science (Acebillo, 2011). According to this proposal, a 260-ha

Serero team masterplan

Fig.10

[http://www.serero.com/
index_en.htm](http://www.serero.com/index_en.htm)



Metropolitan Park was placed in the center of the area connecting the sea and the beach front with the neighboring municipalities. The plan proposed residential areas with a variety of housing typologies for 6,500 new homes, for 15,000 new residents (Acebillo, 2011).

Two years after this proposal as the economic crisis of Greece set new conditions and the 3986/2011 Law allowed the privatization of the property and another plan designed by Spiro Pollalis was proposed (Pollalis, 2012). By doing so, the regeneration changed to favor private interests

The four economic pillars of the proposed development were thus:

Development of new jobs in the sectors of health, research, innovation, education, entertainment, and hospitality;

Investments in urban infrastructure as water, energy, waste, transport, telecommunications, landscape, security;

Development of research and innovation

through innovation zone, integrated services, and business incubator; and

Real estate activities (neighborhoods, detached houses, apartments, serviced residences, offices, shopping centers.

The development would create 11,000 homes of various types which could accommodate 30,000 residents (Fig.12). The proposal envisaged the creation of 15,000 new permanent jobs, while the estimated number of visitors reached 2,000,000 visitors a year (Pollalis, 2012).

4.2.2. The final proposal for the area's regeneration

The share capital of Hellinikon passed to the Public Private Property Development Company in 2011. This new situation led to an invitation to private investors to submit their interest to acquire most of the share capital and to implement a Business and Regeneration Plan (Hellinikon SA, 2011). The private fund that



Laboratory of Regional Planning and urban development proposal, 2010

Fig. 11
Lab of Regional Planning and urban environment, 2010



Hellinikon Urban Development model, 2012

Fig. 12
Pollalis, S., 2012



was chosen envisaged the development of residential zones, hotels, shopping centers and shops, theme parks, art and culture museums, outdoor cultural spaces, health and wellness centers, sports and recreation areas, the creation of a modern business, educational, research hub as well as the complete upgrade of the existing marina and beach front (Fig 13). The Norman Foster-designed project proposed:

- 4-to 5 architectural and cultural landmarks inspired by the case of Bilbao;
- Hotel and residential complexes, surrounded by the park and the sea;
- International Health and Education Center;
- Shopping centers and state-of-the-art sports facilities and marina; and
- Theme parks and entertainment centers.

The park should include facilities Sports center, Airport Hangars, Sculpture Park, Exhibition Center, Police Department, Urban Cultures, Olympic Square, Nature Center', Water Park and 'The Attic Woodlands'.

As far as transportation infrastructures they

will be connected with the existing Metro and the Tram network, while the access to the park and the sea front will be public.

As for the economic framework the total cost for the regeneration' implementation will be covered by the investor while the Greek State will participate by 30% in the profits. The total cost of the project amounts to 7 billion euros (Foster + Partners, 2023).

Through the decades, the different economic conditions, political forces and spatial planning tools have favored different solutions focusing on some cases in residential and commercial activities and in other cases in more profitable private-led ideas. The key factor for each proposal has been funding resources as the area of Hellinikon share capital and the implementation of the Business and Regeneration Plan was given to private investors, so the trigger was the investors economic profit.

Until today as the regeneration was publicly debated between the different political forces

Norman Foster's proposal for Hellinikon

Fig. 13

<https://www.fosterandpartners.com/projects/ellinikon-masterplan/>

and of the bureaucracy of the Greek system due to the lack of bottom-up procedures and consultation, but little has been the progress (Dimelli, 2018).

The privatization of the area and the final plans have been strongly criticized (Gospodini, 2017). The Greek Government advertised the project as a great opportunity for jobs opening and economic development, but many citizens' collectives and environmental organizations were against this project as it reduced the potential green spaces of the area (Dimelli, 2018). It is important to underline that every different proposal of the area's development was guided by different political powers. The Conservative Governments promoted the area's construction, while the Liberal political powers supported the proposals that showed that the area should be developed as a public park. This debate was transmitted to the local society, as many residents of the wider area agreed with the development of commercial and other uses as this new attractor would lead to the increase of the area's land values, while other citizens underlined that the area would lose its public identity and would gradually become a private place for consumption.

Conclusion

Greece, a country strongly shaped by deindustrialization, has created an ad-hoc institutional framework for the integration

of these zones in the urban tissue with new role, identity, and function. But still, Greek regeneration projects are limited in small-scaled urban voids and pedestrian networks. These punctual interventions, due to their size, are however implemented with low cost and fast rates.

On the contrary, large regeneration projects such as those analyzed in this paper, have faced huge challenges due to their character as metropolitan wastelands. The unfavorable and long-standing economic situation of Greece and the incomplete and antiquated institutional framework that inadequately support regeneration projects of such scale have led to limited results.

The recovery and the regeneration of wastelands can be achieved by uses that meet the local needs, highlighting the existing heritage and enhancing the connection with existing networks and focal points.

But why has the Lavrio regeneration project succeeded to be implemented while the Hellinikon regeneration project is still at the beginning and six different plans were proposed?

The first key element is the size, position, and the form of each wasteland. Hellinikon former airport is a huge area strategically located in a dense urban environment lacking green spaces. Instead, the Technological and Cultural Park of Lavrio is a smaller sized zone, located

in the borders of the metropolitan area of Attica in a denser urban environment.

The second element is the legislation for wastelands regeneration. The Greek framework has been active for decades, but the bureaucratic, issued, and time-consuming procedures hinder the processes. In the case of Lavrio the existing legislative framework assisted the program while the involved parties (education and research institutes, public authorities, and private investors) collaborated for the regeneration on the basis of its history. In the case of Hellinikon, although the regeneration legislative framework was simplified and promoted faster procedures, it did not have societal acceptance, so it led to many conflicts that delayed the project. The fact that a public property was granted to private investors caused many reactions, as many of the plans favored the investors instead of the public ones. The political debate led to many conflicts, as citizens and agencies appealed to the Regional Council, causing important delays. A final remark is that in both cases, the participatory procedures were weak, as well as the role of the involved citizens' stakeholders.

It is important for wastelands regeneration to legislate policies and procedures that make these areas important urban elements with a new important role, adjusted to the city's needs. Successful regeneration projects

should rely on public-private collaboration, the integration of the societal needs expressed by participatory processes and the development of uses that respect the identity, but are simultaneously adjusted to its new role.

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