AIRPORT TRANSFORMATION IN GREENFIELD PRODUCTION, A COMPARISON STUDY OF ATATÜRK AIRPORT

GULSEN AYTAC
Gulsen Aytac is an urban planner and landscape architect and currently works as Assoc.Prof. in Istanbul Technical University, Faculty of Architecture, Landscape Architecture Department. Her research areas are urban landscape planning & design, green urbanism. She has won ASLA Honor Award in 2013 with her project Hebil 157 Houses in Bodrum Turkey.

MELIKE AKKAYA
Melike Akkaya is a Ph.D. student and YÖK scholarship holder at Istanbul Technical University, Department of City and Regional Planning. She completed her undergraduate education at Istanbul Mimar Sinan Fine Arts University, City and Regional Planning Department and received her MA in Landscape Design from Szent Istvan University in Budapest.

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Abstract

Cities, which are living mechanisms, are in continuous transformation and development process. They expand physically, increase their population, and undergo changes over time while consuming their existing resources. One of the areas that had to change as a result of these urbanization processes is greyfields such as shopping centers, airports, and military areas that have lost their function. Airports, which entered our lives in the 20th century, are the areas that remained amid in intense urbanization in time, unable to expand their capacities due to the intense urbanization and forced to move to the edge of the cities. The transformation processes of these remaining areas are the subject of this study. Many airports in the world have been transformed in this way. Atatürk Airport in Istanbul is also about to change as one of the failed airports. The airport has begun a transformation process that is still in the project stage. Although two years have passed since the announcement of the project, no final decision has been made, and the project has not yet started. Airport land has been used for festivals, cargo, and private flights. Therefore, the examples from around the world that have undergone a successful transformation will be examined under the headings to be descriptive for the Atatürk Airport. The example transformations, which are generally transformed as green, residential and commercial areas, will be examined according to public participation, decision mechanisms, sustainability context, and architectural competition criteria within the scope of the study and will be compared with the transformation process of the Atatürk Airport. As a result of the study, Atatürk Airport has the potential of a successful transformation to a greenfield, if the decision-makers can lead the public and creative industries to contribute to the process of sustainable transformation. With this comparison study, it is aimed to shed light on the potential transformation process of the Atatürk Airport.

Keywords: greyfield; airport transformation; Atatürk airport
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1. INTRODUCTION

The density in the cities is increasing rapidly. According to the United Nations (UN) today, 55% of the world's population lives in urban areas, which are expected to increase to 68% by 2050 (UN, 2018). This situation will increase the need for more urban land for housing and urban infrastructure. On the other hand, cities need green areas which provide many environmental and social benefits with a higher quality of life. However, urban planning

policies and population growth in cities lead to uneven distribution of urban green areas and transformation into residential areas (Kabisch & Haase, 2014). Unfortunately, cities that cannot provide enough space to thrive will begin to use existing green areas, and lead to transformations that result in a lower quality of life. To make this transformation more sustainable, it is necessary to consider the need for new green areas while protecting existing ones as much as possible. One of the successful examples applied in the world is to create more urban green areas by transforming urban lands that have been used extensively in the past and have lost their function recently within the urbanization process. Such fields are referred to as greyfields in the literature. Greyfield term usually refers to derelict shopping centers, airports, military areas, and such real estates. The name is given because of their vast area of parking lots which paved with asphalt. However, this study only covers airports as one of the greyfields.

Airports are one of the most critical areas that have lost their functions and need to be moved out of the city centers by urbanization. In the world, a large number of airports have been out of use and turned into other functions for various reasons. Some of them were transformed into green areas due to ecological concerns and urban needs.

A recent example of these airports that are intended to transform into a green area is the Atatürk Airport which has lost its function in 2019. The new project of Atatürk Airport was presented to the public as an urban green area with a fair and congress center. However, there is a lack of official announcements. Project visuals, which are generally encountered in all news sources, are not included in any governmental sources. Therefore, the new functions of Atatürk Airport have not been clarified with the official approval of the project. At this stage, this paper aims to guide possible solutions with real-life examples. Decision-making processes, urban needs that affect the decisions, public reactions, and international design competitions are at the scope of this paper. To compare these examples with the case area, Atatürk Airport, the criteria will be detailed under the titles of public participation, sustainability context and design competitions, and decision-makers.

The primary research questions are;

- How and according to which criteria are the airports transformed in the world?
- Which of these criteria were evaluated for the Atatürk Airport, and what are the possible results of the project?

2. LITERATURE REVIEW

This section will first summarize the definitions and transformation processes of greyfields. Afterward, the transformation processes of airports in the context of greyfields will be described with the examples in the world.

2.1 Greyfield Definitions

The New Urbanism Congress in 2001, with its 'Greyfields into Goldfields' report, created the term 'Greyfield', which is often the place of derelict shopping malls and commercial sites surrounded by asphalt seas, and suggested taking back these remaining areas by adding new mixed-use, mixed-income, pedestrian-focused activities (Kim 2004). In this report, Lee Sobel describes the term; greyfield, due to their grey-colored structures and their vast area of parking lots, which is associated with failed shopping malls, which locate in the inner ring of suburban areas (Sobel 2002 as cited in W. Merritt 2007). Newton defines the terms as aging, occupied residential areas that are physically, technologically, and environmentally obsolescent but economically outdated, failing, or undercapitalized real estate properties located in the suburbs (Newton, 2010).

2.2 Greyfield Transformation

There is a lack of a suitable term to clarify the situation where new functions and new uses are brought to a parcel or an area with a structure within it. There are a few terms in this issue; (re)conversion, (urban) transformation, (urban) development, reuse, redevelopment, reclamation, regeneration, and renewal. Table 1 lists the terms, and the most preferred terms are transformation and development. The transformation in urban scale is the conceptual equivalent of the changes experienced by the urban space in the physical, social, and economic context. According to Roberts and Sykes (2000), urban transformation is a comprehensive and integrated vision and action that aims to bring a continual development to the economic, physical, social and environmental conditions of an area that has undergone change and pioneers the solution of urban problems. According to McCormick et al. (2013), sustainable urban transformation refers to structural transformation processes that can effectively direct urban development towards ambitious sustainability goals. The general concept of urban transformation includes concepts such as urban renewal, urban restructuring, urban gentrification, urban regeneration, and urban redevelopment (Tolga, 2006). It is one of the main tasks of urban design and urban planning to transform the greyfields into new functions and to connect them to the urban environmental fabric, which has long and complex processes and which is parallel to the economic, ecological and social transformation of the countries (Stangel, 2011).

Table 1. Terminology in the airport literature (Elaborated by the authors).

Term	Source
(Re)Conversion	Dümpelmann & Waldheim (2014); Bagaeen (2006); Favargiotti (2018)
(Urban) Transformation	Genco (2007); Damigos, et al. (2012); Kabisch & Haase (2014); North (2012); Favargiotti (2018); Loures & Panagopoulos (2007); Hess-Lüttich (2016); Best (2014); Németh & Langhorst, (2014)
(Urban) Development	Solnes & þorgeirsson (2006); Gómez-Navarro, et al. (2009); Roskamm (2014); Lange, et al. (2010); Gyurkovich (2011)
Reuse	Damigos & Kaliampakos (2012)
Redevelopment	Bagaeen (2006); Damigos & Laliotis (2010)
Reclamation	Loures & Panagopoulos (2007); Solnes & þorgeirsson (2006)
Regeneration	Damigos & Kaliampakos (2012); Bagaeen (2006); Favargiotti (2018)
Renewal	Favargiotti (2018); Loures & Panagopoulos (2007); Hess-Lüttich (2016)

In the abundance of these terminologies, the transformation of a greyfield into another urban function can be more easily explained by the term transformation. The transformation of such urban fields is seen as an opportunity to create cities that can adapt to changing conditions. Transformation of greyfields is demanded, especially in Australia and the United States. In the matter of Australia, the transformation of greyfields is about the housing market and the housing industry. This effort can be understood by the compact and mix-used urban development strategies of the low-density cities in these countries. According to the Australian Housing and Urban Research Institute (AHURI) Final Report, greyfields have become a key target for the city development strategies by the state government planning agencies, because these areas, which appear between the vibrant inner-city housing market and recently developed greenfield suburbs, provide excellent access to employment, public transport, and services (Newton et al., 2011). Therefore, the transformation of airports which have considerable large areas also plays a crucial role in urban development. Many examples from the world can be given to the transformation of commercial and military airports into different functional areas such as an urban park, agricultural land, and solar energy production (Table 2).

Table 2. List of airports in the process of transformation (Elaborated by the authors)

Airport	Location	Situation	Method	Result
Tempelhof	Berlin	Unchanged	Referendum	Public Park
Reykjavik	Iceland	Project level	Debate/Competition	-
Riem	Munich	Completed	Municipal	Multiple Usage
Taichung	Taiwan	Completed	Competition	Multiple Usage
Stapleton	Denver	In Progress	Foundation	-
Hellenikon	Athens	Partly Reused	Competition	-
Downsview	Toronto	Completed	Competition	Public Park
Caracas	Venezuela	In Progress	Competition	Public Park
Casablanca	Morocco	Project level	Competition	-
Oldenburg	Oldenburg	Completed	Government	Photovoltaic Plants
Kai Tak	Hong Kong	Completed	Government	-
Atatürk	Istanbul	Project level	Ministry	-

3. COMPARISON STUDY OF THE AIRPORT TRANSFORMATION

In this section, the listed airports will be detailed with their brief history and transformation processes. While highlighting the prominent transformation criteria, current situations, and recommendations for Atatürk airport will be included.

The former Atatürk Airport locates in the province of Bakırköy, 24 kilometers west of the city center, Taksim square, and the land is about 11 million m^2. The first civil air transportation in Turkey was initiated in 1912 in Yeşilköy Airport. In the 1930s, experts from developed countries were introduced to develop Turkish Civil Aviation, and the first flights were launched in 1938 between Istanbul and Ankara (Hoş, 2003). After the International Civil Aviation Agreement signed in Chicago in 1944, it was decided to build an international airport in Yeşilköy, Istanbul and the first airport of Istanbul was opened on August 1, 1953, under the name of 'Yeşilköy Airport' (Papila, 2014). The

name of the airport was changed to Atatürk Airport in 1985, and the commercial flights ended with the last flight to Singapore on April 6, 2019 (Alas & Yıldız, 2019). It has been stated that Atatürk Airport has filled its capacity and that it will have to carry passengers over its capacity in 2020. It was also stated that the third runway planned for the expansion works could not be built due to insufficient capacity and intense construction around the airport area and therefore the airport should be moved out of the city (Saldıraner, 2013). It is planned that the cargo flights and general aviation activities will continue for a while and then the land will be transformed into the 'Millet Bahçesi (Nation Garden)' (Figure 1) with the transformation of the terminal building into the congress and exhibition center (Barlas, 2018).

The first presentation of the project visuals (Figure 2) was announced by President Erdoğan in a joint broadcast of Kanal D and CNN TÜRK on June 7, 2018 that Atatürk Airport will be closed to flights and social facilities will be established under the name of the Nation Garden and he also states that such a large recreation area, which is approximately 4 times larger than the size of New York Central Park, is needed for the people of Istanbul (Sarp, 2019). The project, which was also shared with the public as a general election campaign by the Ministry of Environment and Urbanization and announced to be completed in 2018, is intended to be connected with the coast of the Marmara Sea and to be a green corridor of Istanbul with gardens, tea houses, walking and cycling paths (MEU, 2018). In the case of the implementation of the project, it is claimed that the Nation Garden, which will be established on a part of the airport land, will be the 3rd largest city park in the world compared to the international big city parks. The Nation Garden project is planned not only for Atatürk Airport, but also for various districts of Istanbul and the construction is undertaken by the Housing Development Administration of Turkey (Yeni Emlak, 2018). The proposed project for Atatürk Airport remained on the agenda for a concise time, and the public was only informed with a few project visuals. On the other hand, there are statistical evaluations based on the possible results of the land. According to the Tüvimer report in the Eko Yapı Magazine (2018), if active green space is established on the entire area of Atatürk Airport's 11 thousand 700 acres, the green area per person will increase by 52 m^2 (520%) in Bakırköy and 0.76 m^2 in Istanbul. This means a 10% increase compared to 2017 data from the Ministry of Environment and Urbanization. In addition to the green area assessment, the value of housing + trade mixed-use was also analyzed. Tüvimer, with the Tapusor data, states that the value of the airport land will be 234 billion TL, based on the average square meter value of the zoned land in the area, in the case of zoning for housing, and if the 3-story limited construction permit is increased by possible zoning changes, the value of the land will increase and it will become a dense settlement area (Yılmaz 2018).

Since the project presentation in 2018, the airport continues to be used with various festivals. Teknofest was held on 17-22 September, 2019 and Etnospor Festival was held on 3-6 October, 2019. On the other hand, it is seen that there are few official initiatives for the construction of the Nation Garden. On 27 September, 2019, the General Directorate of State Airports Authority (DHMI) announced a tender for the demolition of some existing buildings in order to demolish the area and build the Nation Garden (DHMI, 2019). Therefore, it is planned that the area will be in use with various public activities until the construction of the Nation Garden project begins.

3.1 Public Participation

Since 2007, in the planning process for the reuse of Tempelhof airport, Germany has included citizens, professionals and non-governmental organizations (NGOs) through internet forums, surveys, discussions, and presentations, as well as they, apply top-down strategies, such as the 'Parkland Tempelhof' architectural competition announced in 2010 (Dannenberg & Follmann, 2015). Thanks to the invitation to the citizens to propose provisional uses for determined plots, today it is a new product field, a contemporary urban square, and the most abundant open public space in the city with more than 2,000,000 visitors a year to enjoy its wide-open spaces (Favargiotti, 2018).

Architect Ernst Sagebiel was commissioned by Hitler to design the airport in 1935 but the Nazis never actually used Tempelhof as an airport; they used it as a factory to build fighter planes and weapons during the war (Shead, 2017). Although the historical meaning of Tempelhof airport, which is considered to be of historical importance in the world, is a symbol of freedom in individuals, the history of Tempelhof Airport is somewhat different and comprehensive with the violence and terror practices of the Nazis (Copley, 2017). Perhaps this symbol of freedom has shaped Berliners' desire to preserve this vast space as a public park where they can freely use it. In 2008 the airport was closed, and in 2010 it was opened to use as a recreational and leisure area. 'Parkland Tempelhof' architectural competition was announced for the Tempelhof Airport in Berlin and the proposal of GROSS.MAX (Figure 3), which was selected from 78 projects, was accepted in 2011 (AEST, 2011).

In May 2014 Berliners decided in a referendum not to allow construction on the edge of the airfield and to keep Tempelhofer Feld mainly as it was and in June 2014 a statute governing Tempelhofer Feld's conservation came into force (Grün Berlin Gruppe, 2016). The referendum was for the new use of the Berlin's largest park, the old Tempelhof Airport (3.55 km2), 64.3% of voters chose to keep the Tempelhof as it was (as a public park), after months of hard debates and a campaign supported by most media (Fahey, 2015). This referendum process was an example of a substantial misunderstanding between political forces, the city administration, and the people, and shows the necessity of an urban transformation process that can only be successful if all parties work together and understand each other's goals (Hess-Lüttich, 2016).

After the airport was closed in 2008, the giant terminals and hangars are used as concert venues, while the community uses the large open areas for cycling, running, running, dog walking, kite flying, horticulture and more (Baskas, 2017). The atmosphere (Figure 4) at the airport after the transformation was very viable and bustled with energy (Németh & Langhorst, 2014). Due to the refugee crisis in 2015, the hangars of the Tempelhof airport began to be used as a temporary shelter, and although plans were subsequently prepared to build a larger camp area, it was not accepted because the immigrants would be isolated from society (Hess-Lüttich, 2016).

The Tempelhof example is a powerful example of public participation and the resistance against all political forces and capital owners to ensure that the airport remains a green area. In the case of Ataturk airport, public participation or public influence is not yet possible. As the fate of the project prepared by the Ministry of Environment and Urbanization is uncertain, the citizens who are the main users should have a say and define the uses according to their needs in the preparation of the project to be implemented in the future.

3.2 Design Competitions and Sustainability Context

The idea of sustainability dates back more than 40 years; it was a vital theme of the United Nations (UN) Conference on the Human Environment in Stockholm in 1972 (IUCN, 2006). According to the United States of America Environmental Protection Agency (EPA) who has responsibility to prepare its own National Environmental Policy Act (NEPA) documents for compliance; the goal of sustainability, derived from the NEPA (1969) is to, "create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations" (EPA, 2015).

Airport transformation projects propose green area options such as public parks to bring more sustainable solutions. Interdisciplinary cooperation should be developed for airports to deal with their critical environmental problems which they usually have and be productive and livable places that have a strong relationship with the environment after the transformation. Besides, airports should be planned to utilize their infrastructures throughout their lifespan (when they are built, at peak times and when their use begins to decline) so that they can be prepared for future transformations (Favargiotti, 2018).

However, greening the greyfields have many opportunities when considering environmental quality. According to Loures & Panagopoulos (2007), potential funding sources should be identified; derelict land inventory should be taken, greening opportunities, which constitute an essential opportunity for the emergence of benefits such as improving soil quality, habitat creation, improvement of recreational opportunities and economic revitalization of neighborhoods, should be evaluated. Then, a clear understanding of the benefits can be provided.

In the case of the leading examples in the world for sustainable airport transformations, the process is traced through architectural design competitions rather than top-down projects. One of the examples is the Reykjavik airport (Iceland) that transformed into urban parks through architectural competitions in 2013 (Uygur, 2018). Since 1919, the airport was the main domestic airport in Reykjavik, the capital city of Iceland. For more than 20 years, people have discussed and debated the question of whether the airport should be relocated to make room for urban development. Due to the value of the airport area, the government proposed to relocate and offered 4 different alternatives; keeping the airport in the same place, evaluating the land next to the current airport, moving to the rugged lava field in the south of Reykjavik and moving to Keflavik International Airport, about 60 km away (Solnes & þorgeirsson, 2006).

In 2002, a new detailed land-use plan for Reykjavík was approved, which called for a substantial reduction of the airport by 2016, and a full departure by 2024, to use the land for development (The Reykjavík Grapevine 2008). In 2007, the competition briefing asked for fictions about the spatial, programmatic, economic and cultural future of this city, and the winning project (From Runways to Greenways) addressed the potential of technological development while offering a self-sufficient city on energy, agriculture, and water (Figure 5). The project for Reykjavik, where urban sprawl and car ownership per person is high, proposes master plan for Reykjavik's expansion to intensify the city and to exploit the potential that nature creates for green energy, urban agriculture, and urban nature, while combining various modes of production (research, culture, education, agriculture) to produce greater environmental efficiency (White & Sheppard 2009).

The second example is the former Shueinan Airport which was built by the Japanese army in the 1930s and was decommissioned in 2004 when the Ching Chuan Kang airbase expanded (Dümpelmann & Waldheim, 2014). The Taichung Gateway Park International Competition was announced in 2011 to transform the former Taichung (Shuinan) Airport (Taiwan) and its vicinities into a modern Eco-Park that will be divided into four districts (Eco Residential District, Gateway District, Cultural Business District, and Innovation R&D District) pursuant to their features (Jarz, 2011). According to the project manager, the site was aimed to host a business park, university facilities, a convention center, an ecological park with renewable energies and a smart management system and Sou Fujimoto's future Taiwan Tower, which constitutes a new landmark in the Taichung skyline (MAA, 2016). The 67-hectare site, which was under construction for more than four years, was completed in 2018 (Ching-ya & Hsiao, 2018). The winning project converts the airport into a weather machine, tempting citizens to spend time outdoors despite the tropical climate with its heavy rainfall and unpleasant heat (Dümpelmann & Waldheim, 2014).

The former Caracas Airport was also designed through competitions. It was used for military purposes from 1946 until the opening to the public in 2005. Since then, different proposals have been made for the recreational,

urban, and cultural use of the area. In the study of Gómez-Navarro, et al. (2009) three proposed projects for the transformation of Caracas Airport were evaluated by environmental impact assessment method according to land use, population density, energy consumption, water use, and waste generation values through surveys conducted with experts. The study results show that the theme park has the least water consumption and therefore, the least environmental impact compared to the health club and residential areas. In 2012, a design competition was held to generate ideas for its conversion into a park (Dümpelmann & Waldheim, 2014). The winning idea proposes an efficient use of space with potential for social and urban integration through the implementation of five interrelated strategies that will result in new relationships and meanings for the city: environmental balance, urban dynamics, social encounter, new housing developments, management model (Lalueta, 2012).

Through a design competition, Casablanca Airport in Morocco was aimed to turn into a new cultural and business center in 2007, including a business center, office area, private residences, a new university, an aeronautical museum, and a theatre (Dümpelmann & Waldheim, 2014). Even though the design project gives the idea of a green area, the reality is still far from it (Figure 6). The current aerial photos and maps reveal that the area looks abandoned and is planned to be a financial center soon.

The former Toronto Airport was also designed with a competition which was called Downsview Park competition. It was opened as a result of the closure of the airport in Toronto in the mid-1990s, and it was the pioneer of the design competitions on the transformation of airports into new urban landscapes in the international arena (Uygur, 2018). Downsview was established as a military airbase in the 1940s, and the Canadian government decommissioned the park in 1994 to turn the site into the country's first national urban park (Dümpelmann & Waldheim, 2014). However, the results of the park differ than the design project. The initial aim was to involve the public to the whole process through design to finance. According to the North (2012), with the winning team of the international design competition held in 2000, a process-based landscape design was planned, which was flexible, naturally developing, allowing for future diversity, but instead, a traditional, static master plan was put into practice due to the changing members of the project team and political factors. In the case of Downsview, it can be concluded that the participation of communities in the transformation process is crucial in both the long and short term.

Another example from Germany, Munich-Riem Airport is an example of sustainable concerns. The new airport has become necessary because of the environmental reasons and the old airport Munich-Riem is no longer acceptable for capacity (Toepel 1990). For some time, the former airport was used for rock-concerts and dance-events under the name Kulturzentrum Riem (Culture Centrum Riem) was transformed to the Messestadt Riem (Convention City Riem) with a convention center, apartment houses, and parks (Figure 7).

Messestadt Riem, the new district of Munich, was implemented in the eastern part of the city, in the distance of seven-eleven kilometers from its center, on the grounds of the former Riem Airport after the last plane took off from here on May 17, 1992 (Gyurkovich, 2011). The 210-hectare Riemer Park (Also known under the name BUGA Park, since it was inaugurated in 2005 for the Federal Garden Show) which was built between 1997 and 2005 by landscape architect Gilles Vexlard, is the third-largest park in Munich and today attracts walkers, sunbathers, and swimmers because the 10-hectare Riemer lake is part of the recreation area (muenchen.de 2011). Because the park was opened for the BUGA Garden Show, it is criticized by the public for being unnatural and artificially designed.

This problem of artificiality is also valid for the case of Atatürk Airport. Considering other precedent parks in Istanbul which are designed as the imagination of nature, rather than leaving the natural succession process or designing with local plant species that the location and climate allow, the designs are preferred with vegetation that has aesthetic beauty, often requires high maintenance and is not long-lasting. This situation leads to both budget, time, and labor force loss. Of course, these initiatives are based on achieving political power on the voters by providing visual beauty even though it is always criticized.

In addition to these examples above, some airports have been transformed into other functions rather than green areas. One of them is the former military airfield of Oldenburg (Figure 8), operated from 1932 to 1993, was transformed into one of the largest photovoltaic plants in 2011 (Krawczyk, 2017) in the direction of the country's renewable energy targets (Uygur, 2018). Another example is the Kai Tak Airport of Hong Kong, which was an international airport operated between 1925 and 1998. The seaside airport was transformed into a cruise terminal and housing estate to provide a living environment for around 90.000 residents after the new airport started to operate (CEDD, 2013).

3.3 Decision Mechanisms

The decision-makers are the governments, ministries, local municipalities and private companies with a financial interest in the case of transformation of airports. Therefore, economic interests override ecological and social values. However, studies have shown that creating ecological value will also contribute economically. Damigos & Laliotis, (2010) conducted a survey and Fuzzy Delphi Method to evaluate two projects, culture, sports, leisure park with commercial uses and green park with light recreation areas, proposed for the Hellenikon Airport and as a result, both plans positively affect the prices of dwellings, but the second plan shows 60% more contribution than the first. Relatively, Damigos & Kaliampakos, (2012) also examine the economic value of Hellenikon Metropolitan Park in the region and indicate that even a pure green area creates economic value for the surrounding properties; if the park affects the value of the 1000 apartments in the surrounding area, sufficient earnings will be obtained

for the entire project. Hence, to develop a transparent and socially fair decision-making analysis, the definition and measurement of the benefits of non-commercial uses, i.e., green areas will provide an opportunity, even though they are hard to estimate in monetary terms (Damigos & Kaliampakos, 2012).

The Hellenikon Airport, which is located by the sea and 12 km south of Athens, was built in 1938 in Greece and operated for sixty years up until 28 March 2001. The airport could not meet future demand since the surrounding residential area prohibited any further expansion, it was decided to relocate the airport. For the 2004 Summer Olympics, some areas of the airport hosted sports activities, some were used as bus and tram depots, and for the remaining area, the Greek Ministry of Environment announced a 400-hectare park and 100-hectare office and residential area plan (Damigos & Kaliampakos, 2012). In 2005, an international team of architects won a competition that focused on redeveloping the area for designing of a metropolitan park on the site of the Hellenikon Airport (Dilouambaka, 2017). The 8 billion-euro Hellenikon Project (Figure 9) to turn Athens's former airport site into a multi-purpose complex that will include hotels, luxury apartments, amusement parks, restaurants, bars, and a casino is moving ahead (GCT, 2019).

Former Stapleton Airport, Denver Colorado, has a similar transformation (Figure 10). The Stapleton Airport was operated between 1929 and 1995, replaced by Denver International Airport and planned as a retail and residential neighborhood with the vision of New Urbanism for 25.000 residents and 30.000 jobs (Dümpelmann & Waldheim, 2014). The site was redeveloped by Forest City Enterprises for pedestrian-oriented real estate design while erasing all the physical traces of the former site (Favargiotti, 2018).

It was stated above that the project developed for Atatürk Airport was prepared by the ministry and has not yet been shared from an official state source. Therefore, information about the decision process, which is only handled by the ministries and real estate companies, analyzes, needs of the region and the possible results of the design is not available from any governmental source. In addition, there is no ongoing debate within the ministry or metropolitan municipality, such as architectural competitions for the most efficient transformation possible, economic/ecological/social analysis, and world examples that can be modeled or compared in the context of the referendum process and site-specific planning. However, a report of a round table meeting of real estate companies was disclosed to the press recently (Özer, 2019). The meeting of Urban Land Institute (ULI), 'How can Atatürk Airport be transformed?' themed meeting was arranged in Istanbul, on the 2nd of May, 2019. The outcomes were so; a pleasant land (11 million m^2), a new law needs to be passed to redevelopment, converting to the green area is costly, and no economic return and the airport is creating an economy in the region. In the meeting, the participants also suggested some new functions; cultural techno-park, aviation fairground, multiple functions, touristic projects, international trade center, entrepreneurship base, and private flight tracks. These recommendations seem to have been taken into consideration; recently, Minister of Transport and Infrastructure Cahit Turhan stated that the area will be able to carry out general aviation and cargo flight operations and non-aviation activities (Airport Hotel, conference hall, aviation fairground) and that the works initiated in these areas are continuing (Çakır, 2019).

As this study states, many reasons, especially urbanization, forced the airports to move out of the city and provided opportunities to transform their current location in the best way. European cities can be said that they are successful in benefiting from these opportunities. As in the above examples, the determination of the future of such large areas is often supported by competitions, but the results of the airport transformations also depend on the decision-makers such as governments, ministries, and municipalities. Collaboration with architectural companies, universities, and the public as the real users allows the fields to be transformed with more creative, solution-oriented, ecologic, and sustainable projects. The projects that are created are intended to use each area most efficiently. This efficiency is not only in the economic sense, but also in ecological and social efficiency, which often brings about economic efficiency, too. From this point of view, we can assume that the project which is considered for Atatürk Airport has remained only at the ministerial and government level so far. However, this study demonstrates successful airport transformation processes and collaborations to shed light on future studies and designs for Atatürk Airport. The cooperation for the project, which is not yet officially approved, can be provided by the public, universities, and creative industries.

4. CONCLUSION

As a result of rapid urbanization, areas that lose their functions and remain idle in the central regions of the cities arise due to various reasons such as capacity issues and new functions needed. One of these idle areas are called greyfields such as shopping centers, airports and military areas, which are mostly covered with asphalt and inevitably subjected to transformation processes. Due to the intensive population growth and dense construction around them, airports are filling their capacities, cannot expand their area. Therefore, they lose their current positions and leave their places to new urban functions. These areas, which are frequently seen in the world, are generally transformed into green spaces through projects aimed at the needs of the citizens. Against the problems such as global warming, rapid consumption of natural resources and intensive urbanization, the tendency of green area production has increased. With growing cities and shrinking environmental resources, green areas must act as a vibrant infrastructure, not only for recreation but also to support future urban concentration, and provide optimal and varied performance (North, 2012). Therefore, green area production should be emphasized here and should be an indispensable condition for the areas that are waiting to be transformed, such as Atatürk Airport.

This research was commenced to reveal such successful transformation processes of these failed airports in the world. For that purpose, first, the terms were explained in the literature review section. Then, the world examples were detailed according to the criteria of public participation, decision mechanisms, design competitions, and sustainability context. Consequently, it appears that the most successful implemented projects were designed with the collaboration of design competitions and public participants. The competitions and projects presented create a collaborationist environment for spatial and social solutions, which are crucial in the case of being consistent and sustainable, responding to economic, ecological and social needs, reaching all segments of the society and to providing useful and appropriate solutions for the planning site. Since the old airports are mostly located in the middle of the cities, they should be able to meet the daily needs of the people. For this reason, the above-mentioned competition processes have been mentioned in order to direct the future of Atatürk Airport. There is still a chance to improve it since the project has not been officially announced and there is an ongoing debate by public and real estate companies. On the other hand, news of Atatürk Airport, which is constantly occupying the agenda, also shows the importance of the area. These include various activities such as festivals and fairs, new decisions from various public institutions on the fate of the site, and new steps to implement the Nation Garden project. Here, it is the duty of the academy and the transformation experts to have a say in these steps to direct the decision makers; the project in the field should be finalized, only after the proper research and development processes, as in the above examples.

In short, this comparison study reflects global tendencies in airport transformation processes. The airports have an important place, history and value in the city. When they are ineffective for various reasons, their new functions should be designed according to the needs of the city and its citizens, in cooperation with them, to add ecological, social and thus economic value to the city. With these examples, it is aimed to contribute to Atatürk Airport transformation process and to direct as much as possible.

The issues that need to be discussed and kept on the agenda are not only the general design concept, the number of trees and the economic value. At the same time, the needs, integrated uses according to these needs, its relationship with the rest of the city and its importance in the future of the city should be discussed.

REFERENCES

1. AEST. (2011, 05 23). GROSS.MAX with Sutherland Hussey win Parklandschaft Tempelhof. Retrieved 05 21, 2019 from World Landscape Architecture: https://worldlandscapearchitect.com/gross-max-sutherland-hussey-win-parklandschaft-tempelhof/#.XOQ3UlMzYWp
2. Alas, E., & Yıldız, İ. (2019, 03 29). Atatürk Havalimanı'nda bir devir kapanıyor [One era is closing at Atatürk Airport]. Retrieved 05 28, 2019 from Demirören Haber Ajansı: https://www.dha.com.tr/istanbul/ataturk-havalimaninda-bir-devir-kapaniyor/haber-1634849
3. Bagaeen, S. G. (2006). Redeveloping former military sites: Competitiveness, urban sustainability, and public participation. Cities, 23 (5), 339-352.
4. Barlas, Y. (2018, 06 03). Son Dakika! İşte Millet Bahçesi'nden ilk kare [Breaking News! Here is the first visual from the National Garden]. Retrieved 05 18, 2019 from Habertürk: https://www.haberturk.com/son-dakika-iste-millet-bahcesinden-ilk-kare-millet-bahcesi-nasil-olacak-1998070-ekonomi
5. Baskas, H. (2017, 12 4). Defunct airports take flight with creative new uses. Retrieved 05 21, 2019 from USA Today: https://www.usatoday.com/story/travel/flights/2017/11/30/defunct-airports-take-flight-creative-new-uses/906433001/
6. Best, U. (2014). The Debate about Berlin Tempelhof Airport, or: A Lefebvrean Critique of Recent Debates about Affect in Geography. In Ł. Stanek, C. Schmid, & A. Moravanszky, Urban Revolution Now Henri Lefebvre in Social Research and Architecture (pp. 282-299). Farnham: Ashgate.
7. Civil Engineering and Development Department (CEDD). (2013, 07 13). Overview of Kai Tak Development. Retrieved 05 24, 2019 from the Civil Engineering and Development Department: https://www.ktd.gov.hk/eng/overview.html
8. Ching-ya, C., & Hsiao, S. (2018, 11 03). Taichung Central Park to have soft launch today. Retrieved 05 23, 2019 from Taipei Times: http://www.taipeitimes.com/News/taiwan/archives/2018/11/03/2003703533
9. Copley, C. (2017). Curating Tempelhof: negotiating the multiple histories of Berlin's 'symbol of freedom'. Urban History, 44 (4), 698-717.
10. Çakır, M. (2019, 08 05). Atatürk Havaalanı 'otel' oluyor. Retrieved 08 06, 2019, from Cumhuriyet Gazetesi: http://www.cumhuriyet.com.tr/haber/turkiye/1519497/Ataturk_Havaalani__otel__oluyor.html
11. Dümpelmann, S., & Waldheim, C. (2014, 09 29). Airport Landscape Catalog. Cambridge, Massachusetts.
12. Damigos, D., & Kaliampakos, D. (2012). Emerging Value of Brownfields Regeneration. International Journal of Sustainable Development and Planning, 7 (2), 173–185.
13. Damigos, D., & Laliotis, E. (2010). Estimating the economic benefits of redeveloping the former Athens International Airport. WIT Transactions on Ecology and the Environment, 131, 39-49.
14. Dannenberg, P., & Follmann, A. (2015). Ringen um Grün in der Stadt. Standort. Standort , 39 (2-3), 1-7.
15. DHMI (General Directorate of State Airports Authority). (2019, 09 27). Istanbıl Atatürk Airport Tender for Demolition Work. Retrieved 10 01, 2019, from General Directorate Of State Airports Authority: https://

www.dhmi.gov.tr/IhaleDokumanlari/%C4%B0LAN%20METN%C4%B0%20SON.pdf
16. Dilouambaka, E. (2017, 02 2017). What Will Become of Athens' Old International Airport? Retrieved 05 22, 2019 from Culture Trip: https://theculturetrip.com/europe/greece/articles/what-will-become-of-athens-old-international-airport/
17. Ekoyapı. (2018, 05 25). Atatürk Havalimanı Yeşil Alana Dönüşümü Çevre İlçelere Etkisi. Retrieved 07 31, 2019, from Eko Yapı Dergisi: https://www.ekoyapidergisi.org/4620-ataturk-havalimani-yesil-alana-donusumu-cevre-ilcelere-etkisi.html
18. Environmental Protection Agency (EPA). (2015, 06 01). Sustainability Primer. Retrieved 06 02, 2019 from EPA.gov: https://www.epa.gov/sites/production/files/2015-05/documents/sustainability_primer_v9.pdf
19. Fahey, C. (2015, 03 05). How Berliners refused to give Tempelhof airport over to developers. Retrieved 07 08, 2019 from The Guardian: https://www.theguardian.com/cities/2015/mar/05/how-berliners-refused-to-give-tempelhof-airport-over-to-developers
20. Favargiotti, S. (2018). Renewed landscapes: Obsolete airfields as landscape reserves for adaptive reuse. Journal of Landscape Architecture, 13 (3), 90-100.
21. Greek City Times (GCT). (2019, 01 19). 8 billion-euro Hellinikon Project is set to move ahead. Retrieved 05 22, 2019 from Greek City Times: https://greekcitytimes.com/2019/01/19/8-billion-euro-hellinikon-project-is-set-to-move-ahead/
22. Genco, T. (2007). Downsview Park: City planning through the development of a model sustainable community. Sustainable Development and Planning III; WIT Transactions on Ecology and the Environment, 102, 209-218.
23. Grün Berlin Gruppe. (2016, 11 15). History and Development. Retrieved 05 22, 2019 from Grün Berlin Gruppe: https://gruen-berlin.de/en/tempelhofer-feld/about-the-park/history-and-development
24. GROSS.MAX. (n.d.). Projects. Retrieved 08 06, 2019 from GROSS.MAX: http://www.grossmax.com/projects.asp?n=Parks&x=4
25. Gómez-Navarro, T., García-Melón, M., Acuña-Dutra, S., & Díaz-Martín, D. (2009). An environmental pressure index proposal for urban development planning based on the analytic network process. Environmental Impact Assessment Review, 29, 319–329.
26. Gyurkovich, J. (2011). A Livable Place: Messestadt Riem – a New District of Munich. Housing Environment, 68-73.
27. Hess-Lüttich, E. W. (2016). Urban discourse – city space, city language, city planning: Eco-semiotic approaches to the discourse analysis of urban renewal. Sign Systems Studies, 44 (1/2), 12-33.
28. Hoş, Y. B. (2003). Atatürk Havalimanı [Ataturk Airport] (Doctoral dissertation) Istanbul: Istanbul University.
29. The International Union for Conservation of Nature (IUCN). (2006). The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century. International Union for Conservation of Nature. Cambridge: IUCN Renowned Thinkers Meeting.
30. Jarz, H. (2011, 04 09). Taichung Gateway Park International Competition. Retrieved 05 23, 2019 from Arch Daily: https://www.archdaily.com/126039/taichung-gateway-park-international-competition
31. Kabisch, N., & Haase, D. (2014). Green justice or just green? Provision of urban green spaces in Berlin, Germany. Landscape and Urban Planning, 122, 129-139.
32. Kim, J. (2004). Incremental urbanism: The auto and pedestrian reconsidered in Greyfield reclamation. Places, 16 (3), 18-21.
33. Krawczyk, O. (2017, 02 15). Solar power in Niedersachsen. Retrieved 05 21, 2019 from Invest in Niedersachsen Niedersachsen: https://www.invest-in-niedersachsen.com/en/focus-sectors/energy/solar-energy
34. Lalueta, I. (2012, 12 14). First Prize. İnternational Competition Metropolitan Park, La Carlota. Retrieved 07 10, 2019 from Metalocus: https://www.metalocus.es/en/news/first-prize-international-competition-metropolitan-park-la-carlota
35. Lange, B., Kalandides, A., Wellmann, I., & Krusche, B. (2010). New Urban Governance Approaches for Knowledge-based Industries in Multiplicities: Comparing Two Cases of Large Innercity Developments in Graz and Berlin. Journal of Place Management and Development, 3 (1), 67-88.
36. Lateral Office. (2007). Runways / Greenways. Retrieved 10 01, 2019, from Lateral Office: http://lateraloffice.com/RUNWAYS-GREENWAYS-2007-08
37. Loures, L., & Panagopoulos, T. (2007). Sustainable reclamation of industrial areas in urban landscapes. Sustainable Development and Planning III, 1, 791-800.
38. MAA. (2016, 02 28). Shuinan economic and trade park development project. Retrieved 05 23, 2019 from MAA Consultants: http://www2.maaconsultants.com/en/projects/detail.php?dpid=264
39. McCormick, K., Anderberg, S., Coenen, L., & Neij, L. (2013). Advancing sustainable urban transformation. Journal of Cleaner Production, 50, 1-11.
40. Ministry of Environment and Urbanization [Çevre ve Şehircilik Bakanlığı], (2018, 06 18). Bakan Kurum: "Atatürk Havalimani Alanina Yapilacak Millet Bahçesinin Denize Kiyisi Olacak". Retrieved 08 06, 2019, from Çevre ve Şehircilik Bakanlığı: https://csb.gov.tr/bakan-kurum-ataturk-havalimani-alanina-yapilacak-millet-bahcesinin-denize-kiyisi-olacak-bakanlik-faaliyetleri-26560

41. Muenchen.de. (2011, 11 27). Riemer Park. Retrieved 05 22, 2019 from Muenchen.de - the official city portal: https://www.muenchen.de/sehenswuerdigkeiten/orte/119360.html
42. Murdock, S. (2017, 12 06). A Story of How an Aeroportophile May Also Be a Urbsophile; Planning Is the Key. Retrieved 10 01, 2019, from JDA Journal: https://jdasolutions.aero/blog/story-aeroportophile-may-also-urbsophile-planning-key/
43. Németh, J., & Langhorst, J. (2014). Rethinking urban transformation: Temporary uses for vacant land. Cities, 40, 143-150.
44. Newton, P. W. (2010). Beyond Greenfields and Brownfields: The Challenge of Regenerating Australia's Greyfield Suburbs. Built Environment, 36 (1), 81-103.
45. Newton, P., Murray, S., Ron Wakefield, C. M., Khor, L.-A., & Morgan, T. (2011). Towards a new development model for housing regeneration in greyfield residential precincts. Australian Housing and Urban Research Institute. Melbourne, Australia: Australian Housing and Urban Research Institute.
46. Newton, P., Newman, P., Glackin, S., & Trubka, R. (2012). Greening the Greyfields: Unlocking the Redevelopment Potential of the Middle Suburbs in Australian Cities. World Academy of Science, Engineering and Technology International Journal of Humanities and Social Sciences, 6 (11), 2870-2889.
47. North, A. (2012). Processing Downsview Park: transforming a theoretical diagram to master plan and construction reality. Journal of Landscape Architecture, 7 (1), 8-19.
48. Özer, T. (2019, 06 08). Atatürk Havalimanı Karma Kullanıma Açılmalı [Ataturk Airport should be opened for mixed use]. Retrieved 07 11, 2019 from Emlak Dream: https://www.emlakdream.com/ataturk-havalimani-karma-kullanima-acilmali/
49. Papila, B. (2014). Havaalanları ve Kentleşme İlişkisi, İstanbul Örneği [The relationship between airports and urbanization, the case of Istanbul] (Master's thesis). Istanbul: İstanbul Aydın Üniversitesi.
50. Roberts, P., & Sykes, H. (2000). Urban Regeneration: A Handbook. London: Sage.
51. Roskamm, N. (2014). 4,000,000 m2 of public space: The Berlin "Tempelhofer Feld" and a short walk with Lefebvre and Laclau. In A. Madanipour, S. Knierbein, & A. Degros, Public space and the challenge of urban transformation in Europe (pp. 63-77). New York: Routledge.
52. Saldıraner, Y. (2013). Airport master planning in Turkey; planning and development problems and proposals. Journal of Air Transport Management, 32, 71-77.
53. Sarp, İ. (2019, 09 26). Atatürk Havalimanı uçuşlara kapatılmamalı. Retrieved 10 01, 2019, from Aydınlık: https://www.aydinlik.com.tr/ataturk-havalimani-ucuslara-kapatilmamali-turkiye-eylul-2019
54. Shead, S. (2017, 06 18). The story of Berlin's WWII Tempelhof Airport which is now Germany's largest refugee shelter. Retrieved 05 22, 2019 from Business Insider: https://www.businessinsider.com/inside-berlin-iconic-tempelhof-airport-2017-3?r=UK
55. Simanek, L. N. (2014, 01 21). I am Tempelhofer and I think that the airport with field remains as it is. Retrieved 08 06, 2019 from Tempelhoferfeld Info: https://www.tempelhoferfeld.info/tempelhofer-steht-dazu-dass-flughafen-mit-feld-so-bleibt/
56. Solnes, E. J., & þorgeirsson, A. (2006). Environmental and socio-economic evaluation of four different sites for a domestic airport. Environmental Modeling and Assessment, 11, 59-68.
57. Stangel, M. (2011). Transformation of Derelict Areas into Mixed-Use Urban Neighborhoods-Case Studies in the Polish Cities. REAL CORP 2011: Change for Stability: Lifecycles of Cities and Regions, (pp. 1047-1052). Essen.
58. The Hellinikon Project. (2017, 10 06). Master Plan. Retrieved 05 23, 2019 from https://thehellinikon.com/gallery-en/
59. The Reykjavík Grapevine. (2008, 03 07). 102 Reykjavík. Retrieved 05 23, 2019 from Grape Vine: https://grapevine.is/mag/feature/2008/03/07/102-reykjavik/
60. Toepel, W. (1990). The new Munich airport from the point of view of transport planning. Informationen zur Raumentwicklung, 4 (5), 205-211.
61. Tolga, H. B. (2006). Endüstriyel Alanlarin Dönüşümü, Kentsel Mekana Etkileri: Beykoz Kundura Ve Deri Fabrikasi İçin Bir Dönüşüm Senaryosu [Transformation of industrial areas, effects on urban space: a transformation scenario for Beykoz shoe and leather factory] (Master's thesis). Institute of Science and Technology, Department of Architecture. Istanbul: Yıldız Technical University.
62. United Nations (UN). (2018, 05 16). 68% of the world population projected to live in urban areas by 2050, says UN. Retrieved 05 16, 2019 from United Nations Department of Economic and Social Affairs: https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html
63. Uygur, İ. (2018, 10 02). Havalimanından Sonra [After the airport] Retrieved 05 21, 2019 from XXI Mimarlık, Tasarım ve Mekan dergisi: https://xxi.com.tr/i/havalimanindan-sonra#ref7
64. W. Merritt, A. (2007). Redeveloping greyfields: definitions opportunities and barriers. Institute of Technology, Dept. of Urban Studies and Planning, Massachusetts.
65. White, M., & Sheppard, L. (2009). Productive Urbanisms from Runways to Greenways. 26th Conference on Passive and Low Energy Architecture. Quebec City: PLEA.

66. Yeni Emlak. (2018, 05 29). Millet Bahçesi'ni TOKİ yapacak [TOKI will construct the National Garden] Retrieved 10 15, 2019 from Yeni Emlak: https://www.yeniemlak.com/millet-bahcesini-toki-yapacak-18383-toki
67. Yılmaz, U. (2018, 05 25). Atatürk Havalimanı Değeri Yaklaşık 234 Milyar TL. Retrieved 07 31, 2019, from Tuvimer: http://haber.tuvimer.com/ataturk-havalimani-degeri/