

Interface between urban and rural: Determination of use status for Göktürk Forest Nursery

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Received: March 2013

Final Acceptance: October 2013

Abstract:

Istanbul, Turkey's economic capital is in rapid change and development due to the increased population growth and spread. At this rapid change, the fringes become an important opportunity to establish the relationship between rural and urban and to meet the needs of people in terms of recreational requirements. The reserve areas, which are at the urban boundaries, such as 2-B lands¹, forest nurseries, open mining areas and post-industrial sites have significant potential for re-use after losing their functions. Göktürk Forest Nursery was founded to meet the needs for production of forest trees and ornamental plants in 1969. Today it is in a transitional phase of urban development, changing into a place of interaction of both urban forms and rural landscape. Göktürk Forest Nursery should be appraised by using sustainable landscape planning and design processes to consider its physical, ecological, social and economic potential. This study examines the new use proposals for Göktürk Forestry Nursery at three scales; macro-scale analysis considering the 1/100.000 scale Istanbul Environmental Master Plan, medium-scale relation analysis considering Göktürk scale; and micro-scale analysis with Questionnaire method and a matrix of comparison between different urban green type scenarios for its future development.

Keywords: *Urban growth, urban/rural fringe, sustainable planning, Göktürk Forest Nursery, Istanbul.*

¹ 2B lands are degraded areas which has lost its function as forest. According to Law 6292, 2B lands can now be sold to willing organizations. In Turkey, there are 473000 ha of 2B lands.

1. Introduction

1.1 Istanbul and the urban development

Istanbul is one of the most important metropolises in the world with its special geographical position, magnificent history, splendid culture and great potential of economy. The value of such a privileged geographical, historical and cultural background and unique natural beauties of Istanbul are in part lost, and in part under increasing threat as a result of pressure of unplanned development. Istanbul, as a meeting point of the East and the West, has a synthesis of various cultural backgrounds formed by different civilizations throughout history. Moreover, Istanbul acts as one of the capitals of the world with its strategic, geographical location and cultural connections between The Balkans, the Black Sea, the Caucasus, Central Asia, the

Middle East and the Eastern Mediterranean. Currently, 12.5 million people live in Istanbul, and at the rate current population increase it is estimated that in 15-20 years, the population will be 20-22 millions. In the 2006 Istanbul Environmental Plan, the control of direct migration to Istanbul is emphasized by the determination of the principles of regional land use policies. Besides the east-west directions, the urban expansion to the North is very critical for Istanbul and it should be also taken into control because of the Northern Forests.

The rapidly growing population, is resulting in a rapid increase of structural and economic activities, and has expanded the city centre's built up area. Urban areas most often expand by converting farmland and forests into residential sites (Sullivan, Anderson, Lovell, 2004). Faced with such extreme pressures of urban growth, the city is still expanding towards the forests. Yet there have been hardly any attempts to prevent the consequent physical damage. Looking at the current state of Istanbul, the population is overrunning the designated residential areas and threatens productive agricultural land by expanding on the fringes.

Since cities are not static objects, they can grow fast; pressing their rural hinterland, pushing the borders day by day and creating a new transitional urban fringe landscape (Figure 1). Istanbul is in a process of rapid change and development. After Turkey's industrial revolution, Istanbul became Turkey's industrial and economic centre and this has affected its subsequent urbanization as industrial structures and lands have grown up all over the city. Over time, industrial facilities have developed outside the city with the consequential, post-industrial brown field landscapes. Additionally there are old mining-areas, 2-Bs which is land that has lost the quality of "forest", and closed forestry nurseries. Re-use of these reserve areas, which remain in the urban boundaries, as public open space addresses to some extent the challenge of providing for sustainable development and can improve of the quality of life.

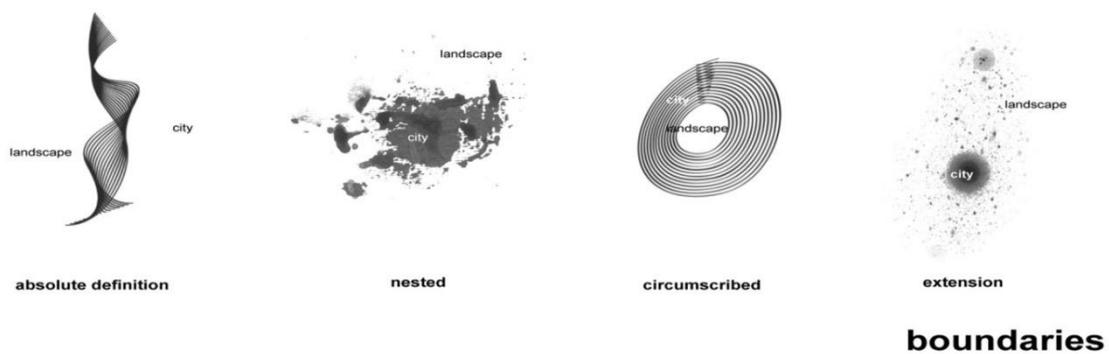


Figure 1. Urban/rural boundaries.

Due to the increased population growth and the spread of settlements into the interior of forests in the north of Istanbul, the border lands become an important opportunity to establish the relationship between rural/urban and to meet the needs of people in terms of recreational requirements.

With the rapid rate of urbanization and global warning, the amount of green steadily decreases even though human need for green increases. As

humanity gains more awareness about the health issues caused by unplanned urbanization and multi-crowded living spaces, the demand for green is increasing. Active green areas are not only the need of humans to embrace the ecology, but also they can have great importance to inspire the social and cultural awareness. Locating in the border between urban and rural, the Göktürk forestry can be efficiently re-evaluated as an open green space for a healthier quality of life for the inhabitants of Istanbul (Figure 2).



Figure 2. Urban/rural intersection.

1.2 Rural/urban fringes

Sustainable urban and landscape design deals with finding the most appropriate land use management. One of the significant properties today includes urban fringe; the area of dynamic intersection where both urban and rural characteristics occur. The first mention of urban/rural fringe appears by planners in 1930s when the United Kingdom was concerned about the loss of agricultural land (Gant, Robinson, Fazal, 2010). However, a policy of “green belt”, like in London, or a Green Finger Planning, like that of Copenhagen, has not been developed to control Istanbul’s urban sprawl. In consequence, the continuous extension of urbanization and transformation of land-use cannot be prevented in Istanbul. The fringes of Istanbul have chaotic and un-organized planning and are governed by an uncontrolled fee market in response to social and economic pressure led by the rapid increase in population and uncontrolled urban sprawl.

Separation the urban territories from rural areas is a concept of modern Western town planning (Yokohari et al, 2000). As cities grew and their urban structure became more and more dense, in the early days of modern planning movement, urban planners and designers used green open spaces and parks within the developing towns and cities for mass popular recreation, as we see in the work of F.L. Olmsted (Stokman, Rabe, Ruff, 2008). The city, which is a dynamic organism, expands and contracts over time, and fringes are re-shaped by different uses and patches. Once located on the edge, old city boundary lines are now stranded in the middle of the Istanbul metropolis; most literally and impressively in the case of the Byzantine walls, and new fringes are defined.

Population growth occurs on the fringes of many metropolitan areas around the world (Daniels, 1999; Duany et al., 2000). Given it is expected that by 2050 nearly 70% of the world’s population will live in cities according to the forecasts of the United Nations, (2007: 23 - 4), we can expect many urban areas will continue to grow rapidly, especially in the megacities of developing countries (Zhao, 2009). As shown in the Settlement Sprawl in Figure 3, rapid urban expansion results in urban sprawl on the fringes of Istanbul. Such development damages the traditional land uses and is in conflict with the

natural resources, such as agricultural land, forests and other land uses (Figure 4, 5 and 6). The present uses of these fringes and the sustainability of the urban-rural balance plays a significant role to achieve a clear standard in living. Consequently an understanding of the transformation processes and patterns of land use is vital for effective landscape planning in areas of mixed urban–rural land use on the periphery of megacities such as Istanbul (Hara, Thaitakoo, Takeuchi, 2007).

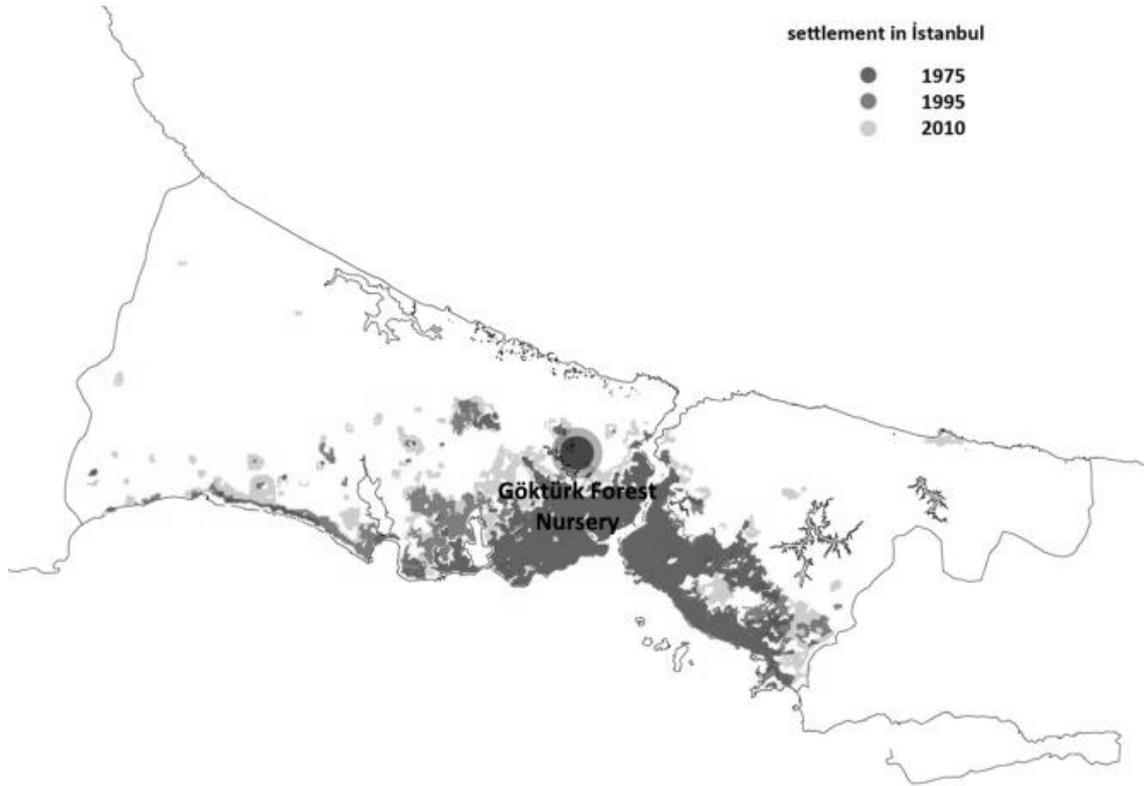


Figure 3. Istanbul settlement extension from 1975 to 2010.

Urban landscapes on the fringe of mega-cities are characterized by an intense and seemingly chaotic mixture of different micro-scaled agricultural and non-agricultural land uses. These can be found in most of today's well-developed economic regions, especially around the central cities and stretching along infrastructure corridors between larger city cores (Stokman, Rabe, Ruff, 2008). The complexity of the landscape in Istanbul's suburbs is a result of the high rate of immigration and the intensity of economic activities. It seems that urban fringes have been disregarded because of the difficulties of comprehending the spatial relationships between urban and rural characteristics. Spontaneous and disordered developments in such zones have severe impacts on both agricultural and residential landscapes (Saizen, Mizuno, Kobayashi, 2006: 411). Land use policies in urban fringe areas to preserve natural and rural features need further public support in order to sustain and preserve the original character of the area (Vogt and Marans, 2003).

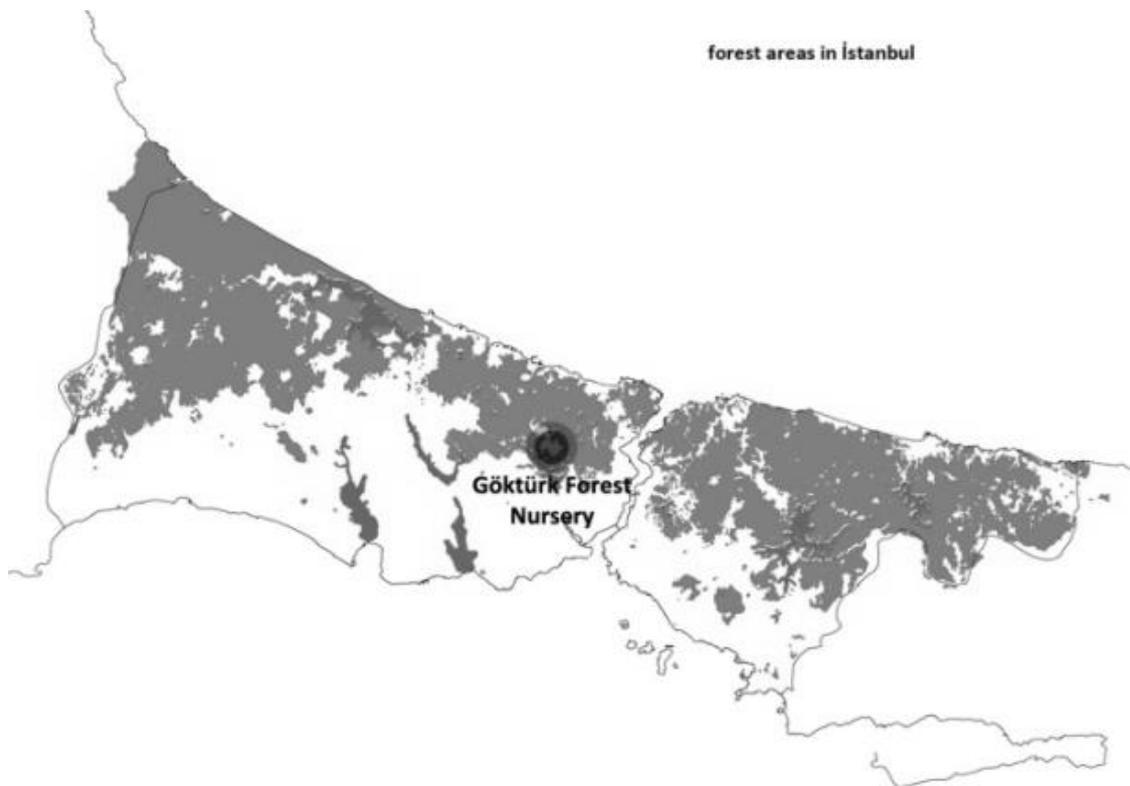


Figure 4. Forest areas in İstanbul.

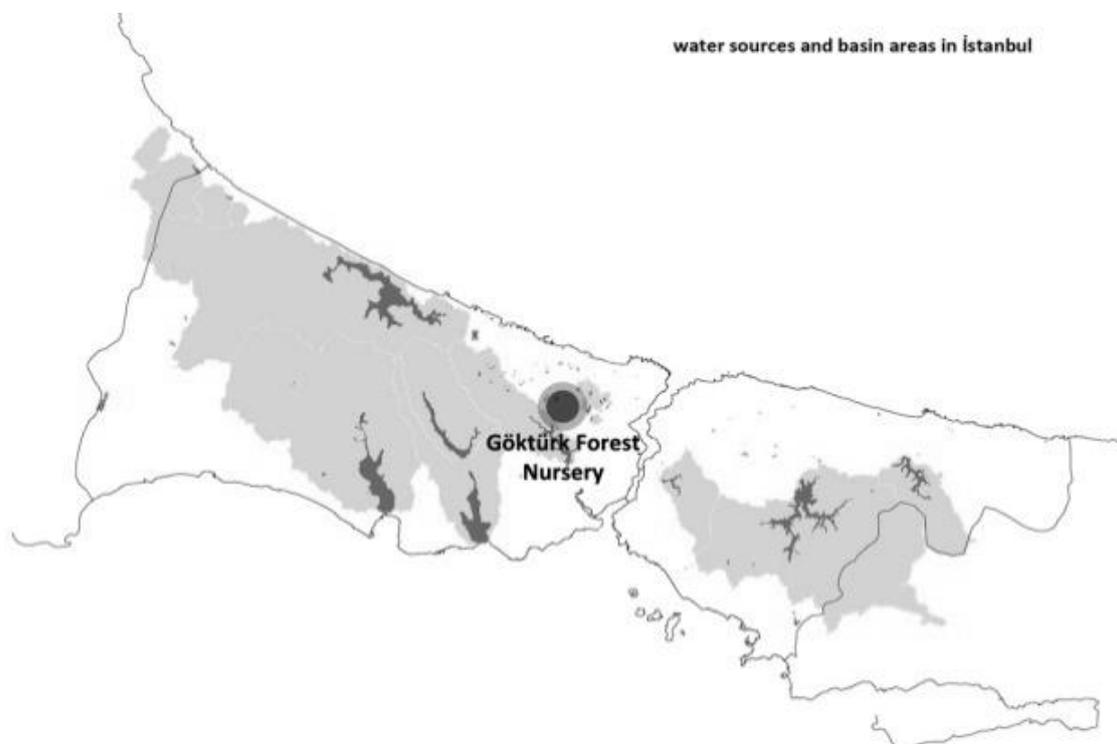


Figure 5. Water sources and basin map of İstanbul.

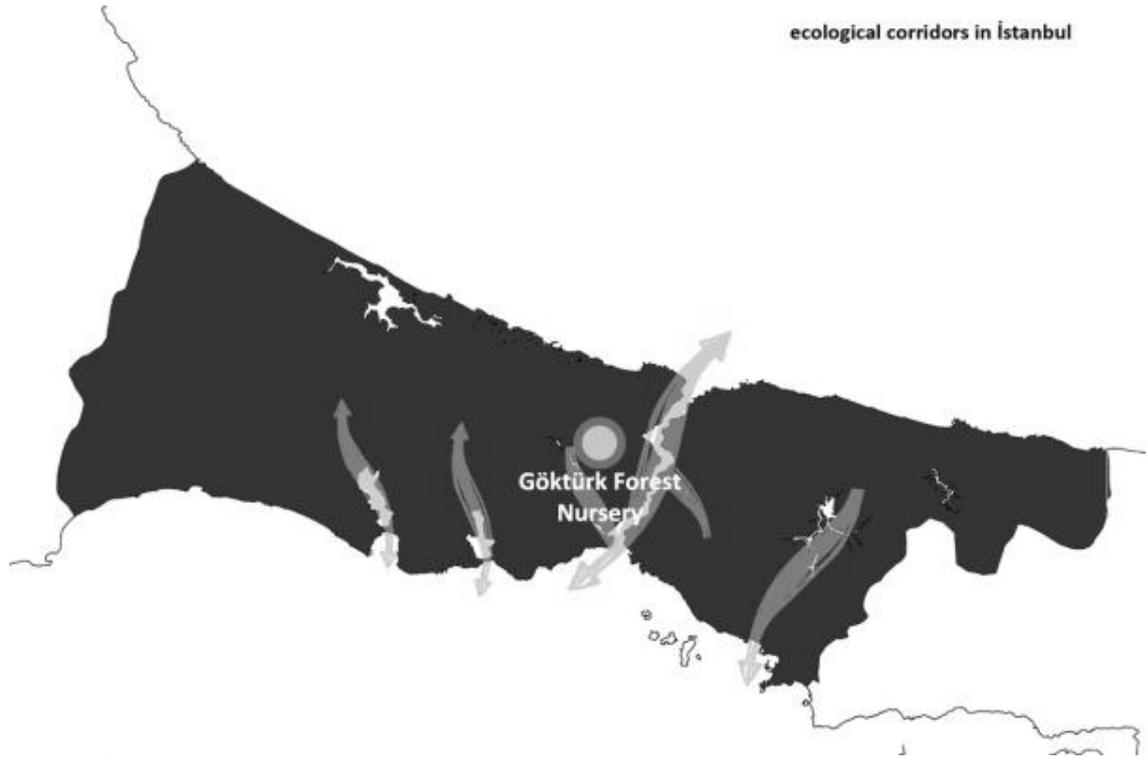


Figure 6. Ecological corridors in Istanbul.

2. Methodology

This study examines proposals for the new uses for Göktürk Forestry Nursery at three scales:

- (1) macro -scale analysis; considering the data sets of 1/100.000 scale Istanbul Environmental Master Plan,
- (2) a medium-scale relation analysis considering Göktürk Scale; and
- (3) micro-scale analysis with Questionnaire method and a matrix of comparison between different urban green type scenarios for the future development of Istanbul's local fringe. This paper follows three sequential steps. Firstly, Istanbul's need of green is indicated and Göktürk's significance is examined. Then, definition and operation of State Forest Areas in Turkey are reviewed in the context of management and green area provision. Finally, a questionnaire has been applied in order to determine the user demands of both local and city dwellers and is expected to guide the successful future designs to be compatible with all kind of user's requests. To conclude, a matrix has been developed whereby urban green space types are examined and the proposal for a botanical garden is developed with a rationale.

3. Göktürk State Forestry Nursery

3.1 Macro-scale: Istanbul environmental plan and Göktürk

Istanbul's environmental problems are so severe as to affect the quality of life. There have been several attempts to protect the surrounding lands, particular the Northern Forest since the Republic was founded in 1923. In the 1920s, the general rate of urbanization by area per decade was 32,2%; in 1960s this rate increased at 40,8%; while in 2000s the urbanization rate was 80,4% (Yücesahir, Bayar, Özgür, 2004). Since the 1950s, migration from rural areas to urban settlements has been the main challenge for cities

(Tüfekci, 2003). Nearly 12 million people have migrated from rural Anatolia to Istanbul, which connects Anatolia to Europe.

In order to cope with the increase in population under control, several Environmental Plans have been prepared. The first was the 1937 Istanbul Master Plan by French planner Henri Prost, at a 1/5000 scale during the first period of major population growth. The Prost Plan was revised in 1943 and a new ten year Development Plan was declared. In 1980, the first metropolitan scale 1/50.000 Istanbul Metropolitan Development Plan was developed by the Ministry of Development and Housing. The latest plan, which was prepared by a public and private establishment, Istanbul Metropolitan Planning, was approved in 2006 under the name of the 1/100.000 Istanbul Environmental Plan.

The 2006 1/100.000 Istanbul Environmental Plan aims to protect the city's cultural and natural values and to bring a significant metropolitan status with its quality of life, accessibility and its young and dynamic population. This plan covers compatible economic and ecological decisions, strategic decisions on land uses and decisions about social structure, and proposes a managerial structure and support systems to address sustainable development. Furthermore, the main principles for the development of Istanbul are determined, and the unhealthy living conditions resulted from the imbalance between economy and ecology is pre-cautioned.

The 2006 Master plan provides for environmental, economic, social and spatial integration to prevent adverse consequences of previous pre-Plan tendencies. The 1/100.000 Istanbul Environmental Plan is aims to find solutions for Istanbul's current problems, by providing for spatial organization and development in a sustainable way and to improve the life quality. The spread of Istanbul through Çorlu-Çerkezköy-Tekirdağ in west, Izmir in east and Yalova in south creates a horizontal axis and extensions to the north.

The Environmental Plan intends to strengthen Istanbul at a global scale through a comprehensive, structural transformation process. Istanbul can survive if its population growth is controlled. However, currently economic activity is threatening the ecological resources and systems which support the biological and climate capacity of the capital city. Otherwise, life-support systems of Istanbul will be insufficient to provide for the ecological sustainability of the city in the face of excessive population growth. For this reason, environmental, economic and social sustainability is the basis of the Istanbul Environmental Plan. The 2006 Istanbul Environmental Plan proposes a multi-centred and balanced spatial development model for Istanbul City and the Marmara Region. This aims to resolve urban and regional problems, to provide efficiently and effectively for activities for the future.

The relation between life support systems and human quality of life stands very strong in the geography of Istanbul, in order to protect it, holistic preventions are determined. Given this, the water basins and forest areas, along the Black Sea coast preserved in a protectionist approach to protect this littoral from economic pressures. Therefore, a linear model for the development of Istanbul which encourages east-west growth is needed in order to protect the Northern Forests. Consequently, future development is envisioned to determine the population growth capacity and to prevent it being exceeded in order to balance economics and ecology.

The response to the environmental and structural threats on self values in global level, resolving the social and spatial differences to provide the urban integration and ensuring the structural transformation in economical activities to increase the productivity will strengthen Istanbul to catch new opportunities in global competition.

The main policies of the *2006 Environmental Plan* are:

- the protection of ecological corridors, and sensitive ecosystems biological diversity;
- the protection and rehabilitation of natural and agricultural characteristics of ecological corridors, ensuring the integration with urban life;
- the planning of valleys in the city to sustain their air circulation function;
- the protection of natural reserves with the principles of scientific nature conservation from urban development pressures and
- the protection of natural sites with the principles of conservation and prevention from urban development pressures.

The main goal of the Environmental Plan is to conserve Istanbul's environmental sustainability. Protection of the natural environment of Istanbul is both important for maintaining the sustainability of the natural sources and of the quality of life under the pressure of urban growth. The northern forests, which are located along the border of the two sides of Bosphorus, and the agricultural lands starting from Tekirdağ border, are the most important ecologically-based natural areas. Other important natural areas include between Hadımköy and Kemerburgaz, where Göktürk is located (Figure 7).

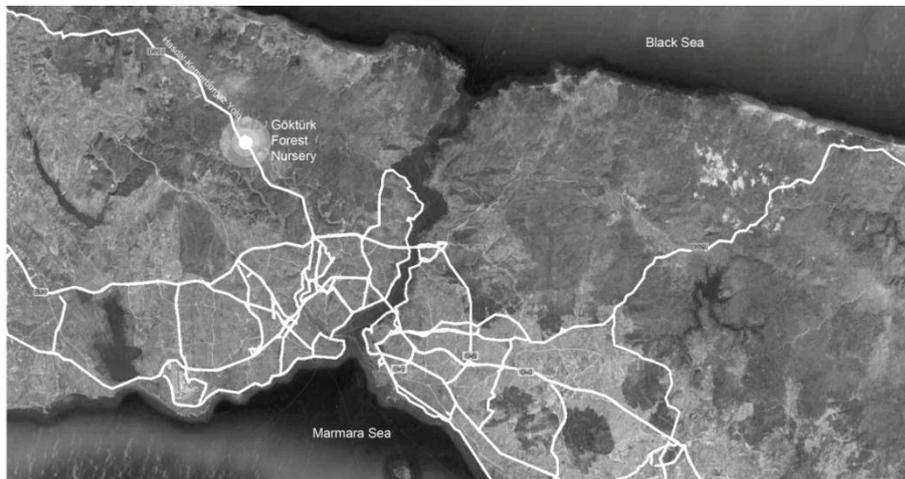


Figure 7. Location of Göktürk in Istanbul scale.

The functions of natural areas are:

- air purification,
- soil conservation,
- groundwater recharge,
- sustainability of ecological balance and
- economic inputs.

These are indispensable to urban life in order to sustain and improve the quality of life. For this reason, the maintenance of the quality and the sustainability of natural sources are essential. In case of development risks for the surrounding natural areas will results are defined as areas which will be kept under control of development and density because of their invaluable natural characteristics. . The decisions of keeping the areas under control for development and density will be determined in the lower scale plans with principals of environmental sustainability.

The areas which will be under restricted development growth are:

- in Europe:
Kemberburgaz, Bahçeköy, Kilyos, Demirciköy, Rumelifeneri, Zekeriyaköy and Büyükçavuşlu;
- in Asia:
Şile, Alacalı, Riva, Ömerli and Alemdağ

In the 2006 Environmental Plan, an aqueduct near Göktürk is also considered as cultural heritage. The Historical Forty Fountain Gallery Line was constructed in 1554-1563 under the technical responsibility of Great Sinan in the period of Sultan Süleyman, and runs from Gaziosmanpaşa to Göktürk (Figure 8). The protection of the gallery is determined as the cultural property (heritage) and there is no permission of any kind of construction except the agricultural activities.



Figure 8. Historical forty fountain gallery line near Göktürk (Municipality of Eyüp).

Another important feature of Göktürk is its characteristic form of urban settlement and this is emphasized in the Environmental Plan. In the Plan, these settlements are to be protected from further urban growth. These settlements, although they have characteristic of urban identity according to surrounding rural areas, have also rural features. As Göktürk district is one of these characteristic areas, its rural identity should be conserved and green areas should be sustained rather than permitting large scale construction.

The main vision of the 2006 Plan for this zone is to take tackles the economic, social and spatial imbalance and control environmental pollution. Therefore, the planning goals are:

- use and preservation of the natural and cultural richness as part of the sustainability policy;
- resolving the social and spatial imbalances between different income groups by increasing qualified green spaces and planned residential areas;
- protecting Belgrade Forest and ecosystem as one of the most significant recreation areas in Istanbul;
- the protection and controlled use of historical aqueducts like the historic Forty Fountain Gallery Line from Ottoman times; and
- precautions to prevent the environmental pollution caused by the waste disposal area in the district.

The most important policy is to reforest the 2B areas, which are not considered as forest, to maintain the ecological integration with the Northern Forest. For this reason, Göktürk Forest Nursery stands as a critical point for the region (Figure 9-10).



Figure 9. Image from Göktürk State Forest Nursery.

3.2 Medium-scale: Göktürk in Kemerburgaz settlement cluster group

Göktürk is located in the cluster of Kemerburgaz Residential Area, with an area of 14.964 ha and a population of 43.960 (Report of Environmental Plan, 2009) The Kemerburgaz cluster includes Göktürk, Kemerburgaz, Bahçeköy, Uskumruköy and Zekeriyaköy settlements (Figure 11). This zone remains outside the basin's boundaries and as a result it is close to the centre of Istanbul, the area is under the pressure of housing and dense construction. This intensive construction is a huge threat for the Northern Forests near the region. The region is exposed to binary structures in social and economical life as different income groups live there. On the one hand, there are high income group residing in Göktürk and Zekeriyaköy, and on the other hand middle and low income groups residing in Kemerburgaz with the

consequence of imbalanced and double standard infrastructures and facilities. In order to prevent the intense pressure of construction to the forest areas and basins, it is crucial not to increase the current density. Thereby, the region's relationships with the north and west should be and strengthen with the city centre.



Figure 10. Image from Göktürk State Forest Nursery.

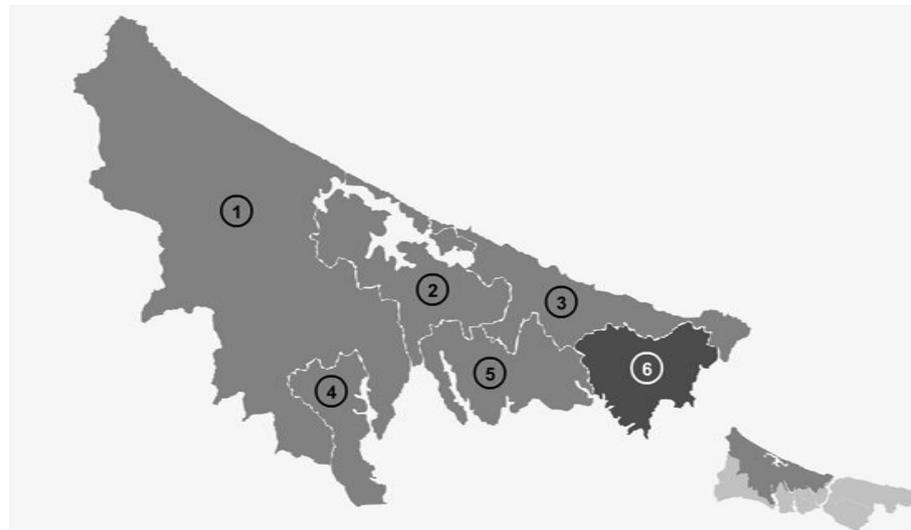


Figure 11. The cluster of settlements in Kemerburgaz including Göktürk, proposed in 1/100.000 Istanbul environmental plan.

Göktürk State Forest Nursery is a green area absorbed by new forms of urbanization due to the expansion of settlement to the Northern Forest of Istanbul. In 1969, it was founded to meet the needs of forest trees and ornamental plants such as Maple, Ash, Acacia, Sycamore, American Oak, Cedar, Pine, Blue Spruce, Fir, Blue Cypress, Leyland and Thuja. According to Fidancılar Union, the production capacity of the nursery is nearly 3 million per year. Nevertheless, today Göktürk Forest Nursery is in a transitional

phase of urban development, changing and beginning to interact with the urban form of the city. The nursery was used as a picnic area before the gates were totally closed to dwellers because of security problems. In response the Green Göktürk Platform, a nongovernmental organization, was founded in order to re-use the area as recreational facilities and prevent any construction project in the nursery (Figure 12).



Figure 12. Göktürk Forest Nursery location in Göktürk scale.

3.3 Micro-scale: Eyüp and Göktürk Forest Nursery

Eyüp is the 18th most populous district in Istanbul according to the address based population registration system. The 2010 population census data shows that 338 000 people lived in Eyüp (Figure 13)². Although Eyüp includes part of the Northern Forest within its district boundaries, due to the pressures of increasing population growth the forests are disappearing. This is why an increase in protection of this forest area will greatly contribute to Istanbul's sustainability.

² Retrieved 2011, January 30, <http://wowturkey.com/forum/viewtopic.php?t=107550>.

With an area of 242 km², Eyüp is one of the largest districts of Istanbul. Most of the district is within the Northern Forests; and the problem areas are on the southern part of the district where most of the settlements take place. But in the long run, the Northern Forests are in great danger as the settlement grows in that direction. The nursery is in the middle of the district, surrounded by forests, but subject to pressure of settlement growth.

As in every country, the huge negative effect of the Industrial Revolution on the ecology is seen in Turkey, especially in Istanbul because of its heavy industries. As well as being the historical and cultural capital of, Istanbul is now the industrial capital of Turkey. This situation has caused the city to lose many of its green areas because of population growth (Figure 14). Since the 1980s, awareness of global warming has increased world-wide and Istanbul has developed a greening plan. Nevertheless, because of all its economic opportunities, Istanbul's population growth has continued. Despite public awareness of the danger of global warming, the green rehabilitation projects have been insufficient and Istanbul is day by day becoming more congested.

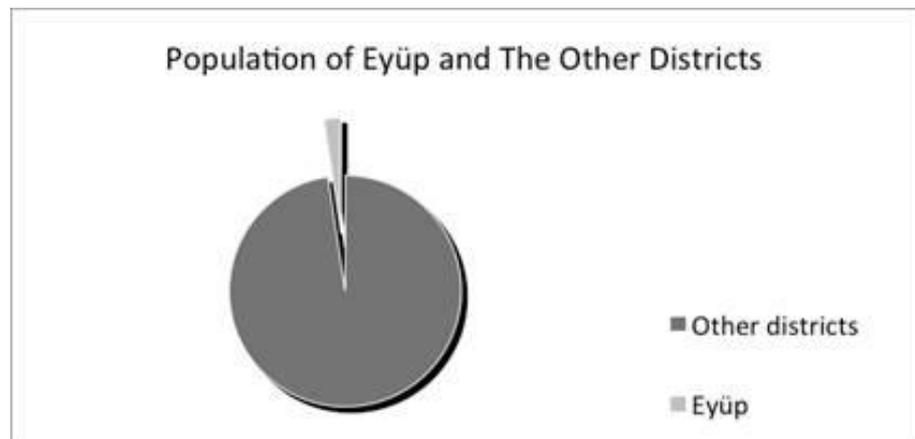
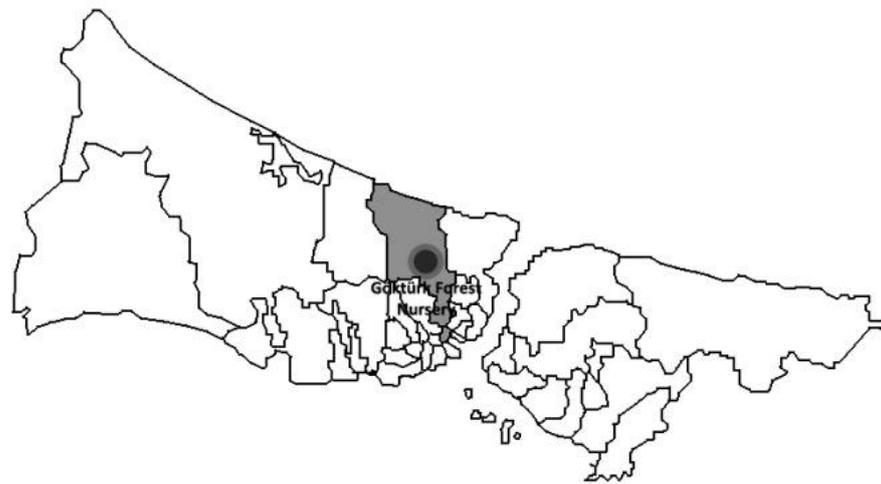


Figure 13. Eyüp district in Istanbul and population of Eyüp with the other districts.

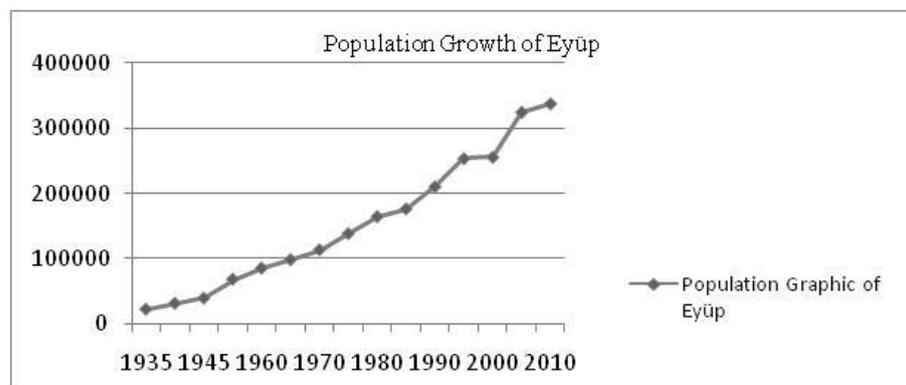


Figure 14. Population growth of Eyüp.

Göktürk is a district located in Eyüp, Istanbul. It is surrounded by dense forestry. Generally, transport is provided by private cars. The population has been increasing rapidly since 1985. The plant nursery is 32,5 ha in area and was opened in 1969 (Figure 15). Provision of public green space and

common recreational areas are insufficient for the district. Furthermore the natural open space provision is not integrated with residential areas. Therefore aims should include provision for a major urban green space and integrating it organically to public transportation systems.

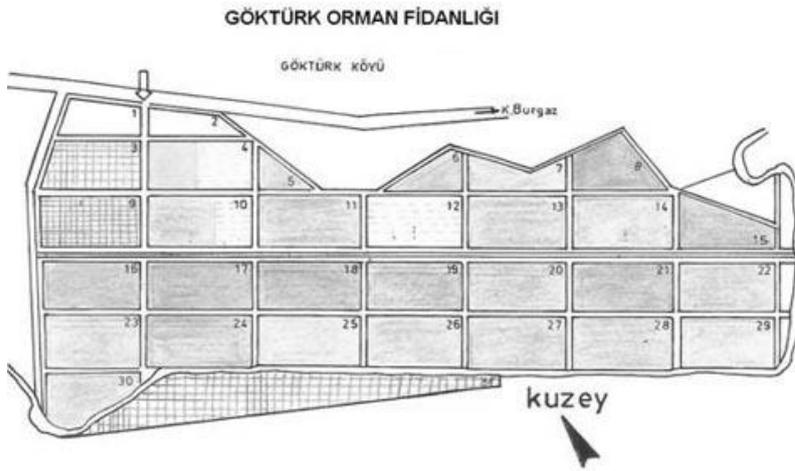


Figure 15. Göktürk Forest Nursery (Municipality of Eyüp).

4. State forest nursery operations in Turkey

A nursery, defined as piece of land, open or closed, where saplings grow in order to plant elsewhere for a specific purpose, can be divided into three groups according to their characteristics and ownership: commercial (private) nurseries, seed cultures and state forest nurseries (Yahyaoglu, 1993). Nurseries, that grow certain high-quality seedlings with superior genetic characteristics for reforestation investments and are established by the government, are defined as State Forest Nursery Operations. State Forest Nursery Operations can be either temporary or permanent.

Turkey has 20.7 million ha of forest, which is 26% of the country. However 49% of the total forest area is inefficient relative to their potential commercial productivity for wood-based forest production (Anonymous, 2001). Our forests are suffering from loss of quality and quantity as a result of the uncontrolled destruction. At the same time, the growth of population and

industry increases the demand for wood and non-wood forest products. For these reasons, investments in forestation should be priority investments. In addition, landscape and garden design by responding to the rapid urbanization increases the demand for ornamental plants and young trees. State Forest Nursery Operations, situated in big cities and near the city centre, have a large market for the production of ornamental plants and are important for supplying the needs of green areas and for visual benefit of community.

In addition, State Forest Nursery Operations have a strategic growing importance in our country as well as on a global scale (Anonymous, 1996; Türker, 2003), with their ecological, economic and social dimensions, providing there is sustainable forest management. Thus, they contribute to the ecological dimension and social dimension and creating employment to cultivate the plant material supplied for plantation works in order to increase the quantity and quality of forest resources.

According to the requirements, at times some temporary forest nurseries that completed their missions have been able to be closed as new nurseries open. Recently, the closing of State Forest Nursery Operations and/or their being sold to private sector have become a live issue regardless of whether the nurseries are temporary or not. It is certainly true that some of the 39 State Forest Nursery Operations located in city centre should be closed. However, this is not as negative as it seems, but may be considered as an advantageous situation for some management. Thus, it is obvious that these nursery operations provide some ecological and aesthetic benefits in order to meet the green area requirements of citizens.

Finally, in our country, which has a rich flora, State Forest Nursery Operations should enlarge its product range and produce the nursery stock of endemic species which exist in our native forests instead of producing the saplings used solely in forestation activities. It may be more beneficial for our forestry to redirect State Forest Nursery Operations, to these studies, which are leading businesses with their knowledge on technology and finance of sapling production.

Today, the importance of trees and forests are more and more understood, and the love of green is increases day by day. The demand for young trees is growing as people start to afforest their environment in response to the lack of green in urban settlements. However, nurseries cannot find appropriate land in an economic way as they are either small or very expensive. According to some experienced nursery owners, instead of selling land to organizations to construct buildings, government could rent land to qualified nurserymen in order to produce better seedlings. Thus, current nurseries would be used in a more efficient way.

State forest nurseries currently are not able to reach the desirable point of productivity, profitability and economic level where they play a strategically significant role in development and sustainability of forests. Capacity utilization problems, place of incorporation, employment, cost and pricing issues play a major role in this failure as well as political and technical problems. The low capacity utilization rate is the main reason that they do reach the objectives set out in the plantation forestry plans. However, this is not properly understood and state management is always put forward as the reason for failure. Therefore, the closure of state forest nurseries or sale to

the private enterprises comes up periodically. Nevertheless, this practice, which is produced as a solution by some authorities, can cause serious problems instead of providing expected benefits. Therefore, it is important to review the issue, make comprehensive surveys and have a full discussion of the viability of these nurseries.

In 2004, the Ministry of Environment and Forestry decided to shut down 39 State Forest Nurseries, which total one third of all total state-owned nurseries, and to sell the land to private individuals and organizations. There was a huge reaction of public against these series of closure of state forest nurseries; it was thought that Göktürk Forest Nursery would be in line after 39 nurseries. The sales were halted as a result of the legal proceeding, but because of the long process, seven nurseries were sold, including Istanbul Alemdağ State Forest Nursery to TOKİ. In response to the reports of closures of Göktürk Nursery, a forum has been established to prevent the sell-off. In 2011, it said that Göktürk Forest Nursery was to be opened to the public and being used as a recreation area. However, given the current 2B lands situation and the vanishing of the open spaces one by one, there is still a threat to Göktürk.

Istanbul becomes more crowded day by day causing unplanned urbanization and unhealthy conditions. Due to the density of population, city dwellers complain of the lack of green areas, where they can play and relax and embrace nature. But the residents do not want uncontrolled green; what they desire is a protected area where they can let their children go freely and enjoy the green. This brings the question of "How sufficient will it be if it is only transformed into a green space?" This means that alongside nature, residents also wish for facilities. Göktürk Forest Nursery was a controlled secure place with daily opening-closing times. This feature makes it more privileged and the research demonstrates that users prefer green area with certain limits and security rules.

5. Scenarios and prospects for Göktürk forestry nursery

5.1 Determination of user request, questionnaire method and five-point likert scale, mode and median method

In Istanbul, open spaces can be an active or passive green areas, but are not appreciated sufficiently in ecological and social ways besides its economical incomes for construction companies. Instead of evaluating those in order to the need for green, open spaces are ignored. According to Erhan Demirdizen, President of Istanbul Chamber of City Planners Branch, the amount of active green space per person is less than 1 m² in Istanbul although it should be over 10 m² for healthy living conditions and he adds that in Europe, this number is average 20 m².³ Consequently it is important for there to be more public open spaces and green areas in Istanbul. With 35 ha of potential open space, Göktürk Forest Nursery can be easily used as an active green space for the dwellers. In this respect, Göktürk Forest Nursery should be subject to a sustainable landscape planning and design process, taking into consideration its physical, ecological, social and economic potential and its relations with the city must be recontextualized. Thus, the organized landscape became a cultural product, affecting the urban identity. A change in this landscape means a change in urban identity. Therefore, this both natural and cultural landscape will identify the future values of urban form in the north of Istanbul.

³ Retrieved June 22, 2009, from <http://www.milliyet.com.tr/default.aspx?aType=HaberDetay&ArticleID=1109271>.

⁴ Survey study by Kusuluoglu, D., 2011.

In the 21st century, deleterious responses to nature have manifested itself in unhealthy living conditions in cities and natural disasters. Accordingly, the green urbanism movement has sought to prevent these negative circumstances in order to reduce the carbon emission amount in districts. Creating parks on such disused lands is a beneficial opportunity to provide both green and socially active areas. A survey study sample of 30 people, who were randomly selected, was done to establish support for this idea and to examine if “a park” is really what the dwellers want. Fortunately, all 30 of 30 people answered favorably to the question “Would you prefer if Göktürk Forest Nursery is transforms into a park”⁴. Respondents to the surveys includes five age ranges; 6 of the 30 people are less than 18, 8 of the 30 people are between 18-25, 8 of the 30 are between 25-45, 6 of the 30 people are between 45-60 and 2 of the 30 are over 60 years old.

According to the survey, it seems that none of the dwellers have knowledge about either dangers of global warming, nor reclamation of abandoned quarries. Nevertheless, they see Göktürk Forest Nursery as having potential for transforming into a park. Additionally, all the respondents agree on continuing its function as a “nursery”.

Frequency of use is another important parameter for a park to maintain dynamically. Using the 5 point scale, respondent were asked to answer “How often would they visit Göktürk Forest Nursery if it transforms into an urban park”. The results can be evaluated by mode ad median method to find out the common spread.

2 2 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5

After aligning the answers numerically, mode is found as “5” which means everyday; median is found “4” which means once a week. If we calculate the percentage, it is seen that 40% of the respondents admit that they would use the park every day. The result indicates that the user requests are in the same direction (Figure 16).

Respondents add that they prefer a secure park rather than an open green area; to ensure the security, the most important feature is the user multitude. A well designed park can be used 24/7 which makes it more secure. The more crowded a park is the more safe it is. Therefore, the park should serve a diverse group of people.

5.2 Urban green space types and a proposal: Botanical garden

In cities, we can define seven types of urban-scale green space:

- Urban Parks,
- Botanical Gardens,
- Zoos,
- Amusement (theme) Parks,
- Expo Areas,
- Sport Facilities Parks and Cemeteries (Yıldızcı, 1995).

In the urban scale, we can define the green space in 7 types; Urban Parks, Botanical Gardens, Zoos, Amusement (theme) Parks, Expo Areas, Sport Facilities Parks and Cemeteries (Yıldızcı, 1995). Botanical Gardens are very significant green spaces in urban landscapes; they are where the plants are collected and exhibited (Pamay, B., 1979). As well as scientific educational

and research activities, botanical gardens also create spaces for recreational needs of public.

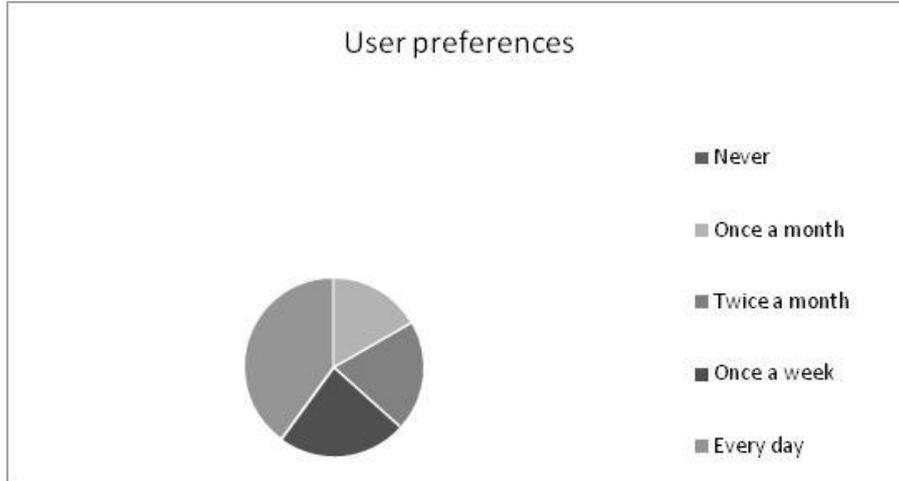


Figure 16. Estimated usage frequency of Göktürk Forest Nursery park.

Since the European colonial period of the 19-20th centuries, botanic gardens have been involved in the introduction of plant resources (Heywood, 1991). Botanic gardens today act as conservation centre for plant species, particularly rare and endangered ones; and they play a leading role in increasing both conservation and education awareness of public recreational activities. Botanic gardens are attractive points for both domestic and international visitors, as well as for professionals (Ballantyne, Packer and Hughes, 2008). The two objectives of botanic gardens are conservation and education; so botanic gardens should be well located and accessible for community education. In order to increase the conservation awareness of public, recreational interest of the botanic gardens is significant. Botanic gardens contribute urban green spaces providing various advantages in conservation, education and recreation (Ward, Parker and Shackleton, 2010). Istanbul has not enough public green spaces; this is why majority of botanic garden visitors complain about the lack of green space. With reference to the usage, a botanic garden will meet the need of a nursery and a park. There is also a contribution to climate change by conserving the biodiversity and interacting with the public (Donaldson, 2009). In today's era that maintenance and sustainability are two significant points in design, conflicting with global warming can be one of the main reasons of the suggestion for Göktürk Botanic Garden.

Botanic gardens should have two basic criteria to be successful: first is the local feature, second is the relation with the city. For a successful application, the local features such as fertility, the quality of soil, water, locating in a basin, to be able to have bio-diversity for plant species from all around the world are very significant. The location within the city, the accessibility, the size of the garden and the user request are other considerable criteria for an accomplished design; and The Old Göktürk Forest Nursery has all of these features (Table 1).

Table 1. Matrix of urban green space types and determination of suitable type for new use of Göktürk forestry nursery.

Urban Green Space Types	Accessibility	Size (ha)	Soil and Water Status	Current status of seedlings	Existence in Istanbul
Urban Park	+	Min 40ha	+	-	-
Botanical Garden	+	Min 20ha	+	+	-
Zoo	-	Min 10ha	-	-	+ (Darıca)
Amusement Park	-	Min 10ha	-	-	-
Expo Areas	-	Min 10ha	-	-	+
Sport Facilities	+	Min 20ha	-	-	-
Cemeteries	-	Min 10ha	-	-	+

6. Final considerations

Urban/rural fringe landscapes are complex formations, and planning policies are departmentalizing the land uses specifically without taking into consideration the dynamic interaction on the urban edges (Stokman, Rabe, Ruff, 2008).

This research has led to the conclusion that it is possible to claim people today need green spaces and there are possibilities for disused areas to be transformed into active green areas and parks. At its simplest, it is not hard to be aware of the urgent need of green for Istanbul; disused areas such as Göktürk Forest Nursery can be re-used as a botanic garden to contribute the green system, but also to contribute the biodiversity, education and cultural heritage of the city. Furthermore, it is significant that rehabilitation of disused areas can help people to appreciate the new urban landscapes. Through urban green spaces, the negative environmental effects of rapid urbanization can be reduced and naturally satisfying spaces can be created in order to promote sustainable city and a better quality of life.

Furthermore, the importance of the relationship between design and maintenance should be emphasized as today it is the key factor of the sustainability. For this reason, it is important to ensure the sustainability of the future parks, not to leave it through the natural selection. Istanbul does not have a botanic garden as well as an urban park; therefore old Göktürk State Forestry Nursery should have both characteristics. With its location, ecological features, water and soil fertility, it can be re-used as a botanic garden; providing the ecological diversity, economic benefits and social satisfaction as recreational facilities.

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Kentsel ve kırsal arasında geçiş: Göktürk Orman Fidanlığı'nın kullanım durumunun belirlenmesi

İstanbul, coğrafi konumu, tarihsel birikimi, kültürel çeşitliliği ve ekonomik potansiyeli ile günümüzde en önemli metropoller arasında sayılmaktadır. Tarih boyunca çok çeşitli medeniyetlere ev sahipliği yapmış, doğu ile batı arasında köprü görevi görmüştür. Tarihi, kültürel ve ekonomik değerlerin yanında sahip olduğu doğal verilerin kontrolsüz kentleşme sonucu kaybolması, İstanbul'un yüzleştiği en önemli sorunlardan biridir. Özellikle kuzeye doğru genişleyen şehir formu, Kuzey Ormanları'nı büyük tehdit altında bırakmaktadır. 2009 yılında onanan İstanbul Çevre Düzeni Planı'nda da belirtildiği üzere, kentsel yayılma, göç oranının kontrol altına alınması ve bölgesel arazi kullanım politikaları esasların belirlenmesi ile sağlanmalıdır. Endüstri devrimi sonrası Türkiye'nin endüstriyel yükünü taşımaya mahkum edilen İstanbul, orantısız ekonomik yatırımlar sonucu artan göçün etkisiyle özellikle 1950lerden itibaren yeşil alanlarının kaybetmeye başlamıştır. 1980lerde başlayan küresel ısınmanın bilinciyle İstanbul'daki büyüme kontrol altına alınmaya çalışılmış, ancak başarılı olunamamış, nüfus artışının önüne geçilememiştir.

Hızlı bir değişim ve gelişme içerisinde olan İstanbul Kenti'nde yerleşik alanlar içerisinde kalmış rezerv alanların, kamusal açık alan olarak değerlendirilmesi yaşam kalitesinin iyileştirilmesi açısından önemlidir. Şehirler birer statik obje değildir; genişlemeye devam ederler ve bu süreç içerisinde kentsel peyzajı değişime uğratarken kırsal peyzaja baskıda bulunurlar. Artan nüfus sonrası yerleşim alanlarının İstanbul kuzey ormanlarının içlerine doğru yayılması, sınırda kalan alanların orman-kent arasındaki ilişkiyi kurması ve insanların rekreasyonel ihtiyaçlarını karşılaması açısından büyük fırsattır.

Göktürk Orman Fidanlığı, yerleşimin kuzeye doğru genişlemesinden ötürü artık şehirleşmenin içinde kalmış bir yeşil alan niteliğindedir. 1969 yılında orman ağaçları ve süs bitkileri ihtiyaçlarını karşılamak amacıyla kurulan Göktürk orman fidanlığı, artık günümüzde kentsel yeşil alan ihtiyacının karşılamaya nitelik bir dönüşüm içerisinde. Günümüzde Göktürk Orman Fidanlığı kentsel gelişimden ötürü bir geçiş dönemi yaşamaktadır. Bu açıdan bakıldığında Göktürk orman fidanlığının sürdürülebilir peyzaj planlaması/tasarımı süreci içerisinde ele alınarak, sahip olduğu fiziksel, ekolojik, sosyal ve ekonomik potansiyeller doğrultusunda kentle kurduğu ilişkinin yeniden kurgulanması gerekmektedir. Bu peyzajın değişmesi, kent kimliğinin de değişmesi demektir. Nitekim hem doğal hem kültürel bir peyzaj olan bu yapay orman, İstanbul'un kuzeyindeki yerleşim yerlerinin gelecekteki değerlerini de belirleyecektir.

Bu çalışma, eski Göktürk Orman Fidanlığı'na yeni bir kullanım durumunu 3 aşamada incelemektedir:

- (1) makro-ölçekte İstanbul'un kentsel/kırsal sınırını ve 1/100.000 ölçekli İstanbul Çevre Düzeni Planı'nın verilerini inceleyerek;
- (2) orta-ölçekte Göktürk ölçekte yaklaşarak elde edilen veriler doğrultusunda;
- (3) makro-ölçekte kullanıcı isteklerini belirlemek için yapılan anket çalışmasına ve kentsel yeşil alan tipleri arasında bu alana uygun olan tipi belirlemek için yapılan matris sonucuna dayanarak incelemektedir. Çalışma içerisinde öncelikle İstanbul'un yeşil alan ihtiyacı ve Göktürk'ün bu konudaki önemi belirtilmiştir. Daha sonra Türkiye'deki devlet orman fidanlıklarının tanımı ve işletilme yöntemleri açıklanmıştır. Kullanıcı isteklerini belirlemek açısından Beşli Likert Ölçeği Mod ve Medyan Yöntemi kullanılarak bir anket çalışması uygulanmış, çalışma sonunda kentsel yeşil alan tipleri arasında bu alana uygun olan tipi belirlemek için bir matris çalışması yapılmıştır. Metodoloji sonucunda, Göktürk Orman Fidanlığı'nın yeni kullanım durumu olarak kentsel yeşil alan çeşitlerinden Botanik Parkı önerilmektedir.

Göktürk Orman Fidanlığı, Kuzey Ormanları'nın bir bölümünü de sınırları içerisine alan Eyüp ilçesinde, İstanbul Çevre Düzeni Planı'na göre Kemerburgaz kümesi içerisinde yer almaktadır. Çevre düzeni planına göre Göktürk, hem doğal kaynakları hem de kültürel özellikleri açısından korunması gerekli yerleşim alanlarında biri olarak kararlaştırılmıştır. Plan çerçevesinde, ekonomik, sosyal ve mekansal dengesizliklerin giderilmesi ve çevresel kirliliğin azaltılması hedeflenmiştir.

2004 yılında 39 orman fidanlığının kapatılmasının ardından, Göktürk fidanlığı tehdit altına girmiştir. 2011 yılında, fidanlık rekreatif park olarak halkın kullanımına tekrar açılmıştır; ancak güncel 2B yasası Göktürk Orman Fidanlığı'nı hala tehdit altında bırakmaktadır. Göktürk Orman Fidanlığı'nın kapatıldığı zamanlarda halkın yoğun tepkisiyle karşılaşmıştır. Bu durum, yerel halkın bu fidanlığa sahiplendiğini göstermektedir. Böylece fidanlığın gelecek kullanımının halka sorularak karar verilmesi uygun olmaktadır. Yapılan anket çalışması sonucu katılımcıların hepsi Göktürk Orman Fidanlığı'nın park olarak kullanılmasını istediklerini belirtmiştir. Buna ek olarak fidanlık fonksiyonunun da devam etmesini istemişlerdir.

Botanik bahçeler, eğitime ve korumaya yönelik kamusal bilinci artırmak açısından önemli rekreatif yeşil alanlardır. Kamusal ilgiyi üzerine çekebilmek açısından konumu ve ulaşılabilir olması en önemli gereksinimleridir. Kentsel yeşil sistemlere sadece pasif yeşil alanlar olarak değil; aynı zamanda koruma, eğitim ve rekreasyonel anlamlarda da katkı sağlarlar. Göktürk Orman Fidanlığı'nın botanik bahçeye dönüştürülmesi, hem eski fonksiyonunu sürdürmesini sağlayacak, hem de yeşil alan yetersizliğinden yakınan kullanıcıların isteklerini karşılayacaktır. Toprak kalitesi, su kaynağına yakınlık, biyoçeşitliliği sağlamak gibi yerel özellikler ve şehir içinde ulaşılabilirlik, alan büyüklüğü gibi gereksinimler Göktürk Orman Fidanlığı'nın botanik bahçeye uygunluğu açısından önemli kriterlerdir. Bu çalışma sonucunda kullanılmayan alanların aktif yeşil alanlara dönüştürülerek halkın yeşil alan ihtiyacının karşılanmasının mümkünüğü Göktürk örneği üzerinden anlatılmıştır. Atıl alanların rehabilite edilerek ve yeni fonksiyonlar yüklenerek yeniden kullanıma açılmaları, insanların yeni kentsel peyzajları keşfetmelerine yardımcı olmaktadır.