

# Green areas in the Ayasofya District (*Nâhiye*) according to the cadastral survey (*tapu tahrir*) registers of Istanbul waqfs 1546 and 1600

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## Abstract

The aim of this paper is to explore the settlement plan and structure of characteristics, components, continuity and changes of green areas mentioned in quarter (*mahalle*) units of the Ayasofya District (*nâhiye*) according to 'The Cadastral Survey (*Tapu Tahrir*) Registers of Istanbul Waqfs dated 1546 and 1600'.

In order to understand the green areas and make interpretations about them, it was considered necessary to understand the urban characteristics and settlement patterns of the Ayasofya District. To achieve this, the urban elements of the Ayasofya District that may have affected the character of the green areas has been researched and compiled. Then, maps were developed in the GIS (Geographic Information System) program to understand the status of the city when the dates of the cadastral survey registers. Afterward, tables were prepared containing the settlement characteristics, their green areas, and their components and numbers. Tables were compared to each other and to maps, and conclusions were drawn. Then, all data supported by visual and written sources related to the period were evaluated and interpreted considering the respective years that they were registered.

As a result, the general settlement plan of the city and the status character of the green areas in the settled areas as well as the relationship of the green areas with the structures they are attached to was determined. Furthermore, the distribution of the green areas in the quarters, their density and location, and the reasons for the differences between the 1546 and the 1600 registers have been discussed.

## Keywords

Ayasofya District, Green areas, Green areas components, The cadastral survey (*tapu tahrir*) registers of Istanbul waqfs 1546 and 1600.

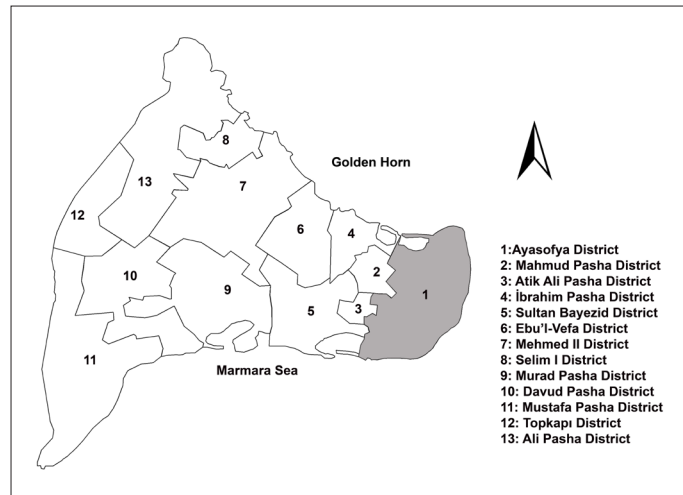
## 1. Introduction

As Aslanboğa states, the three basic structures that establish the financial mechanism of the Ottoman State are the treasury, the manorial system and the waqf system. In order to be regularly supervised by the state administration, a formal registration process was necessary to place the waqfs in a standardized legal framework. Consequently, waqf (*waqfiye*) descriptions, which are the documents describing waqfs' characteristics and their management, were developed (Öz, 1991 p: 425-426). The state registers on income sources, called "*tahrir*", were registers in the waqfs cadastral survey registers (*tapu tahrir defterleri*) (Aslanboğa, 2018 p: 552).

Apparently, waqfs cadastral survey registers are fundamental sources that reveal the social structure of the time and provide important information about the socio-economic and socio-cultural condition of the state (Özgüdenli, 2012 p: 465-467, Öz 1991, p: 425-426). Those sources from the 16th century are 'The Cadastral Survey Registers of İstanbul Waqfs dated 1546' and dated 1600', and they contain clues about the urban settings, the infrastructure characteristics, the quarter plans of the city, and information about the green areas and their features, as well.

Detailed registers of the green areas reveal Turks attached importance to the green areas because of the income they provided. According to Tanyeli (1986), the expressions of '*bağçe*'<sup>1</sup> in many waqfs suggest the presence of agriculture activity within the city. As Tanyeli stated, the garden in the Turkish home was not an ornamental element but rather an area associated with production, adding that the city had large gardens at that time. Respectively, since the waqf registers of properties were directly linked to the property's income, the waqf registers of trees were mostly related to the opportunity to trade their fruits or timber.

The cadastral surveys of both 1546 and 1600 are divided into 14 districts (*nâhiyes*); 13 districts are in the historic peninsula and the other 1 is located in Galata.<sup>2</sup> this paper is about the



**Figure 1.** The Location of Ayasofya District (Prepared by author by İnalçık, 2001, Ayverdi, 1958; Ayverdi and Barkan, 1976, Canatar, 2004).

Ayasofya District which is found in the first chapter in both cadastral surveys.

The 14 districts which are mentioned consist of quarters. The Ayasofya District consists of seventeen 17 quarters with 259 waqfs in the 1546 registers and 360 waqfs in the 1600 registers (See Figure: 1 and Table: 1), containing also the data about the green areas

Öztan (1968), Yıldızcı (1978) and Özbilen (1991) defined green areas as places where the existing open spaces in the urban texture are integrated with plant elements. They added that they are divided into three categories: public, semi-private and private. This study focuses on the green areas in the waqfs that are in the housing settlements and are also in the private green areas.

The aim of this paper is to explore the settlement plan and structure of

**Table 1.** Quarters and number of foundations of the Ayasofya District.

Quarters	Number of foundations (1546)	Number of foundations (1600)
Ayasofya Quarter	26	27
İshak Pasha Masjid Quarter	27	27
Sinan Agha Masjid Quarter	13	23
Akbıyık Masjid Quarter	23	43
Güngörmez Masjid Quarter	16	20
Nakilbend Hasan Masjid Quarter	11	20
Hüseyin Agha Mosque Quarter	9	38
Uzun Şüca Masjid Quarter	18	13
Binbirdirek Sinan Agha Masjid Quarter	4	4
Hace Rüstem Masjid Quarter	9	10
Firuz Agha Masjid Quarter	8	9
Üsküblü Masjid Quarter	17	26
Hayrüddin Bey Masjid Quarter	6	13
Karakedi Hüseyin Çelebi Masjid Quarter	15	19
Nevbethane Daye Hatun Masjid Quarter	20	20
Elvanzade Hace Sinan Masjid Quarter	22	20
Hace Üveys Masjid Quarter	15	28
Total	259	360

the characteristics, components, continuity and changes of green areas mentioned in quarter units of the Ayasofya District according to 'The Cadastral Survey Registers of İstanbul Waqfs dated 1546 and 1600'. The study conducts a survey of the waqfs registered in the cadastral survey registers, explaining the factors related to the origin and presence of green areas and their components within the waqfs. Thus, the study will try to attempt to fill this deficiency in the literature.

## 2. Sources and method

### 2.1. Sources

The main sources of the research are The Cadastral Survey Registers of İstanbul Waqfs dated 1546 and 1600. Moreover, visual and written sources were also used in order to adequately comprehend the data found in the registers. The Istanbul depictions of Giovanni Andrea Vavassore (c.1480), Matrakçı Nasuh (1533), Melchior Lorichs (1559) and Josephus Grelot (1680) provide clues about the green areas of Istanbul. Additionally, written texts and observations, which include writings by Petrus Gyllius (1544-1547), Pierre Belon (1546-1549), Hans Dernschwam (1554-1555), Ogier Ghiselin de Busbecq (1555-1560), and Evliya Çelebi's Travel Book (1630) as well as Skarlatos Byzantios (1851-1869) provide information about the period.

#### 2.1.1. The cadastral survey registers of İstanbul waqfs dated 1546

The original is located in *Kuyûd-ı Kadîme* Archive of the General Directorate of Land Registry and Cadastre in Ankara (Genç et al, 2010 p: 99). In 1970, it was published in Turkish by Ömer Lütfi Barkan and Ekrem Hakkı Ayverdi and included 2490 waqfs between 1502 and 1546. However, some of the waqf registers do not have a specific registration date.

#### 2.1.2. The cadastral survey registers of İstanbul waqfs dated 1600

The original is located in the *Kuyûd-ı Kadîme* Archive of the General Directorate of Land Registry and Cadastre in Ankara (Genç et al, 2010 p: 99). In 2004, Assoc. Dr. Mehmet Canatar published it in Turkish. It

includes 3265 waqfs between 1596 and 1600 and the date of the last waqf is 1600.

In both of the cadastral survey registers, waqfs include the people's waqfs, the components of the waqfs, and conditions governing the waqfs. In 'The Cadastral Survey Registers of İstanbul Waqfs 1546 and 1600', the unified waqf of building groups that were founded jointly are called '*menzil*'<sup>3</sup> (Yilmaz 2009, p: 57). In general, the '*menzil*' consisted of certain types of structures and building sections. Besides the '*menzil*', the waqf registers also indicate garden components such as *bağçe*, *bağçe-i kebir*<sup>4</sup>, *cüneyne*<sup>5</sup>, *çerak/çeraklık*<sup>6</sup>, *bir-i ma*<sup>7</sup>, *çardak/çartak*<sup>8</sup>, *eşcar*<sup>9</sup>, *eşcar-ı tut*<sup>10</sup>, *eşcar-i müsmire*<sup>11</sup>, *gayr-i müsmire*<sup>12</sup>, *muhavvata*<sup>13</sup>, and *zulle*<sup>14</sup>.

### 2.2. Method

This study primarily focuses on the literature review and initially explores the green areas registered in the quarter units of the city. Consequently, the number, the general components, and the settings of the waqfs found in the 1546 and 1600 cadastral survey registers were investigated. In addition, the results of further analyses that reveal the properties of the green areas and their specific locations according to the data provided for the Ayasofya District were shown on two maps using the GIS (Geographic Information System) program. (See: App.-1A and App.-1B).

The topography curves correspond to the map prepared by Muller-Wiener (1998)<sup>15</sup> and the district borders match Halil Inalcik's *Ottoman Period Districts Map* prepared for the Islamic Encyclopedia<sup>16</sup>. The city quarters were defined according to Ekrem Hakkı Ayverdi's map for the book 'İstanbul Quarters at the End of the Fatih Period'<sup>17</sup>, whereas the data about the buildings was drawn from 'The Cadastral Survey Registers of İstanbul Waqfs dated 1546 and 1600'. Müller Wiener's book and map of İstanbul were investigated as well. (Those without identification of their location are shown on the map, but indicated as numbers in the table in App.-4).

Moreover, land, sea walls, harbors and roads were determined from the

interactive Byzantine Map<sup>18</sup> developed by the University of Toronto. Cisterns correspond to Kerim Altuğ's 2013 study<sup>19</sup> and the waterway axis to Kazım Çeçen's 1999 book<sup>20</sup> and to the maps supplied by the ISKI (Istanbul Water and Sewerage Administration) archive. City fountains were indicated according to İbrahim Hilmi Tanışık's 1943 book<sup>21</sup>.

Despite the fact that the city quarters are identical in the two cadastral survey registers, the quarters in the Ayverdi Map from 1958 and the quarters in the cadastral survey registers differ<sup>22</sup>.

The information about the green areas and green area components in the quarters was tabled (See: App.-3) and evaluated in relation to the map (See App.-1A, App.-1B). A table containing the city elements relevant to the period was developed (See: App.-5), and green areas and green area components (App.-3) and the map (App.-1A and App.-1B) were evaluated together. Thus, the continuity and development of the gardens and their relationship with the city elements were investigated.

## 2.3. Urban elements of the Ayasofya District in the 16th century

### 2.3.1. Natural elements

Topography, climate, vegetation and streams can be evaluated as natural urban elements that could indicate effective continuity and change of the green areas of the period. For the topography, Eyice (2010) emphasized that important changes, especially in the last fifty years, are evident. Because of this, the evaluation of the historical structures of Istanbul was based on the topographic lines of Müller-Wiener's 1970s map, which indicates the topographic lines before the changes of the last fifty years. In addition, Dionysios of Byzantium (2010) stated that the coastline was more recessed during ancient times and transformed over time.

In addition to topography, Skarlatos (2019) and Kadioğlu (2009) stated that the living conditions in Istanbul are very favorable in terms of climate. According to data from the Kandilli Observatory and Meteorology Laboratory, there are no climate registers of Istanbul corresponding to the 16th cen-

**Table 2.** Istanbul's temperature averages by years and months (The values are degrees Celsius.) (Arıkan, 2019).

year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2020	5,54	6,01	7,65	12,02	16,51	20,98	23,35	23,37	20,29	15,97	11,96	8,19
1650	5,16	5,62	7,23	11,56	15,99	20,42	22,76	22,79	19,73	15,46	11,50	7,77
1550	5,36	5,83	7,45	11,81	16,27	20,72	23,08	23,11	20,04	15,73	11,74	7,99
1450	5,52	5,99	7,63	12,01	16,50	20,97	23,34	23,37	20,28	15,96	11,94	8,17

**Table 3.** Istanbul's precipitation averages by years and months (The values are in millimeters.) (Arıkan, 2019).

year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2020	94,70	62,18	58,45	50,56	29,58	27,66	22,00	21,98	30,58	57,07	85,27	113,17
1650	97,70	84,17	37,18	55,32	25,66	49,46	30,99	14,12	54,06	56,02	88,16	114,19
1550	96,01	66,29	49,68	52,69	26,64	34,39	23,35	15,89	46,29	55,31	86,50	113,77
1450	94,78	62,14	57,81	50,72	28,63	27,62	21,93	21,08	28,34	55,01	85,26	113,19

tury. Among the sources relating to the period, only Skarlatos (2019) reported that the annual temperature never fell below -4 / -5 degrees and never exceeded 26 degrees. He also registered the annual number of snowy, cloudy and rainy days. However, no data regarding the monthly average temperature and precipitation rate were found.

In this study, the estimated temperature and precipitation monthly and yearly values are based on the Global Circulation Models (GCM), developed by R. Bryson et al., the GCM model system, and the Florya Meteorology station data (providing complete climate registers due to the proximity to the research area) (Table: 2-3).

The interpretation of the values in the table indicates that the climate in the 16th century was similar to that of the present day and was at normal values. Therefore, it could be said that there may be similarities with the present in terms of green areas and vegetation, and no significant differences were determined.

As well as favorable climate conditions, İstanbul had rich vegetation. Depictions of İstanbul by Vavassore (1480), Matrakçı Nasuh (1533), Melchior Lorichs (1559) and Josephus Grelot (1680) as well as written texts of Pierre Belon (1546-1549), Hans Dernschwam (1554-1555), Ogier Ghiselin de Busbecq's letters (1555-1560), Evliya Çelebi's Travel Book (1630) and Skarlatos Byzantios (1869) mention the presence of the following vegetation in the city: cypress (*Cupressus sempervirens*), plane (*Platanus orientalis*) and willow (*Salix alba*) trees were mostly evident around mosques; various flowers,



**Table 4.** Fires / years / areas affected in the 16th century Ayasofya Quarter (Cezar, 1963 p: 329-335).

Year	Area	Statement
1569	South of Golden Horn	One of the most destructive fires that occurred in Istanbul until the 17th century.
1574	Topkapı Palace	Did not exceed the palace borders.
1592	Around Ayasofya	Houses near the Masjid of Üsküblü burned.
1594	Ayasofya	Limited destruction.
1598	Around Ayasofya	Limited destruction.

vegetables and fruit species, colorful blooming trees and grape species were distributed throughout the gardens of residential areas.

Eyice (2010) and (Dinç 2015) stated that there is no natural water source other than the stream called Bayrampaşa (*Lycos*) Stream within the borders of Istanbul during the Turkish period. In addition, Ağır (2009) added that there was a stream dating from the middle ages near the Drungarios Gate (*Odun Kapısı*) which later became dirty water according to the Piri Reis Map. These streams, which do not exist today, reveal that topography and streams have a close relationship. Moreover, topography curves indicate possible streams that have existed in the past and have dried up or started flowing underground over time in the Ayasofya District (See: App.-1A and App.-1B).

### 2.3.2. Cultural elements

Ports, water sources and water structures are urban cultural elements in the Ayasofya District which cause the green areas to change. Ülgen (1939) mentioned the existence of the Haliç and Kadirga Ports within the boundaries of the quarter. The strong presence of the working class near the ports increased the distribution of dwellings for singles called '*höcre/höcerat*'<sup>23</sup>, which resulted in a distinct building typology. Such buildings led to the investigation of the relationship between port areas and green areas within the district.

According to Yaltırık et al. (1997), the presence of natural water resources as well as the water structures resulted in Istanbul's human-made greenery at the end of the 16th century. Water resources of the 16th century are cisterns,

waterways and fountains. According to Altuğ (2013), there are 158 closed cisterns within the city wall, and 28 of these cisterns are located within the Ayasofya District (See: App.-5). In addition to cisterns, a few transmission lines that provide water to the Suriçi Area of Istanbul are the Halkalı Water Supply and Kırkçeşme Water Supply Systems (Çeçen, 2002 p: 476). In the 16th century, the Sultan Mehmed Waterway from the Halkalı Water Supply and a branch of the Kırkçeşme Waterways passed through the inside of the Ayasofya District and reached Topkapı Palace (See: App.-1A, App.-1B). Regarding other water sources, there were two fountains within the borders of the research area dating from the 16th century. (See: App.-1A, App.-1B).

### 2.3.3. Social elements

Population is an important social element for urban development just like green areas. According to Çeçen (1999), the population of Istanbul immediately after the conquest was 40,000, and according to İnalçık (2019), 50,000. Later, in the 16th century a rapid increase in the population of Istanbul took place (Pamuk, 1990 p: 66, İnalçık, 2009 p: 65). With the rise in population, the number of buildings increased and green areas developed.

Together with the population, the economic structure affected the green areas in the 16th century. The most important economic activity in the Ottoman Empire and Istanbul during the 16th century was agriculture (İnalçık, 2009 p: 82). However, when agricultural products started to be supplied from other cities to Istanbul in the first half of the century, agricultural production decreased. In 1588, famine started in Istanbul, resulting in a growing crisis in which the prices of fruits and vegetables tripled. Thus, in the last quarter of the century, agricultural production was resurrected in the cities (İnalçık, 2009 p: 233 Pamuk, 1990 p: 92-93, 101-106).

In addition to natural, cultural and social urban elements, some fires are recorded in Istanbul too. Kuban (1996) declares that there was a decline in urbanization due to fires in Istanbul, and the housing-garden relations were di-

verified. Therefore, the relationship between fires and green areas was investigated.

### 3. Findings and evaluation

#### 3.1. Green areas in the Ayasofya District according to 'the cadastral survey registers of Istanbul waqfs dated 1546'

According to 'The Cadastral Survey Registers of Istanbul Waqfs Dated 1546', there was a high number of waqfs and 'menzil's in the Ayasofya District. This probably is related to the fact that it was one of the first established quarters and is located within the city center.

It is difficult to obtain general characteristics of the buildings through the registers. Although not mentioned in the registers, Kafesçioğlu (2019) stated that the structures were irregular during the period. In the registers, the terminology emphasizes the diversity of structures: *hânehâ-i tâhtanî* (low / lower dwellings), *hânehâ-i fevkânî* (above / upper dwellings) and *höcerât* (small rooms / cells) (App.-2). It is possible to say that these structures emphasize the general characteristics of the district. Moreover, definitions such as 'tâhtanî' (placed below), *fevkânî* (placed above), *süfli* (situated below) defined whether the houses were one or two-storey. Along with the structures, green areas such as 'bağçe' and 'cüneyne' are indicated in the waqfs. It is impossible to obtain data regarding the plan and general features of the green areas, except for a few structural and vegetative characteristics.

'Bağçe' and 'cüneyne', one of which is known as 'bağçe-i kebir', are found in the district in general. The difference in the meaning of 'bağçe' and 'cüneyne' is not clear. Investigation of the registers led to no generalization or feature indicators. The 'bağçe' was common in both the İshak Pasha Masjid and the Karakedi Hüseyin Çelebi Masjid Quarters, while the 'cüneyne' was only encountered in the İshak Pasha Masjid Quarter.

Investigation into the topographic features of the location of the quarters shows that they were founded on flat areas (See: App.-1A). As Gyllius stated, the houses in Istanbul were always in flatter areas (Gyllius, 1997 p: 37).



**Figure 2.** Melchior Lorichs Panorama of the Ayasofya District – general view of green areas (Leiden University).

Consequently, it could be said that the buildings as well as population were denser in flat areas, and it is possible there were also more green areas. One of the reasons for the density of green areas may be the topographic character of the quarters (App.-1A). Although streams may have already dried out by the 16th century, the existence of streambeds is a possibility. In other words, there may be a relationship between streams and green areas.

It is not possible to identify clues in terms of vegetation characteristics in the district, except for the 'eşcar-ı müsmire' located in the Nakilbend Hasan Masjid Quarter, mentioned in both of the waqf registers (See: App.-3). The strong presence of Muslim population in the district and the demand for privacy explains the necessity to enclose the green areas in the 'menzil' structures. Consequently, 86% of the green areas registered in the cadastral survey registers had an 'encircled' typology. In the district, the union of several 'hâne' (house) surrounded by 'bağçe' were generally linked to 'menzil' with one 'bir-i ma' (water well) and, in some cases, 'zulle'. It is possible to generalize that these 'bağçe', which characterized the district, were the most common type of green areas.

While the green areas and elements related to the green areas were concentrated near the Ayasofya, they tended to decrease moving further away (See: App.-1A and App.-3). Their number reached a peak in the İshak Pasha Masjid and Hayrüddin Bey Masjid Quarter. In the parts of Lorichs Panorama which depict the Ayasofya and likely show the İshak Pasha Quarter (right next to Ayasofya), green areas have

been identified within the settled area (Figure: 2). Therefore, data about the district and depictions show that the green areas were concentrated around the İshak Pasha Masjid Quarter within the district (See: App.-6A, App.-6B).

The Hacı Üveys Masjid, the Daye Hatun Masjid and the Elvanzade Hacı Sinan Masjid Quarters, which were poor in terms of green areas, were seriously damaged by a fire in 1539 (See: App.-3). The evaluation of the relationship between the development of green areas and fire indicates that there were fewer green areas in quarters which experienced destructive fires. Green areas were adversely affected by fires and significantly reduced in the rebuilding after a fire. Moreover, the destruction level was higher in the quarters where the number of green areas was limited as fires spread more intensely due to the lack of greenery. The presence of cisterns in the same quarters suggests the possibility that they were used for fire fighting and for watering gardens (See App.-3, App.-5).

### 3.2. Green areas in the Ayasofya District according to the cadastral survey registers of Istanbul waqfs dated 1600

The number of the waqf registers in 1600 exceeded the number of the waqfs registers in 1546 (See: App.-2). The fact that waqfs increased in the quarters further from Ayasofya suggests that new settled areas emerged due to the rise of the population.

The common building typology of the district generally consisted of *‘hânehâ-i tâhtânî* (low / lower dwellings), *hânehâ-i fevkânî* (above / upper dwellings), *beyt-i suflî* (lower-story dwellings), *beyt-i ulvî* (upper dwellings) and *höcerât* (small room/cell) (App.-2). In addition to the complexes of multiple dwellings, constructed from independent sections, single-dwelling structures could also be observed within the district. Moreover, from the small sections identified as *‘höcre’* and *‘höcerat’*, it can be understood that such building types were also frequently utilized. In addition to settled areas, the emergence of new commercial

areas within the district is also evident. The new business areas, placed nearby important public buildings such as mosques and public baths and far from settled areas, were not set aside as green areas.

Similar to the 1546 registers, the 1600 registers also provide limited knowledge about and do not contain general data on the characteristics of green areas. Only a *‘çerak’*, *‘bağçe’*s and *‘cüneyne’*s were evident (App.-3). The number of *‘cüneyne’* was greater than the number of *‘bağçe’*. It is difficult to observe similarities or differences between the waqfs in which both were found. The *‘bağçe’* were often seen in the Nakilbend Hasan and Hüseyin Ağa Masjid Quarters, while the *‘cüneyne’* were common in the Hacı Üveys, İshak Pasha and Nakilbend Hasan Masjid Quarters. Thus, waqf registers suggest that Nakilbend Hasan Masjid Quarter had quite a high density of green areas. The reduced number of green areas in the Hacı Sinan Masjid Quarter may be due to the effects of the fire from the Jewish Quarter<sup>24</sup> in 1569 (App.-5).

*‘Escar-i müsmire’* (fruit trees) were recorded in waqfs in the İshak Pasha Masjid, Daye Hatun Masjid and Hüseyin Çelebi Masjid Quarters, and in two separate waqfs in the Akbiyık and Üsküblü Masjid quarters. Despite not detailing the specific type of fruits that the trees give, it is likely that they were one of the naturally growing fruit trees in Istanbul. While *‘eşcar-i müsmire’* was registered in four waqfs, *‘eşcar’* was indicated in two waqfs in the Nakilbend Hasan Masjid Quarter. Also found in one of the waqfs in the same quarter, the *‘eşcar-ı tut’* (mulberry/*Morus alba*) demonstrates the abundance and quality of the mulberry, which increased the opportunity for trading. Nakilbend Hasan Masjid Quarter’s exposure to the south may explain the intense growth of its trees. In addition to its southern exposure, another reason for such growth may be its proximity to the Langa Gardens.

In general, 61% of the *‘menzil’* in the district were enclosed. Although the ratio decreased compared to 1546, still the phenomenon of privacy held high importance. Several *‘cüneyne’*

surrounding complexes of houses in the district and having a '*bir-i ma*' (water well), and some '*menzil*' with '*zulle*', are evident. It is evident that the most common green area typology in the district was the '*cüneyne*'.

The 1600 cadastral survey registers emphasize that the green areas and the elements related to them were clear evident in the Nakılbend Hasan Masjid Quarter, which corresponded to the area around the Küçük Ayasofya Mosque (the Little Ayasofya Mosque). The 1546 waqfs '*menzil*' consisting of several households decreased in the registers of 1600, and in their place the number of '*höcre*' and '*höcerât*' increased moving away from the center of the district (Ayasofya).

### 3.3. Continuity and change of green areas in the Ayasofya District during the 16th century

Farooqi (1997) and Kafescioğlu (2019) talked about intense settlement movements and significant population growth during the 16th century. Consequently, this resulted in the increase in the number of waqfs in Istanbul as well. According to the registers of the cadastral survey registers, the rate of construction in the quarters increased, the gaps decreased, and the quarters spread to wider areas as well. It is observed that '*menzils*' with several households decreased in number in the waqfs of 1600 compared to the waqfs of 1546, and especially the number of rooms called '*höcre*' and '*höcerât*' increased in areas further away from the center of the district (Ayasofya) (See: App-1A, App-1B and App-2). There was a decrease in the density of '*bağçe*' and approximately a four-fold increase in the density of '*cüneyne*' over time (App-3). An evaluation of '*cüneyne*' in terms of small gardens shows that the people gave importance to these, albeit in limited proportions. There was an increase in the number of trees in the green areas within the '*menzil*' and in all green area elements as well. This suggests that the importance given to gardens and greenery by the dynasty and the state in the 16th century was reflected in the common people. In addition, Pamuk (1990) stated that

people also invested in the '*bağ*', '*bağçe*' and dairy farms on or just outside the borders of the city. Furthermore, some sources indicate that the decrease in economic activities resulted in rising demand for the trade of 'tree products'. Thus, this contributed to the increase in the number of waqfs in green areas, more variety of tree species, and higher numbers in the 1600 cadastral survey registers. Additionally, during the 16th century the commercial areas were detached from the settled areas, which was possibly an important factor in the decline of relevant green areas.

The number of the '*bir-i ma*' increased particularly in the quarters near the seashore. The reason for this may be the large number of high groundwater areas close to the shore. The comparison of the two cadastral survey registers in Ayasofya District indicate that a person who devoted one '*bir-i ma*' waqf in 1546 added a '*bağçe*' or a '*cüneyne*' to the same waqf in the same quarter in 1600. Thus, it seems likely that there was a relationship between water wells and green area development. The need for water in green areas may have resulted in farming activities. The increase of resting areas like '*zulle*' and '*çardak/çartak*' in the '*menzil*' (See: App-3) emphasize the attempt to create places where people could rest around the settled areas. As Atasoy (2002) states, the house of a person having any status had a garden, whether small or large, and some areas designated to the garden in the '*menzil*' also comprised resting units such as '*zulle*' or '*çardak/çartak*'.

### 4. Conclusion

In the 16th century, there was a close relationship between the population (the number of waqfs gives information about the population), settlement intensity, and the increase of green areas in the Ayasofya District (Table 5). However, it is not possible to discern a similar relationship in areas where commercial structures and commercial activities were intense (See: Table 5 Hüseyin Agha Mosque, Hacı Rüstem Masjid and Firuz Agha Masjid Quarters). One of the most important features where these



**Table 5.** Number of *waqfs*, building types, green areas and green areas components in quarters.

	number of waqfs		number of housing buildings		number of Höcre/höce- rat		number of Dükkan/d ekakin		number of green area		number of green area components	
	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600
Ayasofya Quarter	26	27	45	61	25	32	33	32	3	4	10	15
Ishak Pasha Masjid Quarter	27	27	40	44	0	9	4	4	13	12	21	24
Sinan Agha Masjid Quarter	13	23	10	53	11	15	0	1	3	11	5	26
Akbıyık Masjid Quarter	23	43	22	76	0	23	4	4	2	9	11	31
Güngörmez Masjid Quarter	16	20	15	40	0	10	0	3	2	3	7	13
Nakilbend Hasan Masjid Quarter	11	20		40		8		0	4	12	9	23
			18		13		0					
Hüseyin Agha Mosque Quarter	9	38	20	78	34	51	38	34	3	6	8	37
Uzun Şüca Masjid Quarter	18	13	19	27	17	16	6	2	5	3	5	13
Binbirdirek Sinan Agha Masjid Quarter	4	4		8		22		0	-	-	-	-
			0		22		0					
Hace Rüstem Masjid Quarter	9	10	8	18	42	41	2	2	1	4	2	7
Firuz Agha Masjid Quarter	8	9	54	63	96	63	18	41	1	2	4	5
Usküblü Masjid Quarter	17	26	33	58	6	4	0	8	-	5	5	17
Hayrüdün Bey Masjid Quarter	6	13	0	28	14	15	1	1	2	7	3	14
Karakedi Hüseyin Çelebi Masjid Quarter	15	19		37		19		3	6	7	5	11
			16		9		8					
Nevbethane Daye Hatun Masjid Quarter	20	20		31		15		1	3	5	10	15
			20		15		1					
Elvanzade Hace Sinan Masjid Quarter	22	20		22		11	3	0	2	6	13	19
			37		54							
Hace Üveys Masjid Quarter	15	28	34	36	9	11	19	17	2	8	17	25

commercial buildings were located is that there were dwellings called '*höcre-höcerat*' rather than housing buildings. This information suggests that commercial areas and residential areas developed in separate areas and had different features in the 16th century. These dwellings, as Çokuğraş (2013) specified, were single rooms, where people working in the harbors, construction sites or commercial areas, settled in solitary. This development probably resulted from the general increase of settled areas, trade and port activities within the city. The mentioned quarters were those close to the southern port area of the city and / or areas where the Grand Bazaar and commercial shops were located. Thus, it is clear that commercial areas were poor in terms of green areas, and green areas were more common in areas where households were located (Table 5).

In the areas where housing settlements were dominant, the density of green areas increased around religious structures such as mosques and masjids and social structures such as baths, madrasah and waterways (for example, İshak Paşa Masjid and Nakıl-

bend Hasan Masjid Quarters). In addition, suitable topography as well as the greater sunlight and the more temperate conditions of the southern quarters can be added as positive factors in the development of green areas (See: App.-3 ve App.-5). Also water, which is one of the most important conditions for civilizations, was essential in the development of green areas. Although fountains were limited in number, other water elements (*bir-i ma* and waterways) increased green areas and green area components. This situation also suggests the possibility of farming in the green areas in the building settlements due to the economic crisis that emerged at the end of the century.

As Barkan and Ayverdi (1970) mentioned, there was a congested settlement in Istanbul in the 16th century. The increase in construction, which increased towards the end of the century in the wider quarters, verifies this opinion (See: Akbıyık Masjid and Nakılband Hasan Masjid Quarter in App.-1B, App.-2). Although there was no new settlement, the increase in green areas and green area components is remarkable in some small quarters where the settlement was not dense (Nevbethane Daye Hatun, Elvanzade Hace Sinan, Hace Üveys Masjid Quarter). As a result, people tended to create green spaces such as '*bağçe*' or '*cüneyne*' and develop areas to rest, such as '*zulle*', even in small spaces. Also drilling '*bir-i ma*' made farming activities possible. The increase of '*cüneyne*', which are described as small gardens, strengthened the need to create green areas in more densely populated areas, too.

This study has attempted to understand the characteristics of green areas in the Ayasofya Quarter using cadastral survey registers from the 16th century. Although these registers cannot provide data on the plan and design features, they do enable an understanding of the settlement plan of the city and the relationship between the green areas, the density of the green areas in the quarters, and the general characteristics. The study provides data for periodic changes with records from different dates. Also, as in this study, cadastral survey registers can be uti-

lized in similar studies for different areas as they provide information about the settlement plan of the periods, the relationship of the green areas, the development and properties of the green areas as well as an understanding of the changes over time. In addition, the records contain data which allows the reader to picture the green areas in the excellent area of Istanbul from the Byzantine period to the Ottoman period in the 16th century.

## References

- Ağır, A. (2009). İstanbul'un Eski Venedik Yerleşimi ve Dönüşümü. İstanbul: İstanbul Araştırmaları Enstitüsü.
- Altuğ, K. (2013). *İstanbul'da Bizans Dönemi Sarımlarının Mimari Özellikleri ve Kentin Tarihsel Topografyasındaki Dağılımı*. (Unpublished Doctoral Dissertation Thesis). İstanbul Technical University, Graduate School Of Science, Engineering And Technology, İstanbul.
- Arikan, B. & Yıldırım, T. (2018). Paleoclimate, Geology, Geomorphology, and Middle Holocene Settlement Systems in the Delice Valley of North-Central Anatolia. *Journal of Field Archaeology* 43(8), 570-590.
- Aslanboğa, K. (2018). Osmanlı Devletinde Vakıf Yönetiminde Tevliyet: İstanbul Örneği. *Journal of Administrative Sciences* 16(32), 551-558.
- Atasoy, N. (2002). *Hasbahçe*, İstanbul: Aygaz.
- Ayverdi, E. H. (1958). *Fatih Devri Sonlarında İstanbul Mahalleleri, Şehrin İskanı ve Nüfusu*. Ankara: Doğuş.
- Ayverdi, İ. (2005). *Misalli Büyük Türkçe Sözlük*. İstanbul: Kubbealti Neşriyatı.
- Barkan, Ö. L. & Ayverdi E. H. (1970). *İstanbul Vakıfları Tahrir Defteri 953 (1546) Tarihli*. İstanbul: Baha.
- Busbecq, O. G. (2013). *Türk Mektupları Türk Mektupları-Kanuni Döneminde Avrupalı Bir Elçinin Gözlemleri (1555- 1560)*. Derin Türkömer (tr.). İstanbul: Türkiye İş Bankası Kültür.
- Byzantion, S. (2019). *Constantinople A Topographical Archaeological Historical Description*. İstanbul: İstos.
- Canatar, M. (2004). *İstanbul Vakıfları Tahrir Defteri 1009 (1600) Tarihli*. İstanbul: İstanbul Fetih Cemiyeti Özal.
- Crane, H. (1987). *Risale-i Mimariyye: An Early-Seventeenth-Century Ottoman Treatise on Architecture: Facsimile with Translation and Notes*. Hollanda:Leiden.
- Cezar, M. (1963). *Osmanlı Devrinde İstanbul Yapılarında Tahribat Yapan Yangınlar ve Tabii Afetler*. İstanbul: İGSA Türk San'atı Tarihi Enstitüsü.
- Çeçen, K. (1999). *İstanbul'un Osmanlı Devri Su Yolları*. İstanbul: Renk.
- Çeçen, K. (2002). Kırkçeşme Suları. *In İslam Ansiklopedisi* (Volume: 25, p. 476-479).
- Çokuğraş, I. (2013). *İstanbul'da Marginalite ve Mekân (1789-1839): Bekâr Odaları ve Meyhaneler*. (Unpublished Doctoral Dissertation Thesis). Yıldız Technical University, Graduate School Of Science, Engineering And Technology, İstanbul.
- Devellioğlu, F. (2010). *Osmanlıca-Türkçe Alfabetik Lügat*. Ankara: Aydın.
- Dinç, H., Bölen, F. (2014). İstanbul Derelerinin Fiziki Yapısı. *Journal of Planning* 24(2), 107-120.
- Eyice, S. (2010). Tarih Çınarı Eski İstanbul'u Anlattı. [Hürriyet Newspaper Interview]. Retrieved from: <http://www.hurriyet.com.tr/gundem/tarih-cinari-eski-istanbulu-anlat-ti-14144874>.
- Faruqi, S. (1997). *Osmanlı Kültürü ve Gündelik Yaşam: Ortaçağdan Yirminci Yüzyıla*, İstanbul: Yurt.
- Genç, Y. İ., Küçük, M., Gündoğdu, R., Satar, S., Karaca, İ., Yıldırım, H. O. & Yılmaz, N. (2010). *Başbakanlık Osmanlı Arşivi Rehberi*. İstanbul: Başbakanlık.
- Gyllius, P. (1997). *İstanbul'un Tarihi Eserleri*. Erendiz Özbayoğlu (tr.). İstanbul: Eren.
- İnalcık, H. (2001). İstanbul. *In İslam Ansiklopedisi* (Volume:23, p. 240-267).
- İnalcık, H. (2009). *Osmanlı İmparatorluğu'nun Ekonomik ve Sosyal Tarihi. Volume:1 (1300-1600)*. İstanbul: Eren.
- İnalcık, H. (2019). *İstanbul Tarihi Araştırmaları: Selected Works:XIII*, İstanbul: Türkiye İş Bank.
- Kadioğlu, M. (2009). Lodos ve Poyrazın Yaptıkları, [Hürriyet Newspaper Column] Retrieved from: <http://www.hurriyet.com.tr/lodos-ve-poyraz-in-yaptiklari-12472532>.
- Kafesçioğlu, Ç. (2019). Sokağın, Meydanın, Şehirlilerin Resmi: On al-

tıncı Yüzyıl Sonu İstanbul’unda Mekan Pratikleri ve Görselliğin Dönüşümü. *Annual of Istanbul Studies*. 1 İstanbul: İstanbul Research Institute.

Kayra, C. (1990). *Eski İstanbul’un Eski haritaları*. İstanbul: İstanbul Metropolitan Municipality Cultural Services.

Kuban, D. (2006) *İstanbul Bir Kent Tarihi: Bizantion, Konstantinopolis, İstanbul*. İstanbul: Economic and Social History Foundation Of Turkey.

Müller-Wiener, W. (1998). *İstanbul’un Tarihsel Topoğrafyası*. İstanbul: Yapı Kredi

Nazima, A. & Reşad, F. (2002). *Mükemmel Osmanlı Lugatı (Osmanlıca-Türkçe Sözlük)*. Ankara: Turkish Language Society.

Öz, M. (1991). Tahrir Defterlerinin Osmanlı Tarihi Araştırmalarında Kullanılması Hakkında Bazı Düşünceler. *Journal Of Directorate* 22, 429-438.

Özbilen, A. (1991). *Kentiçi Açık Alanlar ve Dağılımı, Tarihi Eserler ve Gelişen Yeni Yapılaşma*, Trabzon: K.T.Ü. Orman Fakültesi

Özgüdenli, O. G. (2012). Vakfiye. In *İslâm Ansiklopedisi*. (Volume:42, p. 465-467

Öztan, Y. (1968) *Ankara Şehri ve Çevresi Yeşil Saha Sisteminin Peyzaj Mimarisi Prensipleri Yönünden Etüd ve Tayini*, Ankara: Ankara Üniversitesi

Pamuk, Ş. (1990). *100 Soruda Osmanlı-Türkiye İktisadi Tarihi 1500-1914*. İstanbul: Gerçek.

Sami, Ş. (2015). *Kamus-ı Türki Osmanlıca Lügat / Sözlük*. İstanbul: Çağrı.

Tanışık, İ. H. (1943). *İstanbul Çeşmeleri I*, İstanbul: Maarif.

Tanyeli, U. (1986). *Anadolu - Türk Kentinde Fiziksel Yapının Evrim Süreci (11.-15. YY)*. (Unpublished Doctoral Dissertation Thesis). İstanbul Technical University, Graduate School Of Science, Engineering And Technology, İstanbul

Tezcan, H. (1989). *Topkapı Sarayı ve Çevresinin Bizans Devri Arkeolojisi*, İstanbul: Touring and Automobile Company.

Yaltırık, F. Efe, A. & Uzun, A. (1997). *Tarih Boyunca İstanbul’un Park, Bahçe ve Koruları, Egzotik Ağaç ve Çalıları*. İstanbul: İsfalt.

Yıldızcı, A.C. (1978). *İstanbul’da Kentsel Doku İle Yeşil Doku Arasında-*

*ki İlişkiler ve İstanbul Yeşil Alan Sistemi İçin Bir Öneri*. (Unpublished Doctoral Dissertation Thesis). İstanbul Technical University, Graduate School Of Science, Engineering And Technology, İstanbul

## Endnotes

<sup>1</sup> Persian bağ and diminution attachment -çe forms bağ-çe). It is the original form of the garden word used in the past (Ayverdi, 2005 p: 254).

<sup>2</sup> The chapters of ‘The Cadastral Survey Registers of İstanbul Waqfs 1546 and 1600:

1. Nahiye-i Cami-i Şerif-i Ayasofya (Ayasofya District)

2. Nahiye-i Cami’ül-Merhum Mahmud Pasha (Mahmud Pasha District)

3. Nahiye-i Cami’ül-Merhum’ül-Mağfürun Leh Ali Pasha (Atik Ali Pasha District)

4. Nahiye-i Cami-i İbrahim Pasha (İbrahim Pasha District)

5. Nahiye-i Cami-i Sultan Bayezid Han ‘Aleyh’ir-Rahme (Sultan Bayezid District)

6. Nahiye-i Cami-i Hazret-i Şeyh Ebü’l-Vefa Rahimehullah (Ebü’l-Vefa District)

7. Nahiye-i Cami’ül-Mağfürun Leh Sultan Mehmed Han Aleyh’ir-Rahmetü Ve’l-Güfran (Mehmed II District)

8. Nahiye-i Cami’ül-Merhum’ül-Mağfürun Leh Sultan Selim Han Tabe Serah (Selim I District)

9. Nahiye-i Cami’ül Merhum Murad Pasha (Murad Pasha District)

10. Nahiye-i Cami’i Davud Pasha (Davud Pasha District)

11. Nahiye-i Cami’i Mustafa Pasha’l Merhum (Mustafa Pasha District)

12. Nahiye-i Bab-ı Tob (Topkapı District)

13. Nahiye-i Cami-i Ali Pasha Der Nezd-i Çukurbostan (Ali Pasha District)

14. Galata

<sup>3</sup> In this study, the term ‘menzil’ is used for the all components of the properties that were co-founded in the same waqf.

<sup>4</sup> kebir: meaning large (Ayverdi, 2005). Consequently, bağçe-i kebir is possibly used to refer to a ‘large garden’.

<sup>5</sup> to fly, garden, very spacious and airy place (Devellioğlu, 2010). ‘Cüneyne’ is the paradise derived from

the Arabic diminution. It means little heaven, heavenly, little garden.

<sup>6</sup> -çera-gah/çera-geh- Animal grazing place, pasture. (Nazima and Reşad, 2002).

<sup>7</sup> water well. Bîr: well, çah (Sami, 2015).

<sup>8</sup> (1) Frame made of trees, flowers and greenery. (2) Canopy made of dry tree branches in front of the buildings, shelter (3) In some areas, open-top covered veils made for drying nuts on the upper floors of the houses (Ayverdi, 2005).

<sup>9</sup> (the plural of Şecer') Trees (Ayverdi, 2005 p:883). Hoops, cells (Sami, 2015).

<sup>10</sup> fruit giving, fruit trees (Ayverdi, 2005 p:2234).

<sup>11</sup> tut: berry giving fruit (Nazima and Reşad, 2002). eşcar: (Şecer' plural) trees (Ayverdi, 2005). Eşcar-ı tut: berry trees.

<sup>12</sup> gayr: somebody else, other (Ayverdi, 2005, p:1005). Müsmire: fruit giving, fruity. gayr-i müsmire: fruit not giving (Ayverdi, 2005: p:2233). Probably used for a tree that is not giving fruits.

<sup>13</sup> walled place, downy (Risale-i Mi'mariyye, p:86). Bonded, surrounded by curtain or wall around it (Nazima and Reşad, 2002).

<sup>14</sup> canopy, wooden covered sofa (Risâle-i Mi'mariyye p:86). Shadow, saye (Sami, 2015). Shadow, protection, ownership (Devellioğlu, 2010).

<sup>15</sup> Müller-Wiener, W. (1998). İstanbul'un Tarihsel Topoğrafyası. İstanbul: Yapı Kredi.

<sup>16</sup> İnalçık, H. (2001). İstanbul. In İslam Ansiklopedisi (Volume:23, p. 240-

267).

<sup>17</sup> Ayverdi, E. H. (1958). Fatih Devri Sonlarında İstanbul Mahalleleri, Şehrin İskânı ve Nüfusu. Ankara: Doğuş.

<sup>18</sup> url-1: <http://individual.utoronto.ca/safran/Constantinople/Map.html>

<sup>19</sup> Altuğ, K. (2013). İstanbul'da Bizans Dönemi Sarnıçlarının Mimari Özellikleri ve Kentin Tarihsel Topoğrafyasındaki Dağılımı. (Unpublished Doctoral Dissertation Thesis). İstanbul Technical University, Graduate School of Science, Engineering and Technology, İstanbul

<sup>20</sup> Çeçen, K. (1999). İstanbul'un Osmanlı Devri Su Yolları. İstanbul: Renk.

<sup>21</sup> Tanışık, İ. H. (1943). İstanbul Çeşmeleri I, İstanbul: Maarif.

<sup>22</sup> The name and citation of the Cankurtaran Quarter, present in the Ayverdi (1958) map, is missing in both of the cadastral survey registers. Nevertheless, some areas belonging to the Nakılbend Hasan Masjid Quarter are registered in the section of the Hüseyin Agha Masjid Quarter. The presumed quarter borders are marked in the section of the Nakılbend Hasan Masjid Quarter (See; App-1A and App-1B). The names of the two quarters are different on the map and the waqf registers. Within the Binbirdirek section, the Sinan Agha Masjid Quarter is indicated as the Molla Fenari Quarter and is called the Sinan Agha Masjid Quarter in the registers, but it is likely the Kanlı Masjid Quarter on the map.

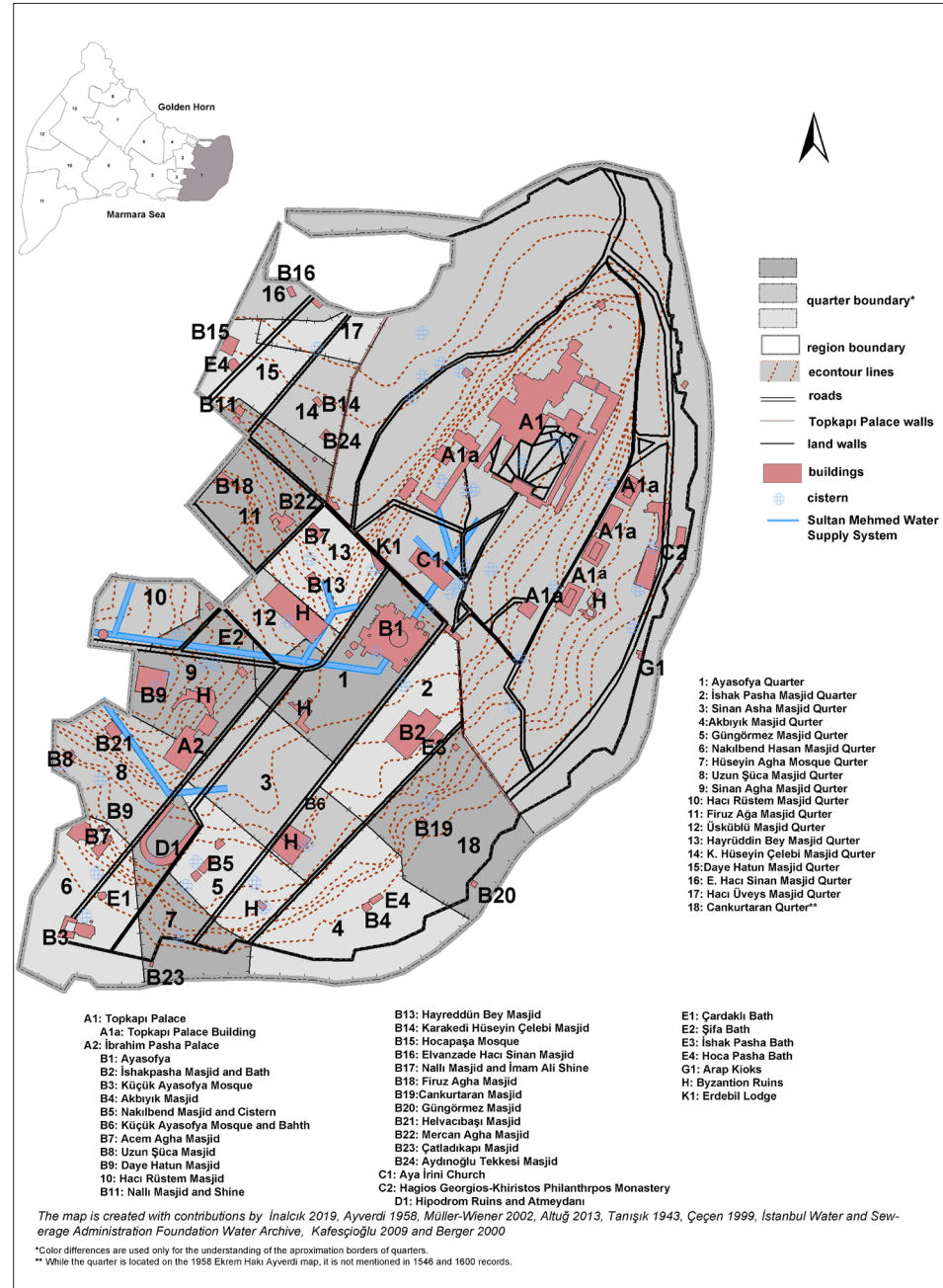
<sup>23</sup> Small room, hujre (Risale-i Mi'mariyye p: 87)

<sup>24</sup> The Jewish quarter is located in the area around Balıkpazarı in the south of Zindankapı. (Ağır, 2009 p: 135,141)



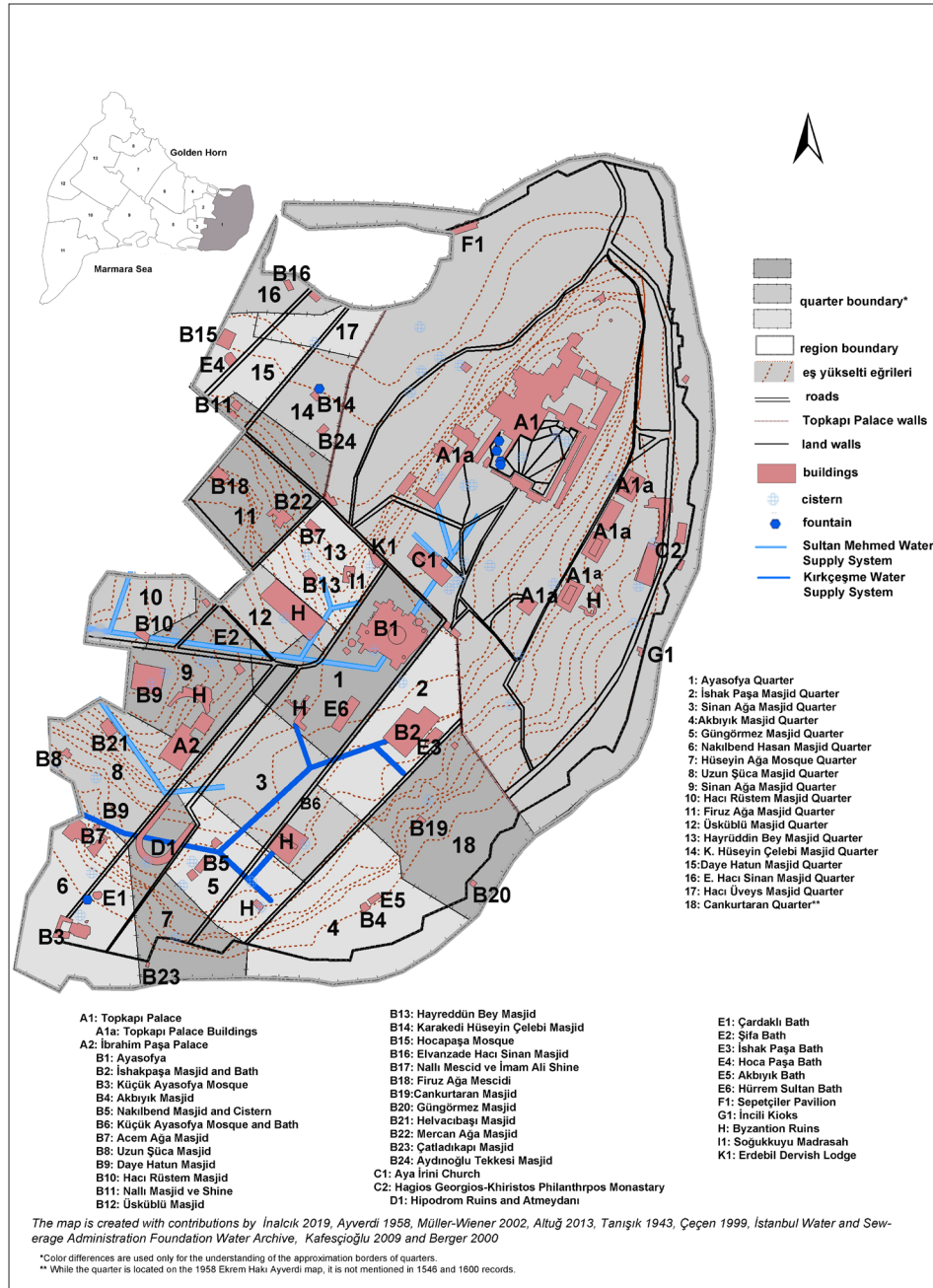
## Appendices

### Appendix 1A: The Map Of Ayasofya District With Urban Elements in 1546.



Green areas in the Ayasofya District (*Nâhiye*) according to the cadastral survey (*tapu tahrir*) registers of Istanbul waqfs 1546 and 1600

# Appendix 1B: The Map Of Ayasofya District with urban elements in 1600.



## Appendix 2: Housing Terms in Ayasofya District .

'There are many phrases in consecration that mean dwellings. In addition, the term 'ev' is also encountered. Although some terms or group of terms have the same meaning in the dictionary, they are used differently. Since it is not possible to estimate how an expression is attempted while it is being used, the synonym terms are not taken in a single term as shown in the source and their numbers are registered separately.

Quarter Name	Hâne (dwelling)	Hânehâ (dwellings)	Odahâ (rooms)	beyt-i sufi (lower dwellings)	hâne-i tâhtani (lower dwellings)	hâne-i fevkânî (above/upper dwellings)	hâne-i sufi (Lower room)	hânehâ-i tâhtani (Lower room)	hânehâ-i fevkânî (Lower rooms)	hânehâ-i fevkânî (above/upper dwellings)	ev (dwelling)	Höcre (small room/cell)	Höcerât (small rooms/cells)	beyt-i tâhtani (lower dwellings)	beyt-i fevkânî (above/upper dwellings)	beyt-i ulvi (above/upper dwellings)
	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600
Ayasofya Quarter	-	2	-	8	-	-	8	11	4	-	3	-	-	2	2	12
Ishak Pasha Masjid Quarter	1	2	1	6	-	-	3	9	2	1	2	1	1	1	2	1
Sinan Agha Masjid Quarter	-	1	-	2	-	-	18	2	-	-	-	-	1	4	6	3
Akbıyık Masjid Quarter	-	5	-	9	-	-	17	6	4	1	2	1	-	3	7	8
Güngörmez Masjid Quarter	1	2	-	3	-	-	1	6	1	6	1	3	-	-	4	5
N. Hasan Masjid Quarter	1	-	1	6	-	-	1	12	3	2	-	1	-	1	7	7
Hüseyin Agha Mosque Quarter	-	1	-	-	-	-	23	3	4	-	8	-	-	-	12	13
Uzun Şüca Masjid Quarter	2	2	-	-	-	-	6	2	-	2	-	1	-	4	5	2
B. Sinan Agha Masjid Quarter	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	4
Hacı Rüstem Masjid Quarter	-	-	-	5	1	-	3	1	-	1	-	-	-	4	3	1
Firuz Agha Masjid Quarter	-	-	-	1	-	-	-	2	2	1	1	-	-	-	47	6
Üsküblü Masjid Quarter	1	1	-	-	-	-	10	4	3	1	1	-	-	-	16	21
Hayrüdün Bey Masjid Quarter	-	2	1	1	-	-	5	3	1	2	-	-	-	-	4	4
K. Hüseyin Çelebi Masjid Quarter	-	7	1	1	-	-	3	-	1	-	3	1	-	-	6	6
Daye Hatun Masjid Quarter	-	2	2	1	-	-	9	-	-	-	-	-	-	-	13	6
E. Hacı Sinan Masjid Quarter	1	-	-	2	-	-	-	3	2	-	-	-	-	2	15	5
Hacı Uveys Masjid Quarter	-	6	4	3	-	-	1	9	4	-	3	1	-	-	16	5

## Appendix 3: Green Areas and Components of Green Areas in Ayasofya District.

	green areas								components of green areas									
	bağçe (garden)		cüneyne (little garden)		çerak/ çeraklık (pasture)		bağçe-i kebir (large garden)		zulle (canopy)		çardak/çartak (arbour)		plant names		bir-i ma (water well)		muhavvata (walled place)	
Quarter Name	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600
Ayasofya Quarter	3	2	-	2	-	-	-	-	4	2	-	-	-	1	6	12	15	16
Ishak Pasha Masjid Quarter	7	4	5	8	-	-	1	-	4	7	2	2	-	2	15	13	15	17
Sinan Agha Masjid Quarter	2	5	1	6	-	-	-	-	2	6	-	6	-	2	3	12	7	23
Akbıyık Masjid Quarter	1	4	1	5	-	-	-	-	5	8	-	2	1	3	5	18	12	23
Güngörmez Masjid Quarter	1	1	1	2	-	-	-	-	3	4	-	1	-	-	4	8	6	10
Nakilbend Hasan Masjid Quarter	4	5	-	7	-	-	-	-	2	5	-	-	2	4	5	14	9	17
Hüseyin Agha Mosque Quarter	2	4	1	2	-	-	-	-	2	9	-	-	-	-	6	28	7	20
Uzun Şüca Masjid Quarter	4	1	1	2	-	-	-	-	2	2	-	5	-	-	3	6	10	6
B. Sinan Agha Masjid Quarter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hacı Rüstem Masjid Quarter	1	2	-	2	-	-	-	-	2	2	-	2	-	-	3	4	5	-
Firuz Agha Masjid Quarter	1	2	-	-	-	-	-	-	2	2	-	-	-	-	2	3	4	5
Üsküblü Masjid Quarter	-	-	-	4	-	1	-	-	2	4	-	-	-	1	3	12	12	14
Hayrüdün Bey Masjid Quarter	1	2	1	5	-	-	-	-	1	4	-	-	-	-	2	10	2	6
K. Hüseyin Çelebi Masjid Quarter	5	4	1	3	-	-	-	-	1	2	-	-	-	1	4	8	10	14
Daye Hatun Masjid Quarter	3	3	-	2	-	-	-	-	3	5	-	-	-	1	7	9	8	13
Elvanzade Hacı Sinan Masjid Quarter	2	1	-	-	-	-	-	1	5	-	-	-	-	-	8	1	13	5
Hacı Uveys Masjid Quarter	2	-	-	7	-	-	-	-	8	4	-	-	-	2	9	9	16	11

## Appendix 4: Religious, Social, Commercial and Educational Buildings in Ayasofya District.

Quarter Name	religious and social building								commercial building							
	Camii (Mosque)		Mescid (masjid)		Hamam (bath)		Han (inn)		Dükkan (shop)		Dekâkin (shops)		Bedesten (covered bazaar)		Bazaar (market area)	
	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600	1546	1600
Ayasofya Quarter	1	1	2	2	-	2	3	3	4	10	29	22	1 <sup>2</sup>	1	-	-
Ishak Pasha Masjid Quarter	-	-	1	1	1	1	-	-	2	3	2	1	-	-	-	-
Sinan Agha Masjid Quarter	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-
Akbıyık Masjid Quarter	-	-	2	2	-	-	-	-	-	4	4	-	-	-	-	-
Güngörmez Mesc. Mahallesi	-	-	1	1	-	-	-	-	-	-	3	-	-	-	-	-
Nakilbend Hasan Masjid Quarter	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
Hüseyin Agha Mosque Quarter	-	-	2	2	2	2	-	2	2	5	36	29	-	-	-	-
Uzun Şüca Masjid Quarter	-	-	1	1	1	1	-	-	2	6	-	1	1	-	-	-
B. Sinan Agha Masjid Quarter	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-
Hacı Rüstem Masjid Quarter	-	-	1	1	-	-	-	-	2	-	2	-	-	1	1	-
Firuz Agha Masjid Quarter	-	-	1	1	2	2	-	-	2	2	16	39	-	-	-	-
Üsküblü Masjid Quarter	-	-	1	1	-	1	-	-	8	-	-	-	-	-	-	-
Hayrüdün Bey Masjid Quarter	-	-	1	1	-	1	-	-	1	1	-	-	-	-	-	-
K. Hüseyin Çelebi Masjid Quarter	-	-	1	1	-	-	-	-	8	1	-	2	-	-	-	-
Daye Hatun Masjid Quarter	-	-	1	1	-	-	-	-	1	1	-	-	-	-	-	-
Elvanzade Hacı Sinan Masjid Quarter	-	-	1	1	1	1	-	-	-	3	-	-	-	-	-	-
Hacı Uveys Masjid Quarter	-	-	1	1	2	2	-	-	2	6	17	11	-	-	-	-

<sup>2</sup> Ayasofya market

Green areas in the Ayasofya District (*Nâhiye*) according to the cadastral survey (*tapu tahrir*) registers of Istanbul waqfs 1546 and 1600

**Appendix 5: The Factors Which is Affecting the Continuity and Change of Green Areas in Ayasofya Quarters in the 16th Century.**

	gradient change (%)	direction	coastal / central	fires		Topkapı Palace	sea walls	harbour	pier	wall gates	numbers of cistern		Numbers and names of water supply systems				Number of fountain	
Quarter Name				1546	1600						1546	1600	1546	1546	1600	1600	1546	1600
Ayasofya Quarter	7	-	central	-	-	+	-	-	-	-	3 <sup>4</sup>	3	1	FMWSSK	2	FMWSS KÇWSS	-	-
Ishak Pasha Masjid Quarter	4-6	-	central	-	-	+	-	-	-	-	-	-	-		1	KÇWSS	-	-
Sinan Agha Masjid Quarter	7	-	central	-	-	-	+	-	-	-	2	2	1	FMWSSK	2	FMWSS KÇWSS	-	-
Akbıyık Masjid Quarter	4-8	east	coastal	-	-	-	+	-	+	3	1	1	-		1	KÇWSS	-	-
Güngörmez Mesc. Mahallesi	5-6	-	-	1489	1489	-	-	-	-	-	1	1	-		1	KÇWSS	-	-
Nakilbend Hasan Masjid Quarter	4-14	south	coastal	-	-	-	+	+	+	1	4	4	-		1	KÇWSS	-	1 <sup>9</sup>
Hüseyin Agha Mosque Quarter	10	south	coastal	-	-	-	+	-	-		3	3	-		-	-	-	-
Uzun Şüca Masjid Quarter	12-16	-		-	-	-	-	-	-	-	2	2	1	FMWSSK	2	FMWSS KÇWSS	-	-
B. Sinan Agha Masjid Quarter	4	-	central	-	-	-	-	-	-	-	7	7	1	FMWSSK	-	-	-	-
Hace Rüstem Masjid Quarter	4	east	-	1509	1509-1588	-	-	-	-	-	2	2	1	FMWSSK	-	-	-	-
Firuz Agha Masjid Quarter	15	-	-	-	-	+	-	-	-	-	-	-	-		-	-	-	-
Üsküblü Masjid Quarter	5	-	central	1509	1509-1592	-	-	-	-	-	1	1	1	FMWSSK	-	-	-	-
Hayrüddin Bey Masjid Quarter	9	-	central	-	-	+	-	-	-	-	1	1	1	FMWSSK	-	-	-	-
K. Hüseyin Çelebi Masjid Quarter	4	-	-	-	-	+	-	-	-	-	-	-	-		-	-	-	1 <sup>12</sup>
Daye Hatun Masjid Quarter	6	north	-	1539	1539	-	-	-	-	-	-	-	-		-	-	-	-
Elvanzade Hacı Sinan Masjid Quarter	2	north	coastal	1539	1539-1569	+	+	+	-	-	-	-	-		-	-	-	-
Hacı Üveys Masjid Quarter	2	north	-	1539	1539-1569	+	-	-	-	-	1	1	-		-	-	-	-

<sup>3</sup> Fatih Mehmed Water Supply System

<sup>4</sup> Kırkçeşme Water Supply System

<sup>5</sup> Odungate.-Değirmengate.-Balıkhaneigate.

<sup>6</sup> The fire which is close to Atmeydanı

<sup>7</sup> The fire which is close to Atmeydanı

<sup>8</sup> Çatladigate

<sup>9</sup> Rüstempasha Fountain

<sup>10</sup> The fire which is close to Bedesten

<sup>11</sup> The fire which is close to Üsküblü masjid

<sup>12</sup> Serhazin Mustafa Agha Foundation