

THE RELATIONSHIP BETWEEN URBAN PLAN HIERARCHY AND URBAN
TRANSPORTATION MASTER PLAN. THE CASE OF ANKARA, İZMİR AND
BURSA

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ABSTRACT

THE RELATIONSHIP BETWEEN URBAN PLAN HIERARCHY AND URBAN TRANSPORTATION MASTER PLAN. THE CASE OF ANKARA, İZMİR AND BURSA

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Planning is defined as the process of preparing systematic action programs to reach the desired goals for the future. Types of urban plan are spatial planning types that reflect the macro form development, population, transportation and policies of the cities. Transportation is an integral part of planning. Transportation planning is a method developed for achieving future change predictions of transportation systems in urban areas. As a transportation planning urban transportation master plans have been prepared by Municipalities in Turkey. The scope of urban transportation master plan focuses on developing recommendations in line with long term demand predictions. Moreover, transportation master plans which analyze the current situation related to transportation identify bottlenecks and develop solutions for the transportation of cities within 15 years. In this context, it is the aim of the thesis to determine the relationship between urban plan hierarchy and urban transportation master plan in the current situation and to determine at which points they dissociate and where they affect each other.

Spatial plans are used as base for the transportation master plans. To understand this Ankara, İzmir and Bursa Provinces from Turkey have been chosen as a case study

because these provinces's transportation master plans are three of the most current transportation master plans. Also, size of the population in Turkey, most the first four provinces, respectively in Istanbul, Ankara, Izmir and Bursa. However, İstanbul differs from the other cities in order to its studies about transportation master plans in terms of fiction and content. There is no current study of urban transportation master plans in İstanbul. Therefore, the second third and fourth largest provinces of Turkey have been chosen as a case study.

A two-step method is used to achieve this purpose. In the first stage, focused on the urban transportation master plan process and semi-structured interviews have been carried out with the participants of the process. These interviews have been carried out with the representatives of expertise stakeholders that are participants of urban transportation arrangement process.

As a second step of the methodology, the transportation master plans of Ankara, İzmir and Bursa is examined. Also, the spatial plans used a base for transportation master plans are compared to the transportation master plans of the cities.

Keywords: Plan Hierarchy, Urban Transportation Master Plan, Spatial Planning, The Relationship Between Urban Transportation Master Plan and Plan Hierarchy, Ankara, İzmir and Bursa Cases

ÖZ

KENTSEL PLAN HİYERARŞİSİ VE KENTSEL ULAŞIM ANA PLANI ARASINDAKİ İLİŞKİ, ANKARA, İZMİR VE BURSA ÖRNEĞİ

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Planlama gelecekte istenilen hedeflere ulaşmak için sistematik eylem programlarını hazırlama süreci olarak tanımlanmaktadır. Kentsel planlar, kentlerin makro yapı gelişimini, nüfusunu, ulaşımını ve politikalarını yansıtan mekansal planlama türleridir. Ulaşım ise planlamanın ayrılmaz bir parçasıdır. Ulaşım planlaması kentsel alanlardaki gelişimler doğrultusunda gelecekteki ulaşım ihtiyaçlarını saptamak için yapılmaktadır. Bir ulaşım planlaması yöntemi olarak Türkiye’deki Belediyeler tarafından kentsel ulaşım ana planları hazırlanmaktadır. Kentsel ulaşım ana planının amacı kentse dair uzun vadeli talep tahminler yaparak, öneriler geliştirmektir. Ayrıca, ulaşım ile ilgili mevcut durumu analiz eden ulaşım ana planları, kentteki dar boğazları tespit eder ve 15 yıl içinde şehirlerin trafik problemini çözebilmek için öneriler getirir.

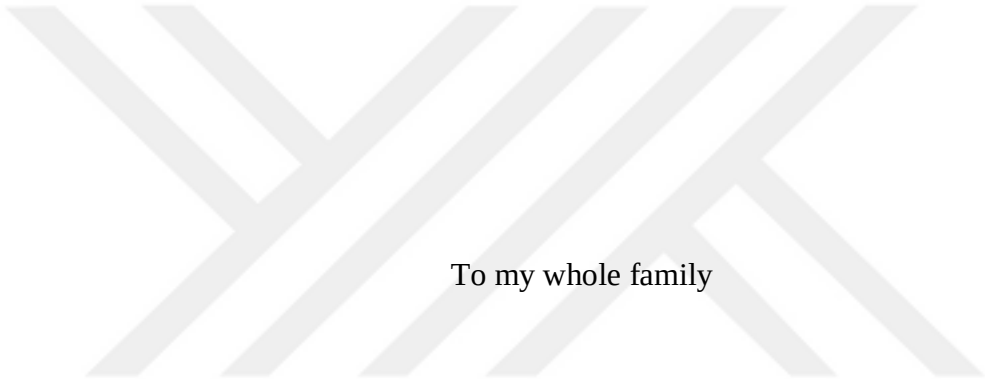
Bu bağlamda, mevcut durumda kentsel plan hiyerarşisi ile kentsel ulaşım ana planı arasındaki ilişkiyi belirlemek ve hangi noktalarda özdeşleştiklerini ve birbirlerini nerede etkilediklerini belirlemek tezin amacıdır.

Mekansal planlar kentsel ulaşım ana planları hazırlanırken altlık olarak kullanılmaktadır. Bu durumu açıklayabilmek için, Ankara, İzmir ve Bursa illeri örnek olarak seçilmiştir. Bu illerin ulaşım ana planları son yıllarda Belediyeler tarafından hazırlanan en güncel ulaşım ana planları arasındadır. Ayrıca, nüfus açısından

Türkiye'nin en kalabalık ilk dört ili sırasıyla İstanbul, Ankara, İzmir ve Bursa'dır. Ancak İstanbul, kentsel ulaşım ana planı konusunda diğer illerden farklı çalışmalar yürütmekte olduğu ve güncel bir çalışması olmaması sebebiyle örnek çalışma olarak seçilmemiştir. Bu nedenle, Türkiye'nin ikinci üçüncü ve dördüncü en büyük illeri örnek çalışma olarak seçilmiştir.

Bu amaç doğrultusunda, iki aşamalı bir yöntem kullanılmıştır. İlk olarak, ulaşım ana planı sürecini daha iyi anlayabilmek için görüşmeler yapılmıştır. Bu görüşmeler kentsel ulaşım ana planı sürecinin katılımcıları olan uzman paydaşlar ile gerçekleştirilmiştir. İkinci aşama olarak ise Ankara, İzmir ve Bursa İllerinin kentsel ulaşım ana planları incelenmiştir. Ayrıca, ulaşım ana planında altlık olarak kullanılan mekansal planları ve bu planların ulaşım ana planları ile olan ilişkisi ayrıntılandırılmıştır.

Anahtar Kelimeler: Plan Hiyerarşisi, Kentsel Ulaşım Ana Planı, Mekansal Planlama, Kentsel Ulaşım Ana Planı ile Plan Hiyerarşisi Arasındaki İlişki, Ankara İzmir ve Bursa Örnekleri



To my whole family

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CHAPTER 1

INTRODUCTION

1.1 Definition of the Issue

Although not yet a consensus is reached on insight of spatial planning and its implementations among theoreticians, practitioners, and any level policy makers around the world, most of the spatial planning studies and activities are carried out basically to influence on allocation of people and their activities to spaces in any target scale and then, to achieve strategic visions for the development of geographic areas and to achieve policies, priorities, programs, actions, operations, any kind of measures for the influenced space distributions under those visions.

In the most general sense, transportation phenomena, with its tangible and intangible effects on humankind and its activities motivated by a set of purpose, arises within the physical or geographical realms. Therefore, transportation cannot be conceived in itself without considering human concerns over space, in other words it is not taken as exclusive and non-concurrent phenomena. It would not be wrong to assert that transportation represents motions of people, economic and all other types of human activities or dynamics arising upon or between human-made or natural structures within geographic areas designed by spatial plans.

An example of a transportation master plan is supposed fundamentally to create a set of proposals for strategy, policies, measures and an indicative action plan with budget forecasts covering a long term vision for a period of 15 years in order to develop mobility opportunities in a given space and suggest alternative solution packages to future mobility-based problems forecasted for the same space by some sort of statistical transport researches carried out as a part of the master plan. It represents estimations on a very dynamic dimension of human-space interactions.

Because of the fact that a transportation master plan is mainly drafted on vision-based or strategic level but also hard suggestions on implementation level are also included in the plan for the movement of people with their activities and freights in a specific space; a transportation plan is classified as a some sort of spatial planning activity notably focused on the mobility of people and accessibility to all kind of activity-based areas.

As a result of all above, by decision makers or researchers, it is established a specific connection between spatial plans those especially prepared on strategy or vision level and transportation master plans. However for a typical strategy-based spatial plan, transportation phenomena is just one concern among all and it is not the overall or primary concern that is attributed more importance than another policy subject such as housing in the plan. The connection is formed as follows; strategy, vision or policies suggested by a transportation master plan should not contradict with the overall strategy and policies decided by strategical spatial plans. In this respect, strategical spatial plans must be taken as basis while a transportation master plan is drafted but implementary or practice based and low-scaled spatial plans with their additional, revised versions should be decided taking prior account of transportation master plan sections in which measures and an indicative action plan with forecasts probably including high-budget infrastructure project proposals to overcome future mobility-based problems are envisaged in that master plan.

1.2 Aims and Scope of the Study

Planning can be defined as the process of preparing systematic action programs to reach the desired goals for the future. (Ersoy, 2007). Transportation is an integral part of planning. Transportation planning is a method developed for achieving future change predictions of transportation systems in urban areas. The Ministry of Transportation and Infrastructure does not approve the rail system projects unless they are proposed within the framework of a urban transportation master plan. For this reason, municipalities in Turkey have made urban transportation master plans to get

their rail system projects approved by the Ministry and financed by central government budget resources. To prepare urban transportation master plans is introduced as one of the essential tasks of the municipalities by Municipal Law No 5393 and Metropolitan Law No 5216.

The scope of urban transportation master plan focuses on developing recommendations in line with long term predictions on travel demand. Issues such as the detailed formulation of individual measures and the selection of specific technical products do not fall into the scope of the urban transport master plan because it exists as a strategic planning tool. This topic has been chosen both to better understand the urban planning literature and to determine the importance of transportation, which is an inseparable issue in urban planning.

Transportation master plans are one of the examples of strategic planning as will be explained in the thesis. These plans are prepared within the framework of a certain mission and vision, which do not have a scale and where transportation strategies for the city are determined. Interaction with other plans is important when preparing these plans. In Turkish practice, especially in city planning level, most of urban transportation master plans are prepared if specific transport infrastructure projects are desired to be designed by local governments and if the central government approval is needed for crediting because the budget resources of these local governments are inadequate for the project implementation. In this context, transportation master plan is not effectively prepared but only adjusted to prior demanded transport infrastructure projects and already prepared elementary development plans.

The main hypothesis of the thesis is:

“If spatial plans aim the identification, design and implementation of all kind of sectoral policies related to urban development, and if spatial plans emphasize the continuity and consistency of plan hierarchy; urban transportation master plans should not contradict with the spatial plans.” Therefore, two main research questions are asked:

1. What is the relationship between spatial plans and transportation master plans?
2. In which points do these two plans jointly make decisions?

In this sense, the hypotheses and research questions are tested by the interviews with the participants of the transportation master plan process and also by examining the case studies from Turkey. Understanding the structure of planning in general manner and investigating the relationship between spatial plans and urban transportation master plans are the main purposes of the thesis. Ankara, İzmir and Bursa Provinces have been chosen as case studies because these provinces represent any three of the most populated cities in Turkey, illustrate comparable scale dimensions and have some of the most up to date transportation master plans. İstanbul the most populated city of Turkey is excluded from the case study as it has a different scale and context when compared to these three cities.

To understand the relationship between urban transportation master plans and other spatial plans in the use, the concept of plan hierarchy is utilized throughout the thesis. This study covered seven chapters without excepting introduction and conclusion.

General information on thesis content, aim and scope are introduced in the first chapter of this study.

Second chapter includes planning in the world. In this context, definition of planning, types of planning and history of planning have been defined first. In addition of these information, development of planning approaches also have been studied in order to understand the variety of transportation master plan.

The third chapter is about planning in Turkey. After defining planning in the world, planning in Turkey is expressed in order to understand ‘the relation between planning hierarchy and urban transportation master plans’ that is the subject of this thesis.

In the next chapter of the study urban transportation master plan is defined. Also, historical process of transportation master plan in the world and in Turkey and the properation process of this plan is explained.

In the fifth chapter, the related studies about the thesis subject and methodology of the thesis are defined. In the first part of the chapter, literature review is detailed. Studies about accessibility, about the plan content and the relations of urban transportation master plans with land use is described. After that, these studies are compared to this thesis in terms of research method, case study and content. In the methodolgy part, definition of the thesis methodology is detailed.

Chapter 6 covered the case study of the thesis. The aim of the study is to identify the relationship between plan hieararchy and urban transportation master plan. Ankara, İzmir and Bursa Provinces have been chosen as case studies. A two-step method is used to achieve this purpose. The first step focused on the urban transportation master plan process and semi-structered interviews have been carried out with the participants of the process. In the second stage, the transportation master plans of Ankara, İzmir and Bursa is examined. Also, the spatial plans used a base for transportation master plans are compared to the transportation master plans of the cities.

At the end of the thesis, the conclusion is spared to provide insights about the place of the urban transportation master plan within the spatial plan hiearachy.

CHAPTER 2

PLANNING IN THE WORLD

The concept of spatial planning goes back to the Neolithic age, when the first urban residents started to be settled with the agricultural revolution. However, in today's sense planning is substantially based on the industrial revolution. Early studies on urban planning approaches and theories go back to the end of the 19th century. It is intended in this chapter to understand “what the planning is” and to determine “how the planning in the world has changed from past to present?” Also, many kinds of planning concept have been adopted and implemented in the world since the beginning of the 1900s. The history of planning and the integration of planning types will be explained in this part of the thesis. As the ultimate aim of this chapter, it will be clarified the specific type plan among all that an urban transportation master plan is inserted into.

2.1. What is Planning?

2.1.1. Definition of Planning

Planning can be defined as the process of preparing systematic action programs to reach the desired goals for the future. (Ersoy, 2007). In planning, it is imperative for the future to have an opinion about the existence of an idea and vision and how it will be implemented. In other words, planning is a systematic action of theoretical knowledge (Friedman, 1987). As can be seen, when the concept of planning is considered in its broadest sense, it contains three indispensable features. Firstly, planning must be a design for the future, the secondly planning has to be done to achieve specific goals and objectives and finally planning must create a systematic action string (Ersoy, 2007).

According to Adams's definition dating back to 1935, planning is a movement of science and art, and a political movement that shapes physical growth in accordance with the social and economic needs of cities (Adams, 1998). The understanding of planning according to recognition goes far beyond physical planning, and it is started to be discussed in terms of social and economic needs.

Some other approaches are developed by Faludi in 1973. He says that planning is the art of conducting decision-making process and especially social decisions in a rational way in accordance with the successive options. Planning is a visionary action (Chadwick, 1977). According to Friedman, planning is the application of theoretical knowledge to systematic action (Friedman, 1987). Furthermore, Hall explains that planning is a series of regular actions that lead to the achievement of the identified goals and objectives (Hall, 2002).

2.1.2. Types of Planning

Planning systems built up for land use planning in the West have undergone several transformational stages but are mainly divided into regulatory zoning systems or discretionary systems. The regulatory zoning planning approach is associated with a high degree of certainty in decision-making processes, offering high level of consistency and objectivity through legal plans. The adherence-based planning approach is more closely linked to flexible decision making, which is sensitive to individual circumstances and provides a negotiating framework (Steele and Ruming, 2012). A regulatory plan has three functions: First, it is an economic tool to protect property and land values based on zoning attributes. Secondly, it is a social tool that protects public space and comfort by excluding undesirable activities. Finally, it is an environmental tool that to allocate separate land for potential harmful industrial use in order to regulate effects of pollution (Steele and Ruming, 2012).

Regulatory planning in developed countries is based on some basic assumptions: In land use regulation, uses are clearly identified and separated, and the same standards of improvement can be used for different urban areas. Therefore, zoning regulations

are made in the same way for different urban areas and any exception is rare, the uses which do not meet the plan requirements and which are incompatible with the regulatory requirements determined in the plan disappear as time goes on and the zoning rules remain in force without amendments for a certain period of time (Steele and Ruming, 2012).

2.1.3. History of Planning

The origin and institutionalization of contemporary planning is traced back to the industrial revolution and to the rise of modern nation states. The urban plans made during this period are the plans to solve the problems of the industrial city, namely the negative living conditions of the industrial city. It was expected that the improvement of physical space through plans would provide solutions to overcome social problems created by these negative living conditions.

The first legislations on planning in many European countries were adopted at the beginning of the 20th century as a response to problems stemming from the increasing pressure of development and population density and irregular development. Cultural, institutional and legal differences, as well as the specificity of the purposes on defining the legal spatial planning systems, have created a wide range of planning systems and traditions in Europe (Albrechts, 2004).

In the twentieth century, especially in the post-war reconstruction and the pressures of Fordist urbanization, the priority was given to plans to address the physical development of cities and to determine where the function would take place. A planning model based on the ideals of the implementation of the plans (Rivolin, 2008).

The starting point of modern western planning, which is woven with strong reformist ideals aimed at improving the conditions of human life, is the question of all good reform city and region as an intellectual and professional movement (Steele ve Ruming, 2012). Planning systems that are implemented quickly with this agenda have a common set of characteristics: a legal framework, a regulatory system, political decision-makers and the ratification process (Carmona and Shieh, 2004).

2.2. Development of Planning Approaches in the World

When the urban planning approaches are examined from the past to the present day, the emergence of the concept of planning as we refer today dates back to the first urbanism movements that are seen in the late 19th century with the industrial revolution and that caused rapid increase of the urban population. From this period to the present, there have been differentiations in the relationship between the management of planning and urban development in urban planning approaches.

With the industrial revolution, the large population migrating from rural to urban areas led to a series of physical and social problems in cities with inadequate infrastructure and this led to the development of approaches based on the improvement of the physical environment (Fishman,1982). However, as a result of the understanding that the social problems in the cities facing the densely populated cities cannot be solved by physical interventions, these approaches remained independent of the state (Parker, 2004).

In this part of the thesis, the understanding of planning in the world will be examined.

2.2.1. Beginning from the 19th century: Conception of Traditional Planning

The traditional urban planning approach emerges with the efforts of finding solutions to the problems of industrial cities which are formed as a result of industrial revolution and capitalist development (Tekeli, 1980).

The traditional urban planning approach is an approach that anticipates the city's physical development in order to provide a comfortable, healthy and beautiful environment for the people living in the city. According to Abercrombie, the main objective of planning is beauty, health and comfort, and the success of planning depends on the balance between these three elements. Beauty, if not accompanied by health conditions, remains unrealistic projects similar to Renaissance schemes, and cities where health conditions are provided are far from aesthetics. Beauty and health bring along the peace of the people (Abercrombie, 1959). According to Kleeble, urban

character and land use need to be arranged and buildings and transportation routes should be placed in order to reach the highest level of comfort, beauty and economy (Kleeble, 1997).

When all these approaches are considered, it is seen that in the traditional planning period, city planning works not only with the problems of urbanization related to the elimination of the problems but also to ensure the regular living conditions (Cherry, 1997). In the traditional planning approach, which considers planning as a technical work, it is aimed to regulate the physical development of the city and therefore it is desirable to reveal the plan as a technical document. The plan that emerged in the traditional planning approach is considered as the final product. Adams emphasizes that the plan is meant to be the last meaning and for a stable, stable and balanced physical structure, to ensure health, safety, comfort, order and convenience, and to improve human well-being (Adams, 1998).

Traditional approach considers the plan as the final product, while its process is defined sequences of Keles as analysis research, preparation and implementation of the plan (Keleş, 1972).

The pioneers of traditional planning are criticized for being too many physical planners. Since they approach the social and economic problems physically, the solutions remain only physical and spatial solutions (Hall, 2002). In this context, it can be said that the planning process is perceived and evaluated as a process that is completed with the plan.

2.2.2. Between 1930-1945: Comprehensive Planning Approach

By the 1930s, it was understood that the planning cannot solve the problems only with the interventions to be made to the physical structure. In this period, planning approaches expand to social, economic and managerial issues as well as physical issues and a comprehensive planning concept emerges (Keleş, 1972).

When the modern planning approaches began to develop in the 1930s, the physical dimension of planning was insufficient to solve urban problems. As a result, the concept of comprehensive planning has emerged. The understanding of comprehensive planning is a central state practice. In this process, the subject of physical planning has changed as a scientific activity rather than art. The reason for this is that large amounts of information are collected and processed by planners with precision systems that are designed as guiding and controlling (Hall, 2002).

In the comprehensive planning approach, concepts such as decision making by the state, management at the central level, and public interest are discussed. The planning process is defined with a comprehensive approach while monitoring and evaluation stages that facilitate the centralized structure to follow the process are included in the process (Friedman, 1996).

In the 1930s, along with the world economic crisis, a comprehensive understanding emerged in the plan of physical and land use and this approach continued to have an impact on the management policies until the 1970s (Ward, 2004). With the adoption of the comprehensive planning approach that emerged with the criticisms of the classical urban planning approach, planning is seen as an instrument of the whole development of the city. Three main factors that make the plan comprehensive are listed as follows (Kelly, 2010):

- Plans to cover all land use data or prepare it with the legal right of local government
- It covers everything related to the physical development of the settlement
- Having a long-term perspective.

The plan, which is defined as the mean of directing the future in this period, brings with a comprehensive and long-term concept for the prevention of the chaos created by the market and it is seen as a condition for planned, regular and healthy development (Şengül, 2002).

The comprehensive planning approach that emerged in the 1930s has been in use effective until today. Comprehensive planning is distinguished from traditional planning with regards to the following key features (Keleş, 1972):

- Planning is not only seen as a plan in the physical sense, but as an instrument of city development. For this reason, not only physical aspects but also social, economic, political and administrative aspects are included in the planning issues.
- The area of the city, which is the subject of the plan, has been enlarged and it has begun to be handled with the hinterland instead of being addressed only within certain administrative boundaries. This situation led to a move away from the approach which considered the city as a closed system.
- It is tried to be coordinated with the centralism feature.

Comprehensive Plan which comes up with a comprehensive planning approach are sometimes called as “Master Plan”, “General plan ve “Local Government Plan” (Kelly, 2010).

The Comprehensive Planning approach claims that from a positivist point of view, social relations and spatial structures can be analyzed by using scientific tools and techniques, and in this context, their problems and their solution proposals can be determined in a technical process. It is suggested that plans and results prepared in this framework can be predicted in advance (Şengül, 2002).

Considering the development of planning approaches, it can be accepted that urban planning studies are parallel to the discussions and approaches of the philosophy of science of the period. In parallel with the rational, positivist and materialist thought that prevailed in the 19th century, the rational positivist approach is dominant in planning. In this period, when the approach of the comprehensive planning is highlighted, the urban growth and development hypotheses are emphasized (Fainstein&Campbell, 1996).

Until the beginning of the 1960s, planning theories, analytical discussions, discussions about the urban form and discussions about the method have shown progress in three different branches. Analytical discussions deal with the question of “what is urban planning?” In addition, in the discussions about the urban form, what is a good urban plan and in the discussions about the method, what is the good planning process is answered are two main questions (Yiftachel, 1989). With the breakdown in planning paradigms related to these three basic questions about planning, there has also been a change in planning and planning process. With this period, discussions about the process have been included in planning studies.

2.2.3. Between 1945-1960: Incremental Planning Approach

After the World War II, the incremental planning approach is considered as an alternative to the comprehensive planning approach. This approach argues that planning should be approached by more flexible, fragmentary and smaller interventions instead of solid planning stages (Lindbloom, 1959). In response to Lindbloom's argument, Faludi does not consider incremental planning as a completely new approach. It is argued that the incremental planning, which is close to the comprehensive planning approach that cannot be opposed, is important for the ease of implementation process (Faludi, 1973).

The incremental planning approach consists of the steps such as limiting options, policy alternatives, producing limited results and targets, revising data, analysis and evaluation, social fragmentation analysis and evaluation (Braybrooke ve Lindbloom, 1963). It is also seen that incremental planning requires monitoring of the plan as well as the comprehensive planning concept and following of the implementation of the plan.

2.2.4. Between 1960-1980: Advocacy and Pluralist Planning

Between 1960 and 1980, the neo-positivist approach came to the forefront in planning in parallel with the liberal and rational understanding prevailing in the world of thought. According to Yiftachel, the first break in planning paradigms was in the early

1960s (Yiftachel, 1989). As a result of the break, the master plan understanding replaced the planning approaches that are dominated by different approaches such as renewal, decentralization and sustainability.

The neo-positivist and post-positivist view prevailed in the planning approaches in parallel with the pragmatist and materialist thought that prevailed in the 20th century. In the second half of the 20th century, diversity in planning approaches came into question. In this context, concepts such as advocacy planning and participation have been discussed (Faludi, 1973; Healey, 2003).

In the 1960s, the question of how to make the plan was not important, instead for whom the plan would be done was the main question (Levy, 1998). With advocacy planning, which is born as a critique of the comprehensive planning approach, the oppressed and excluded parts of the society have tried to be included in the planning. In the late 1970s, the advocacy planning approach emerged as a critique of the comprehensive planning approach. Davidoff argued that planners should take an active role in the political process rather than a single headquarters, and that a number of plans should be produced instead of a single plan. This approach can be considered as a sign of a new era in the relationship between planning and urban development. Within the framework of the new approach, the importance of the monitoring and evaluation stages in the planning process has increased.

This approach reveals the problem by claiming that all groups living in a city cannot unite over common goals related to the city, and that each group has its own goals. As a solution, it is suggested that the plans should be prepared by more than one institution instead of a single institution. This requires the involvement of other groups in addition of more like a planner. While the proposal of advocacy planning approach, it is argued that the discussion environment that includes other actors more than just a planner will make the plan preparation process more rational (Davidoff, 1965).

Davidoff summarizes the effects of pluralist planning on urbanism as follows:

- Pluralist planning makes people aware of alternative choices that are open to them and strongly supported by their supporters. Thus, the monopoly institutions, which are assigned to make the city plan, have to leave some of their burden to search for alternative solutions and plans.
- The institution, which is preparing a plan as a public duty, begins to compete with other planning groups in order to gain the support and trust of the political decision-making bodies. Thus, political decision-making bodies do not fall into the options of accepting a single comprehensive plan or not, they have the opportunity to choose the best quality plan.
- Groups not satisfied with the plan prepared by public planning bodies are obliged to make plans of higher quality than those they criticize.

Davidoff puts the pluralistic planning approach into a systematic framework and argues that comprehensive planning considers the planning process as a technical process and ignores the political content of the planning process and, in this framework, excludes the objectives and the outcomes of planning while emphasizing the tools (Şengül, 2002). For this problem, Davidoff (1965) argues that planners should be politicized and should take an active role in the political process. The way to do this is as suggested by Davidoff that it is better than preparation of multitude of plans instead of a single comprehensive plan.

2.2.5. Between 1980 and 1990: Collaborative Planning

Between 1980 and 2000, the post-positivist planning approach, which is parallel to the prevailing radical rational understanding and globalization, has come to the agenda. Within the context of the post-positivist planning approach, the contextual and pragmatic strategy has come to the fore (Allmendinger, 2002). This period can be accepted as the period in which today's planning approach is shaped.

In the 1980s, the concept of collaborative planning which included different political actors in the planning process comes to the fore. Especially with the studies that Healey (2003) made, it is seen that social issues gained importance in planning in the

current period. This approach, called collaborative planning, is discussed through planning, active society and communication-based governance processes (Healey, 2003).

Healey emphasizes that this approach, which was first debated in the 1970s, is called argumentative, communicative or interpretive planning theory and lists its important points as follows (Healey, 1997):

- All forms of knowledge are formed in a social way, and the scientific knowledge and techniques of the experts are not really as different from the ways of "practical intelligence" as rationalists think.
- The development and communication of knowledge takes many forms, from rational systematic analysis to storytelling and words, images and sounds.
- Individuals cannot reach their "priorities" independently as a result of the social context in which they are interested, but they learn through their social content and interaction.
- In the current life, people have different interests and expectations, and power relations have the power to suppress and dominate over a thin screen of assumptions and practices, not through the distribution of material resources.
- Public policies that are concerned about being effective and accountable to all rights holders in one place must extend the ownership of the above knowledge and understanding level.

According to Healey (1997), this would change the way from contestant interest to co-operative reconciliation, and in such reconciliation founding practices, the ways of coordinating and organizing the actions of different actors and the ways in which information production forms can be significantly changed; in other words, the ideas of organizations that will establish cultures can be developed. In this way, the planning work is connected to its social relationship content through its daily practice and has the potential to challenge and change them. In this way, content and practice are not separated from each other, they are socially organized together.

According to this new planning approach, the main actors of planning are not only selected politicians and technicians (as planners), but also non-governmental organizations and other actors gathered around the common theme.

2.2.6. Post-1990: Strategic Planning

Open-ended and deliberative planning approaches introduced the strategic planning approach, which was defined as a more flexible approach to the solution of new problems that emerged in urban areas in the 1990s when the socio-economic order of the world started to transform rapidly (Albrechts, 2006). The change in planning approaches has influenced the direct planning practices as well, leaving the single centralist and rigorous planning place to more flexible strategic planning. With this situation, the relationship between the management of planning-urban development has also changed. Yiftachel argues that the theoretical debates in the history of planning are maintained in three main channels, analytical (what is planning), form (what a good plan is), and the process (what a good planning process is). Although not mentioned directly in the late 1980s, strategic spatial planning is placed on the channel where process discussions are called pragmatic rationality (Yiftachel, 1989).

The strategic planning approach has been brought to the fore due to the fact that it is oriented towards action and results in the social and economic world order, and it supports the participation in the planning process. The project-based approaches that took place in the 1980s have been replaced by a strategic spatial planning approach that has been replaced by an action-oriented and visionary approach to strategic planning in the 1990s. In the 1990s, the rapid transformation of the socio-economic order in the world led to the emergence of new problems in the urban area and the traditional planning methods were ineffective in solving these problems.

The concept of Strategic Spatial Planning was first introduced in Northwest Europe in the 1920s and 1930s and was used in this period with the concept of modern-nation

state. Strategic planning is used to direct and manage the activities of others (different authorities, different sectors, other private actors, etc.) (Mastop and Faludi, 1997).

Strategic Planning was first used in the private sector in 1950s (Kaufman and Jacobs, 1987). In the 1970s, many reasons such as the oil crisis, democratic changes and the change of values led the strategic planning to be brought to the agenda and attracted attention in the USA, and for the first time in the early 1980s, it was used in the US central and local government (Albrechts, 2004).

When the characteristics that differentiate strategic planning from traditional planning are examined, it is the first factor to be more focused on actions, results and implementation. In addition, it is an important determinant of predicting more diverse participation in the planning process and emphasizing the understanding of a community in the external framework and trying to identify opportunities and threats in this context. In addition, the contestant adopts a behavior, emphasizes the strengths and weaknesses of the community in the context of opportunities and threats (Kaufman and Jacobs, 1987). On the other hand, Albrechts presents strategic planning with five main features: selective, focused on relationships, integrative, vision-determining and action-oriented.

- Selective: Strategic spatial planning is selective and oriented towards issues, as opposed to comprehensive planning that seeks to achieve everything and all problems and integrate everything.
- Relationship-oriented: Traditional spatial planning focuses on form with objects based on the euclidean space and place concept, while Strategic Spatial Planning focuses on relational space and place concepts and on relationships and process.
- Integrating: Traditional spatial planning seeks to integrate only objects and functions, while strategic spatial planning also focuses on the process. One of the most important issues is horizontal integration between administrations and vertical integration between spatial scales. Although inter-scale

integration and internal consistency was again an important feature of comprehensive planning, project-oriented insights, especially in the post-1980 period, caused this feature to be eliminated and increased the need for Strategic Spatial Planning.

- Vision-determining: Strategic spatial planning does not target a plan that is only fixed and frozen, as opposed to traditional spatial planning. It aims to create creative thinking, that is, vision about the desired future and how to reach them.
- Action-oriented: Strategic spatial planning is action-oriented and advocates the need for effective links between political authorities and implementing actors.

In the 21st century, there are several successive planning paradigms that are progressively progressing as multi-center approaches are on the agenda (Allmendinger, 2002). The planning paradigms for the period we are in may be considered as the period in which the second break is experienced. Strategic planning comes to the fore when the post-positivist approach prevails in planning approaches, where liberal radical philosophy prevails. In this period when competition and management-related issues were discussed, it was more focused on the planning process (Allmendinger, 2002).

In the 21st century, the three concepts that will guide urban planning are shown as economic stagnation, resources and plurality. According to Hague, the changes to be experienced in urban planning in the 21st century will be able to produce ideas without depending on uncontrolled market forces; be broader, supportive and flexible; that it will require vision and strategy and will be based on sustainable development and partnership principles (Blowers and Evans, 1997).

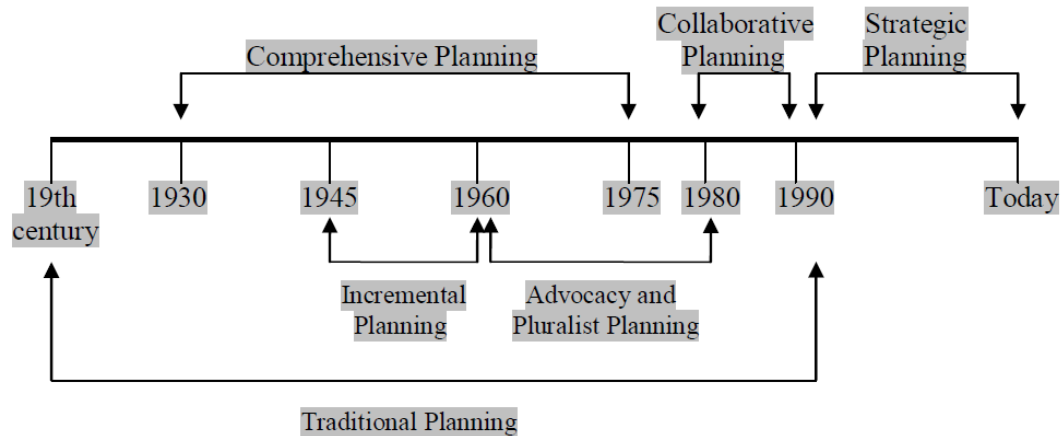


Figure 2.1. The historical scheme of planning in the world

(Compiled by the author, 2019)

2.3. Chapter Summary

The process which started with traditional planning at the beginning of the 1900s has been continuing with emergence of the strategic planning approach. There are many planning approaches in this process. Beginning with traditional planning aimed at a comfortable, healthy and beautiful city and approaching social economic problems from a physical point of view, this process has become more comprehensive with this type of planning that emerged in the 1930s.

Comprehensive planning is a more comprehensive and long-term planning approach. Planning such as traditional planning was not only about physical interventions but also about social, economic and managerial issues. Between 1945-1960, incremental planning has emerged that advocates more flexible, fragmentary and small interventions that facilitate the implementation of comprehensive planning. The favorite concept of planning in the 1960s that emerged as a criticism of comprehensive planning concept is advocacy and pluralist planning approach. In this type of planning, it is important how the planning is set up by different groups or actors but what the satisfactory purposes of planning is not the priority. It is also argued that planning

cannot be done in the same way for all and it is argued that planning should be done by more than one institution and evaluated politically.

The specific planning approach emerged in 1980 is the collaborative planning. Participation is important also in this planning approach. In the 1990s, the concept of traditional planning has lost its validity and the concept of strategic planning has gained popularity. This newly favourite planning in the world today is adopted with different targets that stand out from the physical planning where the visions, goals and actions are determined.

The change in planning approaches has left the single-centered and rigid planning area, which has also affected the direct planning practices, to the more flexible strategic planning. When the planning approaches are examined, it is seen that although there is no difference in defining the planning process, the importance given to the stages determined in the process changes. The planning process, which was completed and implemented in the past by the determination of the actions, is seen as a continuous process with the implementation, monitoring, evaluation and revision of the plan following the completion of the plan.

It is aimed by this chapter to understand what is the specific plan type that urban transportation master plan is counted into. A strategic plan, even other than spatial ones, is composed of written documents that include multi-sectoral strategies and targets affecting directly or indirectly on spatial development and composed of an overall concrete diagram illustrating major strategies. The main objective deals with both concrete and abstract development. Because the report is the essential part of a strategic plan, indication and the jargon in the plan is extremely diagrammatic so that major decisions on orientations and tendencies are stated schematically without any concern over scale (Gedikli, 2012). Along with action plans all strategy recommendations, included the construction of communication/information and transport infrastructures, and increasing the urban competitiveness for incentives to national and foreign investments, are reviewed in plan reports elaborately and clarified

for being bases over sub-scaled plans. At the final analysis urban transportation master plan is clearly classified as a some sort of strategic planning.

However, transportation master plans are spatial strategic plans, master plans and strategic plans differ in some points that can be listed as being complementary, giving priority to the projects and giving importance to participation (Borja et al., 1997).

Table 2.1. *Differences between a strategic and a master plan*
(Borja et al., 1997)

STRATEGIC PLAN	MASTER PLAN
Complementary plan	Regulates urban space
Gives priority to projects. However, it is not necessary to determine the place where the projects will take place.	Defines the uses of land and identifies the general system of the city and the location of large public spaces
Based on conciliation and participation at every stage	The decision gives by institutions. Participation is only result participation
Used in quantitative analysis methods	Spatial and physical field studies are used
A plan based on consensus among actors in actions requiring intervention in the short term	A regulatory plan. Regulates the potential future of action
It is an action plan	Action to edit action

Detailed information about urban transportation master plan is described in the fourth chapter of the thesis.

CHAPTER 3

PLANNING IN TURKEY

For properly exploration of current and ideal relationships amongst a set of planning activities and documents in a country especially hierarchical links, it is essential to review the evolution and transformation of general planning activities within the historical process in the reference country and to compare these nation-wide activities to practices of others across the world. Therefore, in this chapter of the thesis, planning practices history of Turkey will be discussed at first, and next, contemporary situation of planning approaches in Turkey will be explained in detail through analyzing of different plan types that contribute to planning practices.

Regardless of nature and scope of any plan, different planning approaches and practices have been developed and implemented in connection with alternative social, economic and political structures and geographic features of countries. In this context, as the essential objective of the chapter, it is intended to discover to define the position and stance of planning practices in the country with reference to evolution of planning paradigms across the world while examining the planning practices history of Turkey and hierarchical structure established on different planning documents in Turkey.

This chapter is designed to determine where the transportation master plans are located in the plan hierarchy in Turkey.

3.1. History of Planning in Turkey

3.1.1. Late Ottoman Empire Period

While European experts, local or centralized authorities were interested in systematic planning studies for their cities due to population growth emerging from continent-wide industrialization process, only individual planning studies on whole or special

living space(s) of a typical city or region had been carried out before the early republican times of Turkey. However no holistic or systematic view has been developed until republican period, spatial planning efforts date back just before the second half of the 19th century for individual cases on specific cities. Effective decisions were needed to be taken and implemented especially on Istanbul -the most crowded Ottoman city at the time- in order to overcome increase in the number of fires easily spreading from wooden buildings and insufficient street road widths posing obstacles to fire-fighting. On addressing these serious problems, individual planning studies proposing reconstruction or new construction of concrete buildings and roads with proper track width have emerged just for Istanbul, but then it was attempted to extend planning efforts on standardization to other Ottoman cities by taking Istanbul as the model city with the adoption of a set of regulations and code.

It may be asserted that the first city-wide planning efforts came up with the preparation of the Moltke Plan of Istanbul in 1839 by special initiative of Mustafa Reşid Paşa who was an Ottoman diplomat and the grand vizier introducing westernization movements in Tanzimat reform era (Uluengin and Turan, 2005). The essential objective of the plan was to establish accessible networks through extensive roads between spaces where commercial and bureaucratic affairs were conducted and historical entrances-exits of the city. Although the plan by which the western type of city would be reached was not implemented, it could be taken as technical reference for next planning efforts such as legal enactments (Uluengin and Turan, 2005).

Next vital attempts were especially evolved around enacting a range of legal arrangements for planning activities. Enactment movements were first introduced with the Regulation on Constructions (Ebniye Nizamnamesi) adopted in 1848 to guide planning on streets, buildings and other constructions only for a certain part of İstanbul. This regulation was updated with the adoption of Regulation on Roads and Constructions (Turuk ve Ebniye Nizamnesi) in 1864 by which a set of standards were accepted on expropriation, mapping, parceling and road widths not only for Istanbul but also for all cities of the empire.

The first basic spatial development law of the Ottoman Empire was brought into force with the adoption of the Code of Constructions (Ebniye Kanunu) at the same time repeal of previous regulation in 1882. The scope of spatial development arrangements were enhanced by the Law, such as expansion of roads, dimension of pavements, types of building facades and conditions defining construction permits (Tekeli, 1998).

With this law, regulations on a set of specification for public spaces and public areas were set, road widths were determined, road lengths and building heights were brought to a certain ratio and also detailed provisions regarding land forms and structures were introduced. The construction of dead end streets is forbidden by the law. The most important factor is to ensure that people can easily reach social facilities without any charge, and several standards for physical infrastructure of these places (such as pavement, sewerage) has been made obligatory. (Ersoy, 1989). Due to non-development of vehicle technologies and transport facilities accordingly, transport infrastructure and relevance activities was almost never paid attention to planning efforts.

3.1.2. Early Republican Period (1923-1950)

With the establishment of the republic regime as a new state and society formation covering social, economic and political ideals including modernization and nation building efforts, building model cities was embraced for reflecting these visions accordingly. In this context international experts were invited for planning activities, and they were consulted especially for the preparation of spatial development plans of some cities: Carl Christoph Lörcher – Ankara (1924), Hermann Jansen- Ankara, Mersin, Adana, Gaziantep and İzmir (1930-1939), Hermann Elgoetz- İstanbul (1933), Donat Alfred Agache- Erzurum and Trabzon (1933), Martin Wagner- general city construction consultancy for İstanbul Municipality and the Ministry of Public Works (1935-1938), and Henri Prost- İstanbul (1936-1950).

Planning works within this period started for Ankara and Istanbul cities. The province of Ankara's plan was prepared by Hermann Jansen in 1928, when the Lörcher Plan

prepared in 1924 was considered inadequate. The Jansen Plan was approved in 1932 and entered into force.

Newly emerged economy model after the Great Depression (1929) having global consequences and insufficient private enterprises in Turkey gave rise to different economic policy measures to be taken, namely 'statism', especially industrialization policies via state interventions such as establishment of public economic enterprises and five-year industrial development plans. Although significant objectives and actions decided within the scope of general planning phenomenon in the second term (1933-1950) of this period, any strategic or macro analysis on spatial planning or transport planning was not developed and the perspective for potential relationships between them was not established. Transport phenomena were just taken as nationalization of transport operations or companies as in the first term, for example nationalization of coastwise shipping and railway operator. No special transport planning was carried out. Zone planning activities for individual or specific local scales maintained in order to overcome deficiencies of previous ones and some legislation on zone planning were enacted without exceeding municipality or city-level insight. Transport movements by motor vehicles in terms of under public or private ownership did not pose extensive problems such as traffic jam or different kinds of bottlenecks so transport-based issues were taken mainly as mapping out routes with reference to the positioning of buildings, and if needed, especially inner-city transports were taken into account within the scope of finding exclusive solutions to specific problems of cities.

The code of constructions was deemed insufficient, thus in 1933, the Law on Municipal Constructions and Roads was enacted. This law could be treated as the first legal framework to guide in terms of urban planning practices and the law gave the municipalities the duty to prepare the existing maps and make the spatial development plans for the next fifty years. Planning studies on İstanbul started in this sense. The first individual planning activity, 1/5000 scale master plan study was carried on for İstanbul. The plan, which was prepared by Henri Prost in 1939, focused on the old city

inside the walls. Following this, 1/5000 scale master plan of Üsküdar, Çamlıca and Kadıköy areas on the Anatolian side were also prepared by Prost (Uysal, 2007).

It is seen that spatial plans produced by foreign experts, did not provide solutions to the main problems of the city and develop solutions. Also, the plan did not reflect the principles of general settlement and development issues of the city and did not give any decisions for the future. This plan presents an approach that includes fragmentary decisions for short-term transactions (Uysal, 2007). Besides, the Building Roads Law, which came into force in 1933, provided full continuity with the previous one in terms of the subjects it covers and its provisions (Akçura, 1982).

Because of inadequate municipal funding for planning studies to reconsider master plans deficiencies especially for Ankara and İstanbul provinces, the establishment of Municipalities Bank in 1933 was another milestone within the planning history of the country. While the focus of this state-owned company was to finance infrastructure investments of the municipalities because their budgets were insufficient to meet increasing credit necessities emerging with increase in population and urbanization process. The Bank was restructured as Provincial Bank, a development and infrastructure credit agency in 1944 and its scope was extended to all local government units such as special provincial administrations, municipalities, village administrations' planning and construction studies. With services of the bank 189 planning and mapping studies including city spatial development plans and other specific plans such as water and electricity transmissions have been completed in Turkey for 10 years, and 541 planning studies in the period of 1945-1960. Provincial Bank played a significant role in the construction of big cities especially in 1950s.

3.1.3. The Period Between 1956-1985: Implementation of the First Comprehensive Spatial Development Law

The first comprehensive law concerning land development control and planning in Turkey was entered into force in 1957 and numbered 6785 Law on Land Development Planning and Control (Ersoy, 2005). The Law, which has been in force for almost 30

years, played a major role in shaping the planning system in Turkey. It could be asserted for the relationship between transport and spatial development in sense of planning that with the law numbered 6785, along with construction plans municipal administrations were first obliged to draw road direction plans both at the scale of master planning and implementation planning. However, any hierarchical link among these plans was not anticipated by the law. In order that regardless of their scales both road direction and spatial development plans could become valid and be implemented, they had to be accepted by the municipal council in the first phase and be approved finally by the Ministry of Public Works and Settlement.

Another novelty laid by the law was about regulations of spatial development to have been implemented for next 4 years after the approval of spatial development plans. Spatial development programs that could be valid only by approval of municipal council were foreseen to be prepared for the concrete implementation of all kinds of spatial development plans. A spatial development program could be classified an action plan by which total required public expenditure amount for whole programming period, number and technical qualifications of staffing needed, annual budget allocations for designing and construction of buildings or some small-scaled infrastructures were also decided.

3.1.4. Post 1985: Spatial Development Law 3194

3194 Spatial Development Law was issued in 1985. The law is still in force today. Implementation of the spatial development system and the scope of spatial development legislation is included in the 3194 Law on Land Development Planning and Control. Except for some limitations, it cannot be said that it introduces very different provisions from the previous law.

It would not be an exaggerated statement to say that there has not been a comprehensive legal regulation on the serious problems experienced in urban areas in the last fifty years (Ersoy, 2005). But yet with the law, pointing out transportation system and resolutions of transportation system problems as deemed as two of

purposes for master development planning so relevancy of transport-based issues with spatial planning was first conceptualized by a legal arrangement on planning. However, no any other direct and detailed connection between spatial planning and transportation in terms of technical or legal synergy was foreseen by this law.

Although devolution of power from central government to local administrations on decision making for local scale spatial planning in Turkey is envisaged by law 3194, it is seen that the central government is usually the main actor holding the substantial powers, and decentralization has never been fully realized. In particular, the Ministry of Environment and Urbanization, which was restructured in 2018, is mostly the final authority to make, conduct, monitor and supervise all kinds of plans. When considered public service experiences of local governments in Turkey, financial and political risks such as lower technical and organizational capacity, failing to provide sustainability, limited financial resources but overindebtedness especially for the construction of large-scale infrastructure, high potential to taking decisions non-aligned with any other important nation-wide policies, short-run focus instead long-run, difficulties in internal control and audits; lots of justification may be raised for status of central government as final authority on spatial planning but the same time any justification or root causes of non-transfer of powers may be viewed as subjective and normative.

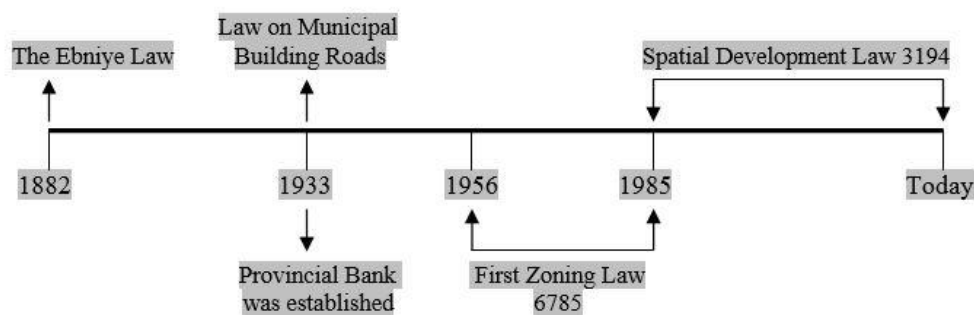


Figure 3.1. The historical scheme of spatial planning legislation in Turkey

(Compiled by the author, 2019)

3.2. The Effects of Important Economic Events on Spatial Planning in Turkey

It is a fact that spatial planning is not independent of the economy and political events in Turkey. Three important economic events that affect spatial planning of Turkey considerably are explained in this part of the chapter.

3.2.1. Transition to Planned Economy Model after 1947

In 1947, Turkey Economic Development Plan also called as Vaner Plan, enhancing the role of private enterprise, agricultural sector-oriented rather than industrial sector, given priority to transportation infrastructure investments especially on highways and dependant to external financial resources, was prepared by liberal-minded bureaucrats in order to meet the requirements for Marshall Plan, a set of economic aid programme envisaged by United States of America (Eşiyok, 2009). Although not formally implemented, this plan should be seen as a document that proves that the statist-conservative understanding of industrialization is now absolutely out of the agenda. However, with the military coup of May 27, 1960, an important turning point has been experienced in the multi-party political system. By adopting the principle of social state, the 1961 Constitution brought the understanding of welfare state. With the understanding of welfare state, the planned development principle has been adopted and the State Planning Organization has been established as a constitutional institution. A planned mixed economic policy has been implemented in the future (Tekeli, 1998). One of the most important milestones of the plans made on a country basis is here. Political vision on spatial planning also started to become more centralized focus than previous.

3.2.2. Development and Expansion of Squatter Housing in Turkey after 1950s

Starting from the year 1950 to recent years, the influence of squatting among other important factors has been major in the spatial planning history of Turkey. In urban planning process, it is suggested that urban transformation projects, which are

proposed as a solution to the squattering, will not carry a realistic solution value as long as the solution of the problem is reduced to the physical space size.

It is seen that the concept of urban transformation, which especially includes the transformation of slums and depression areas, has just emerged in the 1980s. However, the urban transformation concept and urban transformation projects and practices have not been falling from the discussion agenda since the beginning of the 2000s. It is seen that these discussions focus on the problems faced in both the legal regulations, the actors in practice and the implementation process (Akkar, 2006).

As a result of the delegation of planning powers to municipalities and the increase of municipal resources, most of major cities of Turkey have developed a comprehensive planning and development movement (Şahin, 2006). These practices have an important place in the resulting planning and development movements. Urban transformation applications mainly; historical texture, collapsed areas and rehabilitation-reconstruction plans have become unrecoverable.

It is observed that institutional arrangements and legal regulations that supervise and direct urban transformation cannot be established properly, and the planning approaches generally fall behind the transformation process and projects that are copied from the west without sufficiently questioning implementation processes in the world are added to the Turkish planning system (Türel, 2005).

The 1980s are a turning point in terms of localization and urban transformation practices. With the Law no. 3194, planning of a comprehensive planning and reconstruction movement has been initiated in almost all big cities with the transfer of planning powers to municipalities and increasing the resources allocated to municipalities. The problem of squattering has been tried to be solved by urban transformation but has not yet been overcome. Squatting is a major factor in the absence of regular planning system in Turkey.

3.2.3. Establishment of Housing Development Administration (TOKİ) in 1984

Housing Development Administration is founded in 1984 and started to construct apartment flats with almost same standardization as a social housing. TOKİ's type of constructions are built in every province and especially on state-owned properties. The code numbered 3194 represents an political approach that leads to unplanned and distorted urbanization process because it is adopted to rapidly meet the social housing needs of cities, especially metropolitan ones but not meet the requirements arising from plan decisions of the institutions authorized to make the spatial development plan in accordance with the law.

3.3. Planning Hierarchy in Turkey

3.3.1. Definition of Planning Hierarchy in Turkey and Plan Types Within the Hierarchy

The planning hierarchy arising from the definition of inter-plan relationships is based on the principle that sub-scale plans in the staging scheme are compatible with the upper-scale plans. In Turkish spatial planning system, development plan, country spatial strategy plan, regional plan, regional spatial strategic plan, environment plan, master plan and implementation plan are defined respectively in hierarchy. There is no specific legal provision that arranges sectoral plans and metropolitan area development plans.

According to the article 6 of Spatial Development Law numbered 3194, spatial plans are mainly classified as regional plans and development plans and ,in detail, development plans are also divided into master plans and implementation development plans. By the Article 6 of the Regulation on Preparation of Spatial Plans, spatial planning hierarchy is envisaged at the following order: spatial strategy plans, environment plans, master plans and implementation plans.

According to the diversity of places to be planned, different plan types are adopted in the spatial development legislation. Some of these plan types are envisaged in Spatial

Development Law but some of them are left to specific regulations as stated in the Article 4 of the same code. According to purposes of preparation, plans arising from the provisions of the Law are beforehand classified as general purpose plan types and special-purpose plan types. On the other hand, plans prepared for policy areas subject to different planning regime other than spatial planning can also be deemed into special-purpose plan types (Orta, 2006).

The plan types included in the Turkish planning system are basically defined in the Article 6 of spatial development law, which is the basic legal arrangement of Turkish spatial development legislation; plans are divided into two main categories in terms of their scope and objectives. The first variety of plans is regional spatial plans and the second one is spatial development plans. Also, development plans are subdivided into two different categories; master development plans and implementation plans.

The purposes of introducing such a relationship between the plans are to ensure that the plan decisions taken at the highest level can be increased to the lowest level plans and to provide sound coordination between the plans at all levels throughout the country (Ünal, 2003). Considering this basic law, it can be thought that the plan hierarchy is provided to a great extent for Turkish spatial planning studies. According to the Law, all plans from the scale of the whole country to the lowest implementation plans shall be organized within the framework of a certain hierarchy. As laid down in spatial planning or zoning legislation, all types of plans that are envisaged for the country, region and local level, and the planning order from the upper scale plans to the sub-scale plans according to relevant stages are mentioned at Table 3.1.

Table 3.1. *General and special purpose plan types*
(Orta, 2006)

General Purpose Plan Types	Special Purpose Plan Types
Top Scale Plans - country plans - regional plans - environment plans	- Conservation Development Plans - Tourism Reconstruction Plans - Forest Development Plans - Coastal Development Plans - Village Settlement Plans - Mass Housing Plans - Reclamation Development Plans - Revision Plans - Plans for Agricultural Areas - Environment Protection Plans - Plans for pastures, highlands, winters - Plans for National Parks - Plans for Industrial Areas - Plans Watersheds
Development Plans - master spatial development plans - implementation spatial plans	
Complementary and Amendment Plans - additional plans - site plans - revision plans - amendment plans	

More detailed plan concepts can be grouped under three headings in Turkey (Ünal, 2003):

- Plan Concepts in Spatial Development Law: Regional Plan, Environment Plan, Master Development Plan and Implementation Plan.
- Plan Concepts in the Regulation on Preparation of Spatial Plans: Revision Development Plan, Additional Development Plan, Regulatory Plan

- Plan Concepts in Other Laws: Reconstruction Plan (Improvement Plan), Plans for Tourism, Development Plan for Conservation, National Park Development Plan

Table 3.2. *Types of plans according to laws and regulations*

(Compiled by the author, 2019)

Plan Concepts in Spatial Development Law numbered 3194	Plan Concepts in the Regulation on the Principles for the Development of Spatial Plan	Plan Concepts in Other Laws
- Regional Plans - Environment Plans - Master Development Plan and Implementation Plans	- Revision Development Plans - Additional Development Plans - Regulatory Plans	- Reconstruction Plans(Improvement Plan) - Tourism Plans - Conservation Development Plans - National Park Development Plans - Transportation Master Plans

Transportation master plans, are not arranged especially by the Spatial Development Law but by other particular laws that will be examined in chapter 4.

3.3.1.1. General Purpose Plan Types

The plans in this scope cover the types of plans for solving all problems rather than a specialized sector. These plan types, which are divided into three main headings and subheadings, will be explained in detail below.

Top Scale Plans: Country plans, regional plans, metropolitan development plans and environment plans are the plans to be examined in this category.

Country Plans: In Article 5 of Spatial Development Law No. 3194, the definition of a country plan is mentioned within the definition of the environment plan. However, the country-wide development plans and the country's spatial strategy plan, which are new in the Turkish planning system, can be evaluated in the country plan category.

Development Plans: Development plans are prepared to determine economic, social and cultural policies and targets at the national level and are at the top of the planning system. In Article 6 of the Spatial Plans Regulation entered into force on 14.06.2014, it is stated that while spatial strategy plans and environment plans are prepared, national development plans, regional plans, regional development strategies and other strategy documents will be priorily taken into consideration. National development plans covering all kind of sectoral policies were prepared by the Development Ministry according to the statement in paragraph (b) of paragraph 1 of Article 2 of the Decree Law No. 641. But after the transition to the presidential system, the development plan is one of the duties and responsibilities of the Strategy and Budget Directorate under the sub-clause of Article 2 of the decree of the presidential decree dated 24.07.2018.

National Strategy of Regional Development: The national-wide spatial development strategies to be further included into the National Development Strategy are beforehand decided on Regional Development National Strategy documents by both the Regional Development High Council and Regional Development Committee with reference to the Article 23/A of the Decree Law No. 641 on Particular Councils for Development, , but these strategies are not envisaged to be decided specifically as a spatial plan document by the spatial development legislation. It is understood that there will be a strategic document that will serve to ensure the integrity between development strategies and development policies, in other words, to bridge the development plans and spatial strategy plans.

The former Ministry of Development, the newly transformed into Strategy and Budget Directorate, has published a guideline on the 2014-2023 Regional Development National Strategies.

Regional Plans: Regional plans, are explained within the Article 8 of the spatial development law, that they are prepared to determine socio-economic development trends, development potential of settlements, sectoral targets, distribution of activities and infrastructures. the former Ministry of Development and now the Strategy and Budget Directorate is entrusted to prepare regional plans. Development Agencies affiliated to the Strategy and Budget Directorate are also assigned in this regard. Regional plans are prepared in order to accelerate regional development in line with the national development plan and policies and policies foreseen in programs in the region where Development Agencies are responsible.

Spatial Strategic Plans: Evaluating the regional development strategies and spatial development strategies at the regional level, taking into account the economic and social potentials, targets and strategies of the regional plans, transportation relations and physical thresholds; is the type of plan that establishes the relationship between spatial strategies and strategies related to sectors, determining spatial strategies for directing settlements, transportation system and urban, social and technical infrastructure. 1/250.000, 1/500.000 or higher scaled maps prepared by using schematic and graphic language, sectoral and thematic maps and the report are expressed as the whole plan. This plan, which is entrusted to the responsibility of the Ministry of Environment and Urbanization, has not yet been implemented.

Environment Plans: Environment Plans coming after the regional plans within the planning hierarchy are prepared by the Ministry of Environment and Urbanization as the top level spatial plans. Spatial plans to be prepared based on environment plans, development plans and regional plans, compries as basis for general land use decisions and the related strategies and policies in order to formulate them. Environment Plan with the country and regional plan decisions, is defined in Article 5 of the Spatial Development Law that is the planin which it is determined the settlement and land use decisions such as housing, industry, agriculture, tourism and transportation.

In the Regulation on Preparation of Spatial Plans, which was put into effect on 14.06.2014, the layout was redefined: Identify general land use decisions related to sectors such as urban and rural settlements, development areas, industry, agriculture, tourism, transportation, energy, where basic geographical data such as forest, river, lake and farmland are shown in accordance with the objectives and strategy decisions of the spatial strategy plans. It is the plan made as a whole with the plan notes and report which can be prepared at the level of the region, basin or provincial level on a scale of 1/50.000 or 1/100.000 which provides the balance between the settlement and sectors and protection-use.

Spatial Development Plans: According to Article 6 of the Spatial Development Law No. 3194, the spatial development plans following the Regional Plans in the planning stage are the plans at the bottom and at the local level in the hierarchy. According to the same law, spatial development plans are divided into two as Master Development Plans and Implementation Plans.

Master Development Plans: In the Article 5 of the Spatial Development Law No. 3194, the master plan is defined as show the general modes of use of land parts, the main types of regions, the future population densities of the regions, when necessary, the density of the buildings, the direction and size of the various settlement areas, the principles of transportation systems and the solution of their problems. It is defined as a plan which is prepared as a basis for the preparation of implementation development plans.

In accordance with the Regional Plan or Environment Plans, the Master Plans prepared in the responsibility of the Municipalities are the spatial plans that determine the general land use, population and structure density, the direction and size of the settlement areas and the principles regarding the transportation system.

In the Regulation on Preparation of Spatial Plans, this plan type has taken its place in the plan hierarchy and it is stated that it can be done in 1/5000 scale in Municipalities, 1/5000 to 1 / 25.000 scale in Metropolitan Municipalities.

Implementation Plans: Plan decisions are produced in the application plan at the bottom of the plan leveling and these plans are intended to be implemented. Implementation development plan in Article 5 of the Spatial Development Law No. 3194; approved maps which have been prepared according to the principles of the master spatial development plan and their cadastral status, if any, and the intensity and order of the various regions, their intensity and order, and the implementation steps which will be the basis for the implementation of the spatial development plan.

The Regulation on Preparation of Spatial Plans Article 24 lists the principles of preparation of the development plan, data to be obtained from relevant institutions and organizations and analyzes to be made within this scope.

These plans prepared in 1/1000 scale are under the authority of municipalities other than Metropolitan Municipalities. It is approved by Metropolitan Municipalities.

Table 3.3. *Planning hierarchy and plan types in Turkey*
(Ersoy, 2012)

Name of the Plan	Planning Area	Scale	Legal Basis	Competent Authority
Development Plan	Whole country	uncertain	Spatial Plans Regulation the Article of 6 th	Strategy and Budget Directorate
National Strategy of Regional Development	Both country and regions	uncertain	Decree No. 641	Strategy and Budget Directorate
Regional Plans	Regions	uncertain	3194 numbered Spatial Development Law	Strategy and Budget Directorate - Development Agencies

Spatial Strategy Plan	Regions	1/250.000 1/500.000 or higher scale	Sub-Clause (i) paragraph 4 of the Regulation on the Construction of Spatial Plans	Environment and Urban Ministry
Environment Plan	Area within the boundaries of the province	1/50.000 1/100.000	Regulation on Spatial Plans	Environment and Urban Ministry
Master Development Plan (for Metropolitan Municipalities)	Metropolitan area	1/5.000 1/25.000	Metropolitan Law No. 5216	Metropolitan Municipality
Master Development Plan (for Municipalities)	Municipal boundaries	1/5.000	3194 numbered Spatial Development Law	Municipalities other than the Metropolitan Municipalities.
Implementation Plan	Municipality and contiguous area	1/1.000	3194 numbered Spatial Development Law	Municipalities other than the Metropolitan Municipality and County Municipalities in Metropolitan Municipalities

Complementary and Amendment Plans: Additional Plan, Plan revision, and spatial development plan changes are included in the supplementary plan. Article 20 of the Regulation on Construction of Spatial Plans In cases where the layout of the layout does not meet the needs or if it affects the plan's main decisions, continuity and integrity in terms of the vision, purpose, objectives, strategies, principles and policies of the plan, revision is done in the whole of the environment plan. The statement is located. In the same article, it is said that plan change can be made if the plan change is related to the main decisions, continuity and integrity of the Environment Plan.

In accordance with the Article 25 of the same Regulation, Revision and Additions to the spatial development plan revision of the spatial development plans of the spatial development plans, or where it is not possible to implement the case, or in order to ensure compliance with the top-level plan decisions to affect the overall plan or a part of the main principles of the and in accordance with the standards. Regarding the additional spatial development plan, where the spatial development plans do not meet the requirements, it is stipulated that the existing plan is made in accordance with the principles, principles and standards stated in this Regulation, in order to ensure continuity, integrity and compliance with the general land use decisions and the current plan.

Regarding the amendments to the spatial development plan; The plan is defined as the main decisions, continuity, integrity, social and technical infrastructure balance, which are made on the basis of technical and objective reasons for public benefit.

The spatial plan included in the Regulation on the Principles for the Construction of the Plan, which is the previous regulation from the Spatial Plans Regulation, is not defined in the new regulation. However, it is mentioned in various places in the Spatial Development Law.

3.3.1.2. Special Purpose Plan Types

Considering the Spatial Development Law, it can be thought that the plan hierarchy is provided to a great extent. According to the Law, all plans from the scale of the country

to the lowest implementation plans are organized with a certain hierarchy. Although the plans defined by the Spatial Development Law follow a certain hierarchy, it is seen that the Special Purpose Plans, which have priority over the spatial development plans, are outside the plan hierarchy. This coherence and coordination between upper-scale plans and spatial development plans, in line with planning principles, at the level of the law, is controversial in terms of special-purpose plans. Article 4 of the Spatial Development Law states that the provisions of the Spatial Development Law which are not contrary to special laws shall be applied in the places to be determined or determined by special laws (Orta, 2006).

The hierarchical planning hierarchy, which has been exempted by the exempted laws, has been distorted at the very beginning and coordination problems have arisen due to the uncertainty during the priority of the laws. This situation also led to the confusion between the local and central government.

Reconstruction Plans for Tourism Purposes and Development Plans for Conservation purposes by the Municipality and Governorships, but the legal validity of the approval of the central government. Special environment protection zone plans are prepared and put into effect by the central government without the need for local government.

3.4. Chapter Summary

It can be said that the concept of planning, which started with traditional planning in the world and developed with strategic planning approaches, is limited only with physical planning in Turkey (Ayrancı, 2013). While the power of local administrations is increasing in developing countries and accordingly, the participation of the public is being achieved in a high rate, it is seen that this situation goes in the opposite direction in Turkey.

Although the laws shaping the planning system in Turkey seem to have transferred the powers of the central government to the local government, it is seen that the final decision authority is usually the central government and the localization has never been fully realized. In particular, the Ministry of Environment and Urbanization,

which was established in 2011, gathered all kinds of plans to perform, build, monitor and supervise the plan.

When considering the planning stages of the world, Turkey is not possible to include in a particular category. It is understood from the planning section of this chapter that planning activities are limited only with space as mentioned above. Practical problems arise on the implementation of strategical plans, which is called as top scale plans and by which country-wide decisions are taken.

After planning in the world, planning in Turkey is expressed in order to understand ‘the relation between planning hierarchy and urban transportation master plans’ that is the subject of this thesis. The relation between planning and transportation arises while determining general strategies on transportation that takes place in objectives and targets section of country-wide plans. Backbone network of the city and connections to other cities is determined in environment plans by taking into account of decisions from off-scale strategic plans. General structure of urban transportation is stated in 1/25000-scaled and 1/5000-scaled plans. General spatial decisions as well as strategic decisions are reflected to urban master development plan. These plans in which the city is analyzed in whole manner pose a basis for transportation master plan also classified as a sort of strategic plans. However, supplementary development plans are low-scales and only prepared for a specific part of the city such as districts and street, and they are spatial plans detailed illustrating transportation arrangements on a given part of the city rather than whole city. These supplementary development plans are supposed to be re-prepared, revised or amended with respect to changes for a number of urban parameters in terms socio-economic variable such as population, residential areas, and investments and they should be, by nature, amended in short term. Therefore, general decisions on urban transportations are not included in supplementary or implementation development plans.

It can be said that the concept of planning, which started with traditional planning in the world and developed with strategic planning approaches, is limited only with physical planning in Turkey (Ayrancı, 2013). The relation between planning and transportation arises while determining general strategies on transportation that takes place in objectives and targets section of country-wide plans.

There is a reciprocal interaction between urban transport and land use. Land use decisions impact the type and scale of a required transport system. To the contrary, transport options and the structure of a given transport system influences people's movements and can subsequently influence the value of land. As such it is recommended that an urban transport master plan is prepared simultaneously with the master land development plan to optimize the efficient interaction between land use and transport.

Accordingly, the urban transportation master plan must be developed in parallel with the master land development plan, and with respect to the upper tier land use plans which are:

- National Spatial Strategy Plans (Ministry of Environment and Urbanisation);
- Regional Plans (Ministry of Development);
- Regional Spatial Strategy Plans (Ministry of Environment and Urbanisation) and
- Territorial Plans (Ministry of Environment and Urbanisation).

With regard to scale, the urban transportation master plan should be developed at the scale that is consistent with the master development plan in the Municipality (typically 1/25.000 scale) so to drive efficiencies and consistencies in GIS systems, and to align with the higher tiered plans. Once the transportation plan is determined at the same scale as the master development plan, the Municipality may option to develop plans at the 1/5.000 scale where interventions are focused on a specific corridor or a smaller geographical footprint, however this is not deemed an essential requirement. A

1/1.000 scale plan is only required for construction, and not required at the planning stage.

As it said before, 1/5.000-1/25.000 scale development master plans in metropolitan municipalities and 1/5.000 scale development master plan in other municipalities are coordinated with transport master plan.

The relation between planning hierarchy and transportation master plans will be stated broadly.



CHAPTER 4

URBAN TRANSPORTATION MASTER PLAN

Transportation is an integral part of general planning scheme. Although the plans mentioned in the plan hierarchy includes the subject of transportation, it is a self-described topic that is elaborated and put into practice in accordance with the previously prepared transportation master plans. In this part of this chapter, firstly the emergence process of the transportation master plan, its practices around the world, its Turkish practices as well will be discussed. In the following part of the chapter, the transportation master plans will be defined and further explained in detail such as purposes, methods and the stages of these plans.

4.1. Development of Urban Transportation Master Plan

Transportation planning is a method developed for achieving predictions on future changes of transportation systems in urban areas and scope and methodology of transportation master plans has evolved to date. The first transportation works were made as road arrangements at the beginning of the 10th century.

4.1.1. Transportation Planning in the World

The increase of motor vehicles in transportation caused significant changes in the settlement patterns of cities and the first systematic studies were started to determine the urban travel texture by making home surveys and roadside counts between 1920 and 1930 to solve the increasing problems in urban movements in Western countries (Kılınçaslan, 2012). Especially in the 1950s in USA, the increase in private car ownership with improvement and development policies in the transportation infrastructure in parallel with the increase in urbanized sphere and the level of importance given to suburbanization in urban policies, and development of

transportation planning studies in Chicago, Detroit and some other cities have started to be accepted as a discipline. (Özalp and Öcalır, 2008) .

Urban transportation planning, which has been developed in the 1950s and 1960s and called as the classical model, is a process in which rational decisions are dealt with in order to develop a plan. The rational transportation planning model, which is based on a scientific theory with the technique based on the cost analysis, is developed in Pittsburg, San Francisco, Penn Jersey corridor in the United States, London and West Midlands in England (Özalp and Öcalır, 2008).

In the late 1970s, new approaches started to come up with social changes. Urban planning has begun to be appeared as a process that takes technical and political perspectives at the same time and does not involve single and best solutions. Urban planners set officialy against non-governmental organizations while they assumed the role of advocate, civil engineer-based transport planners continued their approach based on computer models for technical knowledge. In this period, some countries have given importance to rail system investments with high initial investment costs, and the oil-rich countries in West have continued to focus on road transport. It is a fact that building rail system is not always the best solution to under all circumstances, and that the expected benefits can only arise with the availability of appropriate geographical conditions and supportive transport and land use policies. While the decision of the rail system investment is taken, urban transportation is established on the basis of this network and the rail connections with the road connections are supported. While comparing rail system investments in eight cities selected from the United States, the United Kingdom and Canada, it also sets out how these systems are close or remote to the expected success. Despite the cost-efficient and the other positive effects of the urban railways, none of them were fully successful in solving traffic congestions and environment problems (Babalık, 2007).

The recent changes in transport policy in a London conference (Transport: The New Realism) in 1991 (Goodwin, 1991):

- Transportation is a part of a larger urban problem and all management levels.
- The consistency of operation between species is important.
- It is impossible to meet all demands of transportation.
- Transportation requires more than simple technical solutions and a better understanding of the reasons for traveling with human factors.

The concept of sustainability in the 1990s consists of many dimensions of planning together with the transportation planning agenda. Although it was not expected that a fundamental change in urban transport would occur in a few years, it was envisaged that the traffic cessation practices supported by financial measures and remuneration policies would increase the share of transportation types such as public transport, walking and cycling in the species distinction (Hart, 1994).

Owens (1995) points out that a sustainable transportation policy can only be achieved with a coordinated policy package. A sustainable urban transport and land use system (Minken, 2003);

- efficiently deliver goods and services to all residents of the urban area access,
- protect the environment, cultural heritage and ecosystems for the current generation and
- include the natural environment and cultural heritage of future generations endangering the possibilities of today's prosperity not horses.

The modeling system used today in transportation planning differs fundamentally from that used in the 1950s and 1960s. While past models have focused on cost efficiency in providing infrastructure, recent studies focus on accessibility, macroeconomic impact, environment impact, social equity, land use and development (Özalp and Öcalır, 2008).

4.1.2. Transportation Planning in Turkey

4.1.2.1. Before 1970

The works that were defined as the first generation and that were carried out before 1970 are the first studies in the field of urban transportation planning in Turkey. Depending on the circumstances of the period, it is started to assign an external or more foreign experts for short-term and narrow-scope studies within the framework of some specific projects implemented in Istanbul and Ankara are.

The studies in this period were carried out in order to determine and defend the necessity of a particular transportation investment (ie the Bosphorus Bridge) rather than the general transportation structure of the city (Öncü, 1993).

4.1.2.2. Studies Between 1970-1985

The second generation of transportation planning efforts were carried out between the years 1970-1985 and appeared within the framework of public-sector master plans. Eight master plan offices established in this period in İstanbul, Ankara and if compared to the previous period during planning work in Izmir more extensive transportation studies were carried out.

The main purpose of the transportation planning activities in this period is to test the transportation dimensions of development scenarios and land use decisions that were made during the high scale planning studies in urban plan offices. This approach is considered to be an important development in relation to transportation planning and master plan relation (Öncü, 1993). Transportation planning and survey studies prepared between 1970-1985 are listed in the Table 4.1. in chronological order.

Table 4.1. *Transportation planning and survey studies prepared between 1970-1985*
(Özalp and Öcalır, 2008)

Province	Study	Year
İSTANBUL	Feasibility Study for the Istanbul City Metro Station	1970
	Traffic Engineering and Control Study	1975
	Istanbul Metro Feasibility Study	1978
	Urban Transportation Plan	1983
	Speedy Tramway Pre-feasibility Study	1984
ANKARA	Transportation Study	1972
	Urban Rail Transportation Project	1980
	Feasibility Study of Rail Public Transportation System	1983
İZMİR	Transportation Study	1974
	Public Transportation System Optimization Study	1980

4.1.2.3. Studies After 1985

The third generation of urban transport planning studies started in 1985-86 with surveys prepared for the cities of Istanbul and Ankara. It has been determined as a prerequisite to the preparation of transportation survey for the evaluation of allocation of resources to the central public rail transportation projects with the arrival of the demand levels of the railroads in some provinces of Turkey and with the emergence of requests and initiatives in many cities in this direction. As a result of this necessity, comprehensive urban transportation studies have been carried out in approximately twenty cities since 1985. One of the most significant features of this period is the financial resources provided by credit and grants and the contribution of foreign

experts in order to introduce Turkey's own technologies to the countries which produce rail public transportation systems and to get a share from the rail public transportation market which emerged especially in Metropolitan Municipalities of Turkey.

The transportation master planning became more widespread year by year with the lack of highways in transportation and increased the importance for rail system projects. As the Ministry of Transport and Infrastructure are obliged to analyze and control the Urban Transportation Master Plan for the approval of rail system projects, the municipalities had to produce and record much more transportation data than before and widen the transport planning framework including all alternative transport modes so far as possible. Transportation planning studies that have been conducted for some provinces in Turkey for last twenty years are pointed out at Table 4.2.

Table 4.2. Transportation planning studies conducted last twenty years

(Compiled by the author, 2019)

Province	Transportation Master Plan Works After 1980s
Adana	1992 Transportation Survey
Ankara	1985 Transportation Master Plan
	1994 Transportation Master Plan
	2009 Transportation Master Plan
	2017 Transportation Master Plan
Antalya	2005 Transportation Survey
	2016 Transportation Master Plan
Bursa	1987 Transportation Master Plan
	1997 Bursa Urban Development Project Urban Transport Improvements Study
	2012 Transportation Master Plan
	2018 Transportation Master Plan
Denizli	2003 Transportation Survey
Diyarbakır	2012 Transportation Master Plan
Erzincan	2016 Transportation Master Plan

Erzurum	2016 Transportation Master Plan
Eskişehir	2001 Transportation Survey
	2017 Transportation Master Plan
Gaziantep	2006 Transportation Survey
	2010 Transportation Master Plan
	2016 Transportation Master Plan
İstanbul	1997 Transportation Master Plan
	2011 Metropolitan Area Transportation Master Plan
İzmir	1992 Transportation Master Plan
	1997 Transportation Master Plan Update Study
	2009 Transportation Master Plan
	2011 Transportation Master Plan
	2018 Transportation Master Plan
Kayseri	2001 Transportation Survey
	2009 Transportation Master Plan
	2017 Transportation Master Plan
Kocaeli	2014 Transportation Master Plan
Konya	2002 Transportation Master Plan
	2008 Transportation Master Plan
	2015 Transportation Master Plan
Malatya	2018 Transportation Master Plan
Mersin	2001 Transportation Master Plan
	2012 Transportation Master Plan
	2016 Transportation Master Plan
Samsun	2000 Transportation Survey
Trabzon	Transportation Survey Studies continue

4.2. Requirements of Urban Transportation Master Plan

4.2.1. Aim for Preparing Urban Transportation Master Plan

The scope of the urban transportation master plan focuses on developing recommendations in line with long term demand predictions. Issues such as the

detailed formulation of individual measures and the selection of specific technical products do not fall into the scope of the urban transport master plan because it exists as a strategic planning tool.

Outcomes of the urban transportation master plan are prerequisites for preparing the following technical reports and studies on urban transport projects, thus the plan becomes essential and poses a basis for the success of the followings:

- ✓ Feasibility studies;
- ✓ Preliminary or concept design;
- ✓ Detailed design;
- ✓ Operational/systems specifications.

Transportation Master Plans are organized to ensure the optimal layout of public transport and urban layout in transportation. Preparation of the Transportation Master Plan is one of the important duties of municipal administrations or local government units. This duty definition is clearly adopted by the laws. Mobility is a key dynamic of the urban environment, and the associated infrastructure (e.g. roads and transport systems) invariably shape the urban form (i.e. the spatial imprint of the city). In 2005 approximately 7.5 billion trips were made in cities worldwide each day. In 2050 there may be three to four times more than this amount (infrastructure and energy prices permitting supposedly). Yet, despite the increasing level of urban mobility worldwide, accessibility to places, activities and services has become increasingly difficult.

Owing to urban sprawl (the horizontal, low-density growth of cities over vast areas) distances between functional destinations such as workplaces, schools, hospitals, administration offices, or shopping amenities have become longer; leading to a growing dependency on private motorized transport and other car-centered mobility. Consequently, widespread congestion and traffic gridlock have now become the norm in many cities, impacting urban life through negative externalities such as pollution, noise stress, and accidents. Many Turkish cities are creating large, dense developments on the periphery of the city including new office parks, shopping malls

and residential developments creating a greater physical separation of residential areas from places of employment, markets, schools and health services that meaning many urban residents spends increasing amounts of time on transport.

Furthermore, many cities still have not developed efficient, if any, public mobility systems. Even when available, public transport often suffers from congestion because of high access costs, lack of reliability, and deficiencies in safety and security. In addition, administrative boundaries don't always match the total metropolitan area, and each administration has separate mobility policies and transportation systems in practice. This often leads to inefficiencies and unattractiveness due to uncoordinated operations, such as mismatching schedules or multiple fares. So far, the standard response to addressing urban mobility issues typically has been to increase infrastructure, mostly for cars, such as building more roads, highways, flyovers, or tunnels. Unfortunately, these developments engender a vicious circle: more infrastructure stimulates urban sprawl because access to peripheral urban areas is eased, increasing the use of cars which, in turn, calls for further infrastructure development, and so on. While it is true that all residents must be able to access home, work, amenities, and other places of leisure or personal fulfillment in a fast and efficient way, adding infrastructure is not necessarily the panacea for the urban mobility challenges of today. Addressing the mobility challenge calls for a paradigm shift in urban planning, encouraging compact cities and mixed-land use as a way to increase accessibility and to reduce the need for transportation altogether. Understanding that the purpose of mobility is to gain access to destinations, activities, services and goods, urban planning should therefore be resident-centered, so that functional endpoints – the reasons for travel – are as close as possible to each other, in effect reducing distances and transport needs.

Thus, urban planning should focus on how to bring people and places together, by creating cities that give priority on accessibility, rather than merely adding urban transport infrastructure to increase the movement of people or goods. To put it simply put, city residents should be able to address their needs using as little travel as possible.

Likewise, the bias towards private motor vehicles needs to change in favour of more sustainable mobility concepts, such as public transport systems that have high passenger capacity and area coverage and are low in energy use and carbon emissions. To cut reliance on private motorized transport, cities need to develop attractive, accessible, and affordable public transport systems that are within geographical and financial reach of all residents.

Because most trips involve a combination of several modes of transport, cities need to provide multimodal transport systems and address modal integration as a major component of any urban mobility strategy. For example, high-capacity public transport systems – metro, light rail, or bus rapid transit (BRT) which needs to be integrated with other forms of public transport that serve as feeder services to ensure full utilization of their conveyance capacity. Emphasis is therefore to be placed on “last mile access,” to allow residents easy access to the public transport system. The urban space needs to be rethought in order to optimize flow of traffic, but also to increase and encourage the use of non-motorized transport, such as pedestrian movement or cycling. Streets need to be adapted, with walkways, crossings, and cycling lanes. Transport junctions need to be established to create connection points between different transport modes, thus facilitating access to and extending the range of a public transport system.

4.2.2. Legislation on Urban Transportation Master Plan

There are laws stating that Transportation Master Plans will be carried out by municipalities in Turkey. These laws, their validity and explanations will be described in detail below.

4.2.2.1. Regulation on Procedures and Principles for Improving Energy Efficiency in Transport Services

The 30 Metropolitan Municipalities and any Municipality with a population over 100,000 are expected to have a transport plan as per the “Regulation on Procedures and Principles for Improving Energy Efficiency in Transport Services” published in

the Official Gazette of 09 June 2008 and No 26901 which states that “Metropolitan Municipalities and Municipalities with a population of more than 100,000 shall prepare a transport master plan. These plans shall cover a period of fifteen years and be revised every five years”.

4.2.2.2. Municipality Law No: 5393

Under the article 14 in Municipality Law No 5393, under the duties and responsibilities of the Municipality, it is written that the municipalities will design and build the transportation infrastructure. Transport master plans are approved and validated in municipal councils. The authority to prepare Transportation Master Plans is in the Municipalities. However, these plans are generally carried out in Turkey to raise the recommendations of the rail system. In this case, the Transportation Master Plans prepared by the Municipalities shall offer for the considerations of the Directorate General for Infrastructure Investments of the Ministry of Transport and Infrastructure.

4.2.2.3. Metropolitan Municipality Law No: 5216

As per the Metropolitan Municipalities Law no 5216, Article 5– the borders of the Metropolitan Municipality extend to the scope of the provincial administrative borders, and thus; the scope of the urban transport master plan must cover this extended areas. For some Metropolitan Municipalities, the primary city has over 100,000 populations, but there are also secondary districts with over 100,000 populations. This reflects a polycentric urban form that should be accounted for in the urban transport master plan. For non-Metropolitan municipalities with a population in excess of 100,000 the urban transport master plan should cover the full municipality boundary, however for these municipalities, the focus will be on the central district which has over 100,000 population that reflecting a multi central urban form.

In accordance with Article 7 of Law No. 5216, metropolitan municipal administrations are obliged to carry out the following tasks: to prepare or implement the transportation master plan of the metropolitan cities, to plan transportation activities or measures and

public transportation services and to provide coordination; to determine all kinds of services and public transportation vehicles, taxi numbers, ticket fees and tariffs, time and routes operated on land, sea, water and rail; detecting, operating, operating or renting car parks on roads, roads, streets, streets, squares and similar places; to carry out all the work required by the traffic regulation of the laws given to the municipalities.

4.2.2.4. The Regulation on Preparation of Spatial Plans

As laid down by the 4th clause of the 1st sub-article of 4th article in this regulation entered into force with its promulgation in Official Gazette 14th June 2014 dated, transportation master plan is designed as follows: It acts a plan by considering transportation needs and demands, sustainable development conditions in respect of spatial, social and economic features of a city that determines transportation system of a city and its near abroad; transportation networks, standards and capacities with dispersion to transportation modes; road, maritime and air transportation and integration of these transportation modes; transfer points, storage and interchange centers, freight corridors and mass transportation routes; if needed, parking lots, bicycle trails and pedestrian ways, other details on accessibility and traffic subjects; and it is a plan that concentrates on and give precedence to mass transportation; offers solutions to short and long-run transportation modal problems; it can be prepared in coordination with high or low ranking urban plans; and it is a whole plan with its necessary map sections and report.

4.2.2.5. The Regulation on Procedures and Principles of Increasing in Energy Efficiency on Transportation

A set of arrangements for urban transport master planning is envisaged by the 6th article in this regulation entered into force with its promulgation in Official Gazette 2nd May 2019 dated. With this regulation;

- Metropolitan municipalities and municipalities with its population exceeding 100.000 and excluding municipalities within the border of metropolitan

municipalities has anymore to prepare urban transportation master plan to be align with the national transport master plan that prepared by Ministry of Transport and Infrastructure. These plans will be prepared for a period of 15 years and will be renewed and revised every 5 years by parallel with urban master development plans, medium-term plans and other spatial plans. The renewed plan decisions will be reflected to further revisions and supplements of spatial plans.

- By providing pioneering coordination of Ministry of Transport and Infrastructure with all related public institutions and organizations and within the framework of sustainable urban transportation approach, it is also envisaged to prepare the Manual on Preparation of Transportation Master Plans covering inner-city and inter-city transportation planning, efficient use of energy, ecological and integrated transportation modes, mobility management, intelligent transportation systems and all other transportation factors.
- Urban Transportation Master Plans will be prepared with reference to the Manual on Preparation of Transportation Master Plans previously prepared by Ministry of Transport and Infrastructure.
- The plans, to be prepared by municipalities for the cities without urban transportation master plans, will be valid with the approval decision either by General Board of Transportation Coordination Center for metropolitan cities or either by Municipal Assembly for other municipalities after taking opinion of Ministry of Transport and Infrastructure. One of the approved copies of these plans will be submitted to the Ministry.
- Urban Transportation Master Plans will be prepared for short-term, medium-term and long-run in coordination and in line with sustainable transportation policies on strategical level, urban spatial plans' decisions, local and national clean air action plans.

4.2.2.6. National Development Plans

It is stated under the title of Share of Authority and Responsibility within the Urban Transportation Sub-Commission Report of 8th National Development Plan prepared for between 2001 and 2005 that Municipalities are responsible for carrying out development and transportation planning studies for their own municipal realm. Therefore, Municipalities are also responsible for providing coordination between these two different planning criteria and processes and for providing conformity of transportation master plan with development plan. It is stated under the title of Urban Transportation within the 9th National Development Plan prepared for between 2007 and 2013 that There will be carried out urban transportation planning studies that provides equal opportunities to all segments of the society; that are participatory, public welfare oriented; that minimize external dependence by taking care of domestic resources' use; that are environment-friendly, economically efficient, safe and based on continuous pedestrian mobility; and it will be provided to analyze land-use decisions considering transportation effects on each scale, and to prepare urban transportation plans needed for each scale.

It is evaluated in the 10th National Development Plan prepared for between 2014 and 2018 that it will be needed to pass over to corridor approach for following term, to provide integration between transportation modes, transportation networks of undeveloped areas; it will be provided combined-transportation opportunities, encouraging maritime and railway transportation by determining the most advantageous transportation mode as per appropriate volumes and distances within transportation corridors. It will give priority to transportation systems that enables to energy efficiency, clean fuel and eco-friendly vehicle riding. The current and planned urban rail system projects will be designed by being integrated to main railway track traversing city centers, to urban logistical centers, inter-city coach stations, airports and any other transportation modes.

4.3. Preparation Process of Urban Transport Master Plan

The purpose of the transportation master plan is to make an analysis of the current situation in the city, to identify the shortcomings in transportation and to improve with new proposals. Studies on this subject can be classified under ten headings. Below are the stages of a typical transportation master plan.

4.3.1. Current Situation Analysis

The first stage of developing an urban transport master plan relates to the collection of available data and information. A comprehensive understanding of the city and the transport needs requires the collection of information that is often fragmented across different departments and sources. This stage focuses on gathering together information into a central data point, to utilise this for developing a baseline understanding of the city and to understand the key opportunities and challenges in a city. Data should be collected to identify the characteristics of the city in relation to land use and demographics, alongside information relating to travel patterns and demands for both people and freight across the city. Information should also be obtained related to higher tiered plans, including relevant policies and aspirations so that the basis of the urban transport master plan can be established and transparent to all. It should be noted that territorial plans are a good source of information as they are supported by a spatial database that has been utilised for the planning works at the upper level.

4.3.2. New Data Collection and Analysis

At this stage, in addition to the current situation in the city, new surveys are collected with household surveys and travel surveys. Household surveys can be accepted as 3% of the total population in metropolitan areas and up to 5% of sampling in other municipalities.

The available information and data collected as part of stage 1 is likely to indicate key gaps in understanding of current transport trends. Most critically, it may reveal that

there is a lack of intelligence relating to travel patterns (most specifically origins and destinations of travel) and or traffic volumes. To address these gaps, surveys should be undertaken to ensure a robust understanding of the existing situation. Four types of surveys are set out in further detail below:

- Traffic counts,
- Household interview surveys,
- Roadside interview surveys,
- Passenger interview surveys.

4.3.3. Model Development and Forecasting

The function of transport models is to mathematically represent the reality of transport movements. In other words, it models the behaviour of individuals in making decisions regarding the provision and use of the transport system. The aim of a transport model is to mimic the reality with the smallest error margin. Once a model has been developed, models are then further used as a tool to predict travel demands for the future, and to help make decisions on the future development and management of transportation systems.

Travel demand modelling was first developed in the late 1950s as a means to undertake highway planning. Modelling techniques are continually evolving based on increasing capabilities of computers and related modelling software packages that are utilised, which provides new and innovative ways to represent travel demand. To the contrary, models provide forecasts only for factors and alternatives which are explicitly included in the equations of the models. If the models are not policy sensitive, the models will not show the effect of these policies. This can lead to the conclusion that such policies are ineffective. This would be a wrong conclusion because the models were not capable of testing that policy. For example, travel forecasting models usually exclude pedestrian and bicycle trips and thus improvements to these systems will not be reflected in a model as the model ignores

these trips. It would be wrong to conclude that such improvements are ineffective, rather the actual impact is unknown.

In recognition of a shift in transport planning process from ‘predict and provide’ to ‘vision and validate’, a fundamental requirement of any urban transport plan is a vision. For example, ‘what is the plan trying to achieve for the city?’ Many cities around the world develop a statement of vision as a basis for developing their strategy for transport (as well as other sectors). A vision is effectively the ‘hook’ that provides an overarching statement of desired outcomes that leads to well defined goals and objectives. The vision is an important qualitative description of the desired future. This alone is not sufficient. The vision needs to be supported by objectives which indicate the type of change desired; and key principles that reflect underlying priorities and values within a plan. The developed objectives and principles should align with the long-term vision for transport and provide direction for all modes and forms of transport likewise public and private, passenger and freight, motorised and non-motorised, moving and parking. Defining objectives means specifying what social, environment or economic improvements are required - saying exactly what needs to be ‘reduced’, ‘increased’ or ‘maintained’.

Targets represent the most concrete form of commitment in an urban transport master plan, stating the desired degree of change within a given timeframe. They are needed to assess whether an adopted measure really achieves the desired outcomes. Targets should be smart (specific, measurable, achievable, realistic, time-bound) and refer to the agreed objectives. Targets are essential for monitoring and evaluation purposes and the selection of indicators needs to keep that in mind. Target setting provides transparency and clarity on what you plan to achieve in terms of changing transport and mobility in the city.

4.3.4. Identification and Evaluation of Alternatives

Measures need to contribute to achieving the vision, objectives and targets. A set of options needs to be identified that realistically fits with the available resources. The

first step is about gaining an overview of possible measures. Transport infrastructure is often among the most capital-intensive physical assets owned by a municipality. Decisions on investment should therefore be made on a sound basis which ensures good value for money and a contribution towards the city achieving its vision and objectives. Transportation master plan in Turkey preparing determined the alternative, that the maximum of public transport and pedestrian trips is selected as the final alternative scenario.

4.3.5. Creation of the Report and Introduction of Recommendations

As a result of the studies carried out, the transportation master plan result report is created. This report includes both the current situation in the city and new studies and recommendations. Includes studies related to all modes of transportation. The final report includes not only urban transportation but also how to ensure the connection of the city with other provinces.

4.3.6. Developing the Urban Master Plan Document

The urban transport master plan document summarises the outcomes of all the stages undertaken to date. It is not the intention for the urban transport master plan document to contain all the technical working detail that has gone into the development of the plan. The detail for each of the stages should be set out in technical annexes that can be made available upon request.

To ensure that the previous agreements are well reflected drafts of the document need to be reviewed internally and by important external stakeholders. The official adoption of the plan is an important step and so it is important to ensure stakeholders are content with the document and are clear on their responsibilities within it. The structure of the urban transport master plan document is not rigid and should be agreed and discussed between the intersectoral group, external stakeholders and political decision-makers. The main body of the document should reflect the themes of the document, which will vary across municipalities based on the challenges faced or the objectives to be met.

The document should however tell the story which links back to the overarching vision and what the urban transport master plan is trying to achieve.

4.3.7. Monitoring and Evaluation

Monitoring and evaluation needs to be built into the plan as essential management tools to keep track of the planning process and measure implementation, but also to learn from the planning experience, understand what works well and less well, and to build an evidence base for the wider application of similar measures in the future. Two elements are important for monitoring and evaluation:

- Firstly, monitoring and evaluating the processes that have been undertaken as part of the urban transport master plan development. This is therefore a review of the stages to obtain what has gone well, what less so, and what could be changed to ensure greater efficiency next time around;
- Secondly, monitoring and evaluating the outcomes of the plan. This is therefore a review of the effectiveness of the measures and allows those responsible for the actions to justify investments.

4.4. Why Urban Transportation Master Plans Are Prepared in Turkey

Rail system investments have the highest investment costs in all modes of transport. Investments in rail transit systems are increasing throughout the world. In Turkey too, there has been many new urban rail transit projects. Transport investments have long lasting effects on economic, social and physical life of cities, and this is particularly true for rail transit investments, which have fixed infrastructure resulting in a permanent change in urban areas. This fixed infrastructure also makes rail transit projects extremely expensive investments. Rapid rail transit systems require the highest amount of investment costs of all modes; and while light rail transit and street trams require lower costs, they are still significantly more expensive than road-based transit systems. Although rapid rail system investments are the most expensive one, vehicle price of light rail system and street trams are high. Therefore, it can be said that all rail system projects include expensive investment costs.

The central government institution responsible for urban rail projects is Directorate General for Infrastructure Investments (AYGM) within the Ministry of Transportation and Infrastructure. In the mid-1980s, there was an interest in many cities in Turkey to construct rail transit systems and therefore the central government brought about the requirement for transport studies to be conducted as a prerequisite to evaluate the funding of these investments and approve the projects. Regarding the law of The Ministry of Transportation and Infrastructure, which is responsible for design, build and operate of transportation infrastructure and systems, Directorate General for Infrastructure Investments (AYGM) has the authority to approve the rail transit investment projects and documents of both public and private sectors.

The Ministry of Transportation and Infrastructure does not approve the rail system projects unless they are proposed within the framework of an urban transportation master plan. For this reason, municipalities in Turkey have made urban transportation master plans to get their rail system projects approved by the Ministry and financed by central government budget resources. To prepare urban transportation master plans is introduced as one of the essential tasks of the municipalities by Municipal Law No 5393 and Metropolitan Law No 5216.

4.5. Chapter Summary

In the 1950s in the world and in 1970s in Turkey, urban transportation master plans start to be important for the design and build of the city's transport infrastructure. These plans, which do not have a scale, are also example of strategic planning that become popular in the world after 1990s. However, it is not proclaimed that transport master plan bears all characteristics of a strategical plan, in some senses this plan differs from strategic planning. In the planning system in Turkey, urban transportation master plans are associated with spatial plans.

As the hypothesis “If spatial plans aim the identification, design and implementation of all kind of sectoral policies related to urban development, and if spatial plans emphasize the continuity and consistency of plan hierarchy; urban transportation

master plans should not contradict with the spatial plans.” but the level of relationship between spatial plans and urban transportation master plans in Turkey is limited in practice. Spatial plans are taken as basis for preparing urban transportation master plan. In the 6th chapter, relations between transportation master plan and other plans will be explained with the examples of case studies and in the conclusion chapter it will be clarified in detail what is the relationship between the transportation master plan and spatial plans.



CHAPTER 5

RELATED STUDIES ABOUT THE THESIS SUBJECT AND THE METHODOLOGY

In this chapter, firstly literature review has been conducted to understand in which point this thesis differs from the other related studies. 12 articles about the subject are analyzed. When the concept of transportation master plan subject is investigated in literature, it is determined that the publications examined could be categorized under three main topics: The studies are generally about the accessibility of transportation, the content of the transportation master plan and its relationship with land-use. After the publications examined in the first part are detailed in content, in the second stage of this section, this thesis and other studies will be compared to each other. The aim in doing this is to show why the subject of the thesis is chosen and at which points it is similar to and differentiated from other studies examined. Comparison of this thesis to other studies have been examined in terms of used methodology, case study and content.

In the second part of the chapter, the methodology of the thesis has been explained. As a methodology a two-step method is used. The first stage is focused on the urban transportation master plan process and semi-structured interviews have been carried out with the participants of the process. In the second part of the methodology, the transportation master plans of Ankara, İzmir and Bursa is examined. Also, the spatial plans taken basis for transportation master plans are compared to the transportation master plans of the cities. As mentioned before, The Ministry of Transportation and Infrastructure does not approve the rail system projects unless it is proposed in the transportation master plan. For this reason, municipalities in Turkey have made urban transportation master plans to get their rail system projects approved by the Ministry.

Therefore, especially recommended rail system of the case studies has been analyzed to understand the relation with the spatial development of the cities.

5.1. Related Studies About the Thesis Subject

When examining academic studies about the transportation master plan in the world, the position of the master plan within the plan hierarchy seems to be limited. The studies are generally about the accessibility of transportation, the content of the transportation master plan and its relationship with land-use. Some studies on the subject of transportation master plan have been examined and are shown in the below. In the first part of the literature review, relations of transportation related to the accessibility are examined. Studies about accessibility are shown in the Table 5.1. In the second part of the review studies, the content of the transportation master plan is determined. Table 5.2. is about the plan content studies. Also, there are some studies conducted on the relationship between transportation master plan and land use. Table 5.3. points out these studies. These studies will be compared to this thesis in terms of its content. The main aim is to determine in which point this thesis differs from other studies.

5.1.1. Studies About Accessibility

When the literature research related to the subject in this thesis is carried out, it is seen that accessibility is the most extensive subject of the transportation plan. In this sense, the relationship between accessibility and planning is studied. As can be seen in the Table 5.1, four related studies have been examined. Since accessibility is a subject that can be explained by numerical data, in most of these studies, surveys have been conducted and quantitative research methods have been performed as a methodology. In terms of content, accessibility is defined throughout the studies. In some studies, the relationship between accessibility and transportation is explained. Table 5.1. details the publications, authors, dates and methodology used. In addition, each publication is assigned a number for the relations table with this thesis that is in the following part of the chapter.

Table 5.1. Literature examples for accessibility on urban transportation planning

	Number of the Article	Topic of the Article	Aim of the Study	Author	Date	Content	Methodology
Accessibility	A1	Indicators of Urban Accessibility: Theory And Application	Review on accessibility is made of various existing theoretical bases, with special emphasis on recent behavioral approaches	J.G. KOEING	1980	Accessibility is the most important indicator in determining the travel rate.	Quantitative research methods are carried out. France is the case study of the study.
	A2	Development of an Urban Accessibility Index: Formulations, Aggregation, and Application	The real contribution of this research is in the methodology developed for the aggregation of the spatial data.	Chandra BHAT, Susan HANDY, Kara KOCKELMAN, Hani MAHMASANI, Anand GOPAL, Issam SROUR and Lisa WESTON.	2002	This article associates accessibility with urban mobility. Also they criticize the overall definition of accessibility.	To measure accessibility, they prefer quantitative research methods. They maintain the variety of methods to measure accessibility. There is no case study in this research.
	A3	Accessibility evaluation of land-use and transport strategies: review and research directions	This article is written in terms of describing accessibility. According to them an accessibility measure should be susceptible to changes for the quality of transport services.	Karst T. GEURS and Bert Van WEE	2004	Describe a set of theoretical criteria related to the different components of accessibility from the perspective of evaluating land-use and transport changes.	To show the effects of accessibility, specific methods are explained and compared.
	A4	How Accessibility Shapes Land Use	He represents an operational definition and suggests a method for determining accessibility patterns within metropolitan areas.	Walter G. HANSEN	2007	It describes the relationship between accessibility and land use. He explained how accessibility is measured.	He describes the measurement of the accessibility. Washington has been chosen as a case study.

5.1.2. Studies About the Transportation Master Plan Content

Among transportation planning studies conducted, urban transport master plan is one of the sampling in Turkey. This duty is assigned to municipalities by laws. In this context, articles written about the contents of the transportation master plan in Turkey and thesis are available. In this context, two publications are examined from Turkey. In addition, a publication is made in a city in Russia and mentioned about the content of the transportation master plan is analyzed. In these studies, transportation master plans have been examined and information has been given about the content of the plans. A general assessment is made. In addition, the available information and recommended alternatives are described in the plan. In the Table 5.2. these studies are detailed. In addition, each publication is assigned a number for the relations table with this thesis that is in the following part of the chapter.

Table 5.2. Literature examples about plan content on urban transportation planning

	Number of the Article	Topic of the Article	Aim of the Study	Author	Date	Content	Methodology
About plan content	C1	Ulaşım Ana planı ve Diyarbakır Kent Ölçeğinde İrdelenmesi	In this study, the city of Diyarbakır in the transportation in the area of transport of the species of the current situation are determined to be of transport problems of the city centre and in close vicinity of the solution to the suggestions offered in the fields.	İskender DEMİR	2013	The current status of the transportation types in Diyarbakır is evaluated according to the Transportation Master Plan data. A pedestrianization area has been developed as a solution proposal for the transportation problems in the city center and its vicinity.	Diyarbakır Transportation Master Plan has been examined and especially pedestrian transportation has been detailed.
		Diyarbakır Kentiçi Ana Ulaşım Planı İle Entegre Üniversite	In order to integrate with the rail system line proposed in the Diyarbakır transportation master plan and to	Selvi ÇOLAK	2013	It is aimed to construct the Metrobus System line in order to	Diyarbakır Transportation Master Plan have been examined in terms of

	C2	Dağkapı-Karacadağ Caddesi Urfa Yolu-Silvan Yolu Üniversite Metrobüs Ring Sistemi Güzergahı Önerisi	operate each other in a way to complement each other, it is aimed to construct a Metrobus System line in order to improve the transfer facilities.			integrate it with the proposed rail system line and operate it in a way to complement each other and to improve transfer facilities.	recommended rail system and new metrobus system is recommended.
	C3	The Irkutsk Transportation Master Plan solutions for public transport system development	In transportation master plan several combinations of routes for the public transport system, including the consideration of a new bridge over the Angara River and arguing for the Municipal trolleybus network development. Therefore, whether this is a correct chose or not is argued.	M. SHAROV, A. LEVASHEV, A. MIKHAILOV	2014	The model used in Irkutsk Transportation master plan which was prepared in 1985 is examined. In addition, the system selections in the master plan and the applied systems are examined.	He maks analysis for the current situation also by the help of some calculation, forecasts of transport and passenger flows distribution has been done.

5.1.3. Studies About the Relationship Between Transportation Master Plan and Land Use

This thesis is about the relationship between urban transportation master plan and planning hierarchy. These studies are the most relevant studies of the thesis. Five publications related to the subject are examined. While the transportation master plans are associated with land use, spatial data are generally used. The general idea is that transportation is related to space. In this context, transportation master plans of the chosen provinces are analyzed to collect data and interviews have been conducted. Generally, situation assessment is made instead of offering a solution. Table 5.3. details the publications, authors, dates and methodology used. In addition, each publication is assigned a number for the relations table with this thesis that is in the following part of the chapter.

Table 5.3. Literature examples for relations with land use on urban transportation planning

	Number of the Article	Topic of the Article	Aim of the Study	Author	Date	Content	Methodology
Relations with land use	R1	Kentsel Ulaşım Planlamasında Arazi Kullanımı-Ulaşım Etkileşiminin Modellenmesi : İstanbul Üzerine Bir Değerlendirme	The aim of this course is to examine the relationship between transportation and land use and to determine the policies and approaches that is considered during the transportation master plan process.	Azime TEZER	1997	In order to achieve balanced and sustainable development, the interaction of transportation , which is one of the determinants of urban development, with land use has been examined. In addition, policies and approaches to be considered in urban transport planning process are mentioned.	To determine the effects of Bosphorus Bridge and Fatih Sultan Mehmet Bridge on the physical change of Istanbul first of all a field study was conducted. In addition, existing data for Istanbul is used and current maps and satellite imagery are used to create graphics. It is stated that SPSS (Statistical Package for Social Sciences) software is used for determining transportation system and land use.
	R2	İstanbul'da Yolculuk Hareketlerindeki Son On Yılda Değişimlerin Arazi Kullanımı - Ulaştırma İlişkisi Çerçevesinde Değerlendirilmesi	How the travel movements of the cities have changed in the last decade has been examined within the framework of the land use and transportation.	Haluk GERÇEK Serap ŞENGÜL	2007	Household travel surveys in the 1996 and 2006 Istanbul Transportation Master Plan have been examined to determine how urban travel movements have changed over the last decade and land use has been examined within the framework of transport.	In order to determine how the travel movements of cities have changed in the last decade, household questionnaires are used which have been carried out during the transportation master plan process. İstanbul Transportation Master Plans in 1996 and 2006 are examined. Comparison method is used.

	R3	İstanbul'da Arazi Kullanımında ki Değişimlerin Ulaşım Talebi Üzerindeki Etkileri	The article aims to is to examine how the land use and the transportation demand of Istanbul have changed between 1996 and 2006, and how changes in the land use have affected the transportation demand.	Serap ŞENGÜL	2007	In this thesis, land use data and transportation demand in Istanbul province from 1996 to 2006 have been examined. In addition, the effects of land use changes on transport demand are examined.	As an example of qualitative research, appointment and face to face interview method is used. İstanbul province from Turkey is the case study of the research.
	R4	Kentsel Doku -Ulaşım Sistemi İlişkileri	In this study, the relationship between urban tissues and transportation systems is examined. How conceptual road networks operate under some of the proposed travel systems is being investigated.	Fikret ZORLU	2008	In this study, the relationship between urban tissues and the functioning of the transportation system are investigated. In the first stage, the design of road networks-based tissues is investigated. In the second stage circulatory systems of some road networks are examined.	The defined road networks are classified using topological and graph-theoretical methods. Whether the road infrastructure is sufficient is evaluated by the determination of travel demand and travel assignment methods. Samples from France, England and Spain are given.
	R5	Ulaşım Talebinin Belirlenmesinde Erişebilirlik ve Arazi Kullanım Modellerinde Yararlanılması	The relationship between accessibility and land use parameters with trip creation and gravity is investigated.	Görkem GÜLHAN, Halim CEYLAN, Yıldırım ORAL	2013	In this study, the relationship between accessibility and land use parameters with trip creation and gravity is investigated. It has been determined which parameter can be used as an independent variable.	Demographic data have been obtained through household questionnaires. Some computational methods are used, and regression model is used to determine journey types. Denizli province from Turkey has been chosen as a case study.

5.1.4. General Assesment of the Thesis with Respect to the Related Studies

Assesment According to the Research Method: Since accessibility is a measurable issue, quantitative research method has been used in publications dealing with this issue. On the other hand, qualitative research method has been used in publications related to transportation master plan content. Both quantitative and qualitative research method is used in the articles about urban transportation master plan and land use. In this thesis qualitative research method is used as it is mentioned in the methodology part of the chapter. Table 5.4. shows the used methodology of the studies.

Table 5.4. *Comparison according to the methodology*
(Compiled by the author, 2019)

	Quantitative Research Method	Qualitative Research Method
A1	calculation to measure accessibility	
A2	comparison of methods	
A3	comparison of methods	
A4	empirical analyze	
C1		examination of the report
C2		examination of the report
C3	passenger flows distribution	analysis of the recommended transport system
R1	field study and for evaluation SPSS is used	
R2		household questionnaires
R3		appointment and face to face interview
R4	travel demand and travel assignment methods	
R5	regression model	household questionnaires
This Thesis		semi-structured interviews and case study comparision

Assesment According to the Case Studies: This comparison is made to show that the selected case studies in this thesis are not in similar among our findings in the literature. Accessibility is a terminology that is common in the world. Although, studies related to the subject have been carried out in Turkey, the main activities are

carried out in other countries. In the studies examined, other cities in the world have been chosen as case studies. Article written about the contents of the transportation master plan includes 2 examples from Turkey and one example from a province of Russia. While examining the articles about the relationship between urban transportation master plan and land use, it is seen that case studies have been chosen from Turkey. Only one of the 5 titles examined does not include a case study. Publication R4 has made an overview. In this thesis Ankara, İzmir and Bursa Provinces from Turkey has been chosen as case studies. In the 6th chapter, it will be detailed. At the Table 5.5. chosen case studies are shown.

Table 5.5. *Comparison according to case study*
(Compiled by the author, 2019)

	Case Study From Turkey	Case Study From Other Cities in the World
A1		France
A2	-	-
A3		UK and Germany
A4		Washington
C1	Diyarbakır	
C2	Diyarbakır	
C3		Irkutsk from Russia
R1	İstanbul	
R2	İstanbul	
R3	İstanbul	
R4	-	-
R5	Denizli	
This Thesis	Ankara, İzmir and Bursa	

Assesment According to the Content: When the selected studies are analyzed in terms of content, both the articles related to the accessibility make a situation assesment and two of them also offer one each solution. In the studies related to the content of the urban transportation master plan, a general situation assesment has been detailed in line with the data obtained from the plan report and additional suggestions also made for enhancing urban transport conditions. All publications whose titles are categorized as the relations between urban transportation master plan and land use make one each situation assesment. They compare the urban transportation master

plan to land use of the city and give information about the situation. In this thesis both situation assesment is made and also solutions are offered. In the 7th conclusion chapter, both summary and findings of the research, policy implications and recommendations will be explained.

Table 5.6. *Comparison according to the content*
(Compiled by the author, 2019)

	Make a Situation Assessment	Offer a solution
A1	✓	
A2	✓	✓
A3	✓	✓
A4	✓	
C1		✓
C2	✓	✓
C3	✓	
R1	✓	
R2	✓	
R3	✓	
R4	✓	
R5	✓	
This Thesis	✓	✓

The most relevant of the sources examined in the literature are the publications describing the relationship between transportation master plans and land use (R1, R2, R3, R4 and R5). In these articles, qualitative research method is applied and case studies have been chosen from Turkey. However, the studies that show this relationship between urban transportation master plan and land use only analyze the situation. They do not offer a solution. By this thesis not only examines the transportation master plan and land use relationship is examined, but also the relationship between the transportation master plan and plan hierarchy is analyzed. Furthermore, in analyzed publications, case studies from Turkey are Diyarbakır and İstanbul. However In case studies from Turkey considering by this thesis are Ankara, İzmir and Bursa . There are no article for this provinces. Therefore, this thesis differs from the other studies in terms of content of the study and case studies.

5.2. Methodology

Case study research comprises the research design of this study. According to Hartley (2004, p.323) case study research “consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context”. Within this framework, qualitative data are needed in order to answer the questions of this thesis. In this context, qualitative research method will be adopted to understand the basic characteristics of the fields. In this thesis mapping and semi-structured interviews as part of qualitative research methodology is taken into consideration. Mapping clarifies the hierarchical links among plans and interviews point out different but essential expertise that have to be taken place in practical planning studies.

To understand the structure of planning in general and investigating the relationship between conventional spatial plans and urban transportation master plans are the main purposes of the thesis. A two-step method is used to achieve this purpose. The first stage focused on the urban transportation master plan process and semi-structured interviews have been carried out with the participants of the process. As a second stage of the methodology, the transportation master plans of Ankara, İzmir and Bursa is examined. Also, the spatial plans taken as a base for transportation master plans are compared to the transportation master plans of the cities.

Semi-structured interviews have been carried out for obtaining the answer the main question of the thesis. Which are;

1. What is the relationship between spatial plans and transportation master plans?
2. In which points do these two plans jointly make decisions?

Also, in order to prove the hypothesis that is “If spatial plans aim the identification, design and implementation of all kind of sectoral policies related to urban development, and if spatial plans emphasize the continuity and consistency of plan hierarchy; urban transportation master plans should not contradict with the spatial

plans.”, case studies are examined on the basis of inputs coming from conventional spatial plans that provide reference to transportation master plans.

5.2.1. Semi-Structured Interviews

In this thesis semi-structured interviews are taken as basis for knowledge collection methodology, because alternative participants from different sides such as official representatives of central government level assigned in control phase, local government level for both project definition and management phases by spatial planning and transport planning units, and other participants that are assigned for directly preparation of urban transportation master plan as a commercial activity, finally an independent academician who previously take part in “National Transport Master Plan Project”. Minimum level of homogenous ground for planning is reached among these actors having their specific purposes and visions. Therefore, it is preferred to direct open-ended questions in order to find out all possible expertise experiences and opinions, a certain part of interviews is conducted around closed-ended questions as well that semi-structured methodology can provide. In addition to the academic information in the thesis, the problems that occurred and the situations in practice are explained critically.

While spatial data is reflected from the mapping, interviews have been carried out in order to make sense of how this process goes on in practice. 13 semi structured interviews have been conducted as part of the qualitative research methods. 6 of the interviews are performed directly in person, 4 of them are contacted via e-mail correspondence and the remained 3 interviews are completed by phone conversation. All interviews have been carried out between July 25, and August 15 of the year 2019. These interviews have been carried with the representatives of expertise stakeholders that are different participants of urban transportation arrangement process. The stakeholders and their tasks are stated as follows:

- Municipalities: As laid down by the code of Metropolitan Municipalities numbered 5393 and by the code of Municipalities numbered 5216. Besides, as mentioned in Chapter 4 of the thesis, a new Regulation on Procedures and Principles of Increasing Energy Efficiency for Transport dated 2nd May, 2019 is put into force.
- Privately Owned Firms: That the municipalities are provided for the service of preparation of Urban Transportation Master Plans via public procurement procedures.
- The Ministry of Transport and Infrastructure: Until the enforcement of the regulation on Energy Efficiency for Transport, Municipal Administrations have submitted only urban transportation master plans included rail system works project to the Ministry in order to apply for its prior approval. It is now obligated that Municipal Administrations have to prepare urban transport master plans and Ministry is entitled to review and issue its technical opinion in return to municipalities.
- Academician from a university as an autonomus and professional education unit: Independent academician from the department of the City and Regional Plannning represents both external and scentific point of views and also takes part as consultant whose academic expertise is needed for the preparation of transportation master plans.

In this respect, semi structured interviews have been carried out with below mentioned experts and staff:

- 6 participants from the Municipalities of Ankara, İzmir and Bursa; one participant from transport planning department and one participant of spatial planning department for each Municipality.
- 2 participants from privately owned firms; one for each municipality.
- 1 independent academician from the university, who has publicians about transportation master plan studies and also takes part at the project of “The Republic of Turkey National Transport Master Plan”.

- 4 participants from The Ministry of Transport and Infrastructure; contract manager of the project titled as “National Transport Master Plan”, respective branch managers, head of department from the Directorate General for Infrastructuren Investments(AYGM).

The overall purpose of the semi structured interviews is to detect the reciprocal connectivity between urban transportation master plan studies and planning hierarchy. General findings arising from interviews will be stated within the scope of conclusion chapter. The inquiries of semi-structured interview have been organized as below:

1. Do you think if any relation exists between transportation master plan and spatial plans? Please clarify the nature of relations, if any.
2. What kind of spatial plans are taken as references to prepare a transportation master plan? On preparation of a transportation master plan, which specific feature of spatial plans take precedence over the another, the scale or actuality?
3. Do you think that there should be a certain order of priority between the preparation timing of transportation master plans and spatial plans or preparation process of both a transportation master plan and a spatial plan should be carried out simultaneously?
4. On preparation of a transportation master plan, do you think that planning and transport departmentst of municipal administrations are in interaction with each other? Please clarify the interaction process, if any.

5.2.2. Comparison of Transportation Master Plans And Spatial Plans

In order to determine the relationship between spatial planning hierarchy and urban transportation master plans, transportation master plans of 3 selected cities (Ankara, İzmir, Bursa) have been examined on the basis of inputs coming from conventional spatial plans that provide reference to transportation master plans. Ankara, İzmir and Bursa Provinces from Turkey have been chosen as case studies because these provinces’s transportation master plans are three of the most up-to-date transportation

master plans. Also, considering the size of the population in Turkey, most the first four most populated provinces, excluded Istanbul, are Ankara, Izmir and Bursa. However, İstanbul differs from the other cities in order to its studies about transportation master plans in terms of fiction and content. There is no up-to-date study of urban transportation master plans in İstanbul. Therefore, the second, third and fourth largest provinces of Turkey in terms of population have been chosen as case studies. Spatial plans and plan reports of 1/25.000 for Ankara, 1/25.000 for İzmir and 1/5.000 for Bursa, have been analyzed based on;

- Their transportation decisions (road hierarchy and major roads),
- Transportation nodes (airports, bus terminals, ports, etc.),
- The population and employment data, and
- Location decisions for primary land-uses (Residential, education, commercial (and central business district), industrial, health, administrative, social services, recreation (including green areas))

In order to prove the hypothesis maintained and defended in the thesis, indicators that provides sound comparison transportation master plans to spatial plans are determined. The variables above are selected by categorizing the elements common to both the transportation master plans and spatial plans. The spatial plans of Ankara, İzmir and Bursa provinces differ in scale. The reason for this is that the provinces with three of the most recent transportation master plans have been chosen and the spatial plans of these provinces taken as base in the transportation master plan have been examined.

Since January 15, 2016, I have been working at the Ministry of Transport and Infrastructure, Directorate General for Infrastructure Investments (AYGM), Department for Urban Rail Systems Surveys and Projects Department, which is responsible for checking transportation master plans. As I am the only city planner who specializes in transportation master plans, my experience is reflected in the thesis.

CHAPTER 6

ASSESSMENT OF SEMI-STRUCTURED INTERVIEWS AND THE CASE STUDIES OF ANKARA, İZMİR AND BURSA PROVINCES

In this chapter transportation master plans of Ankara, İzmir and Bursa provinces chosen as case studies and the relationship between transportation master plans and used spatial plans during the transportation master plans of these cities are examined in detailed. As a first part of the chapter, semi-structured interviews that have been carried out by Municipalities and private sector firms are evaluated. In addition of the Municipalities and private sector firms, semi-structured interviews have been also carried out by 4 participants from The Ministry of Transport and Infrastructure; contract manager of the project titled as “National Transport Master Plan”, respective branch managers and head of department. Also, an independent academician who has both professional and scientific experiences on transportation master plan process and also work for “National Transport Master Plan” project is another participant of the interviews.

In the second part of the chapter, the transportation master plans of the provinces selected as case studies and the spatial plans used as a base for the transportation master plans and especially the rail system lines proposed in the transportation master plan will be elaborated separately. As it is mentioned before, Municipalities are obliged to prepare urban transportation master plans for rail system projects in Turkey. Therefore, especially rail system recommendations in urban transportation master plans and spatial plans of Ankara, İzmir and Bursa used as a base in urban transportation master planning process are analyzed in detailed.

6.1. Semi-Structured Interviews

While spatial data is reflected from the mapping, interviews have been carried out in order to make sense of how this process goes on in practice. The overall purpose of the semi structured interviews is to detect the reciprocal connectivity between urban transportation master plan studies and planning hierarchy. The inquiries of semi-structured interview have been organized as below:

1. Do you think if any relation exists between transportation master plan and spatial plans? Please clarify the nature of relations, if any.
2. What kind of spatial plans are taken as references to prepare a transportation master plan? On preparation of a transportation master plan, which specific feature of spatial plans take precedence over the another, the scale or actuality?
3. Do you think that there should be a certain order of priority between the preparation timing of transportation master plans and spatial plans or preparation process of both a transportation master plan and a spatial plan should be carried out simultaneously?
4. On preparation of a transportation master plan, do you think that planning and transport department of municipal administrations is in interaction with each other? Please clarify the interaction process, if any.

Aims of this semi-structured interviews are to validate the hypothesis of “If spatial plans aim the identification, design and implementation of all kind of sectoral policies related to urban development, and if spatial plans emphasize the continuity and consistency of plan hierarchy; urban transportation master plans should not contradict with the spatial plans.”and answer the main questions of the thesis; “What is the relationship between spatial plans and transportation master plans?” and “In which points do these two plans jointly make decisions?”

Transportation master plan aims to move passenger and freight quickly and safely from one place to another by means of vehicles and without vehicles, to solve the existing

problems and bottlenecks, and to integrate transportation and traffic conditions to the physical and cultural development of the city in a healthy and efficient manner. It is the whole of the strategic level work done with. (Türkiye Belediyeler Birliği, 2014). The answers given by the Municipalities, the Ministry, the private sector and the academic person to the first question of the surveys will be examined first. The aim is to understand the relationship between urban transportation master plan and spatial plans in practice.

During a semi-structure interview dated 15th August 2019 made with a high-level manager at the contractor from which the preparation of İzmir Transportation Master Plan is procured, the subject manager states ‘the relation between transportation master plan and spatial plan’ as below:

Transportation master plans are essentially established over transportation needs and demands emerging from land-use decisions. It leads to a sort of cause and effect relationship. The population estimated in spatial plans and other spatial decisions thereof, requires strictly that preparation of transportation plans is oriented to previous spatial decisions. Besides, decisions of transportation infrastructures like road networks envisaged in spatial plans delimitate transportation plans.

Besides, during a special conversation dated 30th July 2019 with the city planner working for the Department of Construction Affairs at İzmir Metropolitan Municipality, the staff clarifies ‘the relation between transportation master plan and spatial plan’ as follows:

Transportation master plan is treated just like the backbone of spatial plans, because many factors, from future projections (projections may be related to transport) to point-based resolutions such as amendments, modifications, strategy, are commonly evaluated for both spatial and transportation plan. The most important similarity is that both types of plan are prepared by taking into account of urban dynamics in line with urban planning principles.

In order to better understand the relationship between transportation master plans and spatial plans, in a semi-structured interview held on 31 July 2019 with the person working as an Industrial Engineer at the Department of Transportation of Bursa Metropolitan Municipality, he talks about the relationship between transportation master plan and spatial plans as follows;

Spatial plans are used as base in transportation master plans. It is aimed to improve the transportation infrastructure of the city with the new settlement areas, especially the needs of the existing settlement regions. The spatial plans that are taken as reference while preparing the transportation master plan are environment plans.

As it is mentioned before, the Ministry examines the urban transportation master plans in terms of its recommendations of rail system. Therefore, participants from the Ministry generally give answers to the questions related to the projects. A respective branch manager works for the Ministry since 2007 states ‘the relation between transportation master plan and spatial plan’ as below:

If transportation master plans and spatial plans do not overlap each other spatial problems come into existence. The incompatibility of the two plans leads to an erroneous assessment of transport policies and investments, inadequacies and problems arise throughout the transport system as a whole manner.

In the interview conducted on 9th August 2019 with the participant who served as the head of department in the Ministry of Transport and Infrastructure, she stated the following about the relationship between transportation master plan and the spatial plan:

Spatial plans and transportation master plans are interconnected. Spatial plans affect the decisions and strategies of the transportation master plan, the projects realized as a result of the investments are recommended in line with the

transportation master plans or the projects envisaged in transportation master plans would affect the spatial plans in a cycle. This impact should be considered in plan revision or new plan preparations.

The main purpose of the urban transportation master plan is to identify alternatives for mobility bottlenecks in the city and solve the traffic problem. For this purpose, it is important that the spatial plan to be used as a base while preparing the transportation master plan is up to date. 1/5000 and 1/25000 scale development master plans are the most appropriate plans to use as a base for urban transportation master plans. To show this argument is correct, the second question is asked.

There is a two-way interaction between urban transport and land use. (Babalik-Sutcliffe, 2005). During a special conversation dated 30th July 2019, the city planner working as the chief position for the Department of Transportation at İzmir Metropolitan Municipality answers as below for the question:

Due to the fact that different trip generation/attraction values and different kinds of trip purposes occur for each urban function, the fact that it is made referenced a plan whose dominant jargon is very much related to all urban functions enables to preparation of more detailed transportation plan. In this respect, if any, it will be more preferable to take master development plan as reference than another but unless a master development plan exists, it will be more preferable to take environment plan as reference.

Another opinion about the subject belongs to a professor who has academic publications about transportation master planning and also takes part at the project of “National Transportation Master Plan”. In the questionnaire conducted with the lecturer on 25 July, 2019, the answer to the question asked about the scale and actuality of the transportation master plan and spatial plans is as follows.

Spatial planning includes all plan decisions made at higher scales. Transportation master plans should be made in this way, regardless of scale.

While urban transportation master plan is studied, its relation with regional or national plans is being questioned in order to reveal all the factors that may affect the spatial structures or transportation system of that city. The actuality of the plan is more important than the scale.

A high-level manager from İzmir Metropolitan Municipality also states about spatial plans to be taken as basis for transportation master plans as follows:

1/5000 scaled plans are taken as base for transportation master plans, sometimes 1/1000 scaled plans are also utilized for calculations of population. However 1/25000 scaled master plans are supposed to be enough for studies on planning at strategical level, but 1/25000 scaled plans remain incapable because of their undetailed natures. Of course, spatial plan should be actual, as well as appropriate scale. Otherwise, transportation plan is noncurrent, too.

A city planner working for the Department of Spatial Development Affairs at İzmir Metropolitan Municipality, explains the importance of actuality and types of spatial plan that should be preferred for the basis to transportation master plan phase as below:

The plans that are taken as bases for the preparation of transportation master plans are possible to range up to high-scale strategic plans in which country based policies are reflected. Each kind of planning or approach leads to specific types of effect and further motives accordingly and transportation is the most effective way of including in planning studies. Therefore, I think, for acquiring urban dynamism, actuality is much more operative rather than the scale of plans.

The third question is about the priority. The target year is very important in the transportation master plan and in the spatial plans. In addition, the priority of these plans are important in terms of taking and implementing similar decisions.

According to The Regulation on Preparation of Spatial Plans 14th June 2014 dated, transportation master plan is designed as follows: It acts a plan by considering

transportation needs and demands, sustainable development conditions in respect of spatial, social and economic features of a city that determines transportation system of a city and its near abroad; transportation networks, standards and capacities with dispersion to transportation modes; road, maritime and air transportation and integration of these transportation modes; transfer points, storage and interchange centers, freight corridors and mass transportation routes; if needed, parking lots, bicycle trails and pedestrian ways, other details on accessibility and traffic subjects; and it is a plan that concentrates on and give precedence to mass transportation; offers solutions to short and long-run transportation modal problems; it can be prepared in coordination with high or low ranking urban plans; and it is a whole plan with its necessary map sections and report. The professor at the university, who has publicians about transportation master plan and also takes part at the project of “National Transportation Master Plan”, expresses her experiences on this subject as follows:

It is the ideal solution to carry out the process of the two plans together and with feedback. In this way, the model created in the Transportation Master Plan can be used to test the land use decisions and construction conditions, or updates can be made with the same logic once the plans are implemented.

In the meeting held on 24 July, 2019, the branch manager at the Ankara Metropolitan Municipality Transportation Department, who participated in the Ankara Transportation Master Plan process, responded to the question about the priority order of the two plans:

The first priority is to do both together. The second priority is to make spatial plans first. It is not right to make the transportation master plan first. Transportation master plans are formed in accordance with spatial plan decisions.

As mentioned above, the industrial engineer working in Bursa Metropolitan Municipality answered the question asked about the preperation process of transportation and spatial plans as follows:

Spatial Plans should be made before. Because if the correct spatial planning is prepared in Turkey, it will be estimated the development of the city both spatial and strategic. Transportation master plans are prepared by making the expected journey estimations on behalf of transportation needs. In this way, in the next spatial planning revisions, it provides the opportunity to see the current and planned transportation investments of the city as a basis.

A respective branch manager works for the Ministry since 2007 explains the optimal process of transportation master plan and spatial plans the as below:

I think both transportation master plan process and spatial plan process should be carried out together in order to direct the spatial development of the city correctly and to find solutions to the problems that may arise in terms of transportation. In practice, although development master plans are primarily used as a base in the transportation master plan process, transportation master plans also lead to the development of the city due to investments. A spatial planning approach that reduces transportation demands needs to be adopted.

And as a last question the relationship between planning and transport department of municipal administrations. As it is mentioned before, municipalities as laid down by the code of Metropolitan Municipalities numbered 5393 and by the code of Municipalities numbered 5216 are the interlocutor of the transportation master plan process so they are the authority.

In practice, however, the process does not work this way. In the semi-structured interview held on 15 August 2019 with the person working as a senior manager in the company preparing the Bursa Transportation Master Plan, the person expresses the above mentioned interaction process as follows.

Communication between the two department is not easy. The main reason for this can be explained by the fact that transportation department has not been sufficiently effective in spatial planning studies and have not demonstrated their competencies to date. In particular, the process of data sharing is quite

difficult and there may not be enough open sharing. There is also no data to share from time to time. Too much participation in planning activities cannot be achieved. The reason for this can be explained as the time problem of the process and the intensity of the departments related to their basic works. In particular, expert staff can look at the involvement of such work with an extra job. Most of the time, routine work supports this approach. In addition, the lack of clear information on what is expected from the transportation master plan makes participation difficult.

The legal framework of physical planning does not know transport planning (Öncü, 2016). During the transportation master plan process in Turkey, the biggest problem is that the transportation master plan departments and spatial planning departments of the municipalities are not in contact with each other. The engineer in the Bursa Metropolitan Municipality said that:

It is so important in inter-institutional communication as it is complementary in both plans. Access to the places planned by the spatial development department of the municipality should be provided. Similarly, transportation department should pay attention to the spatial planning of the city during the transportation master plan process.

Hereby, both the Ministry, the Municipality and the firms say maintains that there is a relationship between transportation master plan and the spatial plans. Municipalities as laid down by the code of Metropolitan Municipalities numbered 5393 and by the code of Municipalities numbered 5216 are the interlocutor of the transportation master plan process so they are the authority. Privately Owned Firms that the municipalities are provided the service of preparation of Urban Transportation Master Plans via public procurement procedures are the participant of the process that advances the course under the leadership of the municipality and works on this issue. The firm working in the process has to dominate the issue at least as much as the Municipality. The Ministry of Transport and Infrastructure has not proactive role until the

enforcement of the regulation on Energy Efficiency for Transport, so that the task of the Ministry is limited as such: Municipal Administrations have submitted only urban transportation master plans included rail system works project to the Ministry in order to apply for its prior approval. It is now obligated that Municipal Administrations have to prepare urban transport master plans and Ministry is entitled to review and issue its technical opinion in return to municipalities is the control side of the process as it is mentioned before.

6.2. The Case Studies of Ankara, İzmir And Bursa Provinces

In the first part of the chapter, general information about the questions that are asked in the thesis have been obtained through semi-structured interviews. In the second part of this chapter, with the three selected case studies, the relationship between transportation master plan and spatial plans will be examined in practice-based details. The first case study is Ankara, the second is İzmir and the third is Bursa. To understand the relations of plan hierarchy and urban transportation master plan Ankara, İzmir and Bursa Provinces from Turkey have been chosen as case studies because these provinces's transportation master plans are three of the most actual transportation master plans. Also, if taken into account of size of the population in Turkey, the first four populated provinces, respectively in Istanbul, Ankara, Izmir and Bursa. However, İstanbul differs from the other cities in terms of fiction and content of its transportation master plan studies. There is no up-to-date study of urban transportation master plans in İstanbul. Therefore, the second third and fourth largest provinces of Turkey have been chosen as case studies.

In order to determine the relationship between spatial plan hierarchy and urban transportation master plans, transportation master plans of 3 selected cities (Ankara, İzmir, Bursa) have been examined on the basis of inputs coming from conventional spatial plans that provide references to transportation master plans. For the preparation process of Ankara and İzmir Province Transportation Master Plan, 1/25.000 scale spatial plans of the provinces are used as a base. On the other hand, for Bursa

Transportation Master Plan, 1/5.000 scale spatial plan is used as a base. Therefore, all of the based spatial plans are examined to compare urban transportation master plans of Ankara, İzmir and Bursa. Spatial plans and plan reports of 1/25.000 for Ankara, 1/25.000 for İzmir and 1/5.000 for Bursa, have been analyzed with regard to;

- Their transportation decisions (road hierarchy and major roads),
- Transportation nodes (airports, bus terminals, ports, etc.),
- The population and employment data, and
- Location decisions for primary land-uses (Residential, education, commercial (and central business district), industrial, health, administrative, social services, recreation (including green areas))

These main topics are determined because, data or informations on them have to be included both in spatial plans and urban transportation master plans and when the information is categorized these four main topic is occurred.

In this thesis, according to the literature about planning in the world and Turkey, type of urban transportation master plan become clear and semi-structured interviews give general information about the relationship between transportation master plans and plan hierarchy. In the following part, case studies are detailed. The first province is Ankara, the second one is İzmir and the third province is Bursa.

6.2.1. Ankara

6.2.1.1. General Information

Ankara is the second province among the most populated cities and is located in Central Anatolia in Turkey (TUİK,2019). It became the capital of Turkey in 1923. Therefore, Ankara can be considered as the most important province of Turkey in terms of economic, political and other aspects. Ankara is adjacent to Kırıkkale in the east, Çankırı in the northeast, Bolu in the northwest, Eskişehir in the west, Konya in the south, Kırşehir and Aksaray in the southeast.



Figure 6.1. Location of Ankara in Turkey

(<https://images.app.goo.gl/obCusFBfdXErLwku6>, last access date: 2nd August 2019)

Ankara is a city where rail, air and road transportation opportunities are available. There are highways, state roads and highways that connect Ankara with other provinces. Due to its geopolitical location, Ankara is located on many railway networks. 4 September Blue (Ankara-Malatya), Cukurova Blue (Ankara-Adana), East Express (Ankara-Kars), South Express (Ankara-Kurtalan), Izmir Blue Express (Izmir-Ankara), Konya Blue Express (Konya-Izmir) and Van Lake Express (Ankara-Tatvan) conventional trains cross the provincial border. In addition, high speed rail passenger transportation services are also provided by Ankara-Konya and Ankara-Eskişehir-Istanbul High Speed Trains. The construction of the Ankara-Kayseri-Sivas high-speed

train is in progress. Air transportation in Ankara is provided by the Esenboga International Airport located north of the city. Esenboğa Airport, which was commissioned in 1955, was established on a total area of 7.500.000 square meters. Esenboğa has become the equivalent of an international airport with the new domestic and international terminal since 2006. As the province of Ankara does not have a coastline, there is no sea transportation.

While the population of Ankara was 4,995,542 in 2012, it was 5,045,083 in 2013 (1/25000 scale Ankara Master Plan, 2006). Province in terms of population size is Turkey's second largest city. According to the population projections, 2028 population is estimated to be 6,907,876 and 2033 population is 7,726,994 (Ankara Transportation Master Plan, 2017). There are 25 districts within the borders of Ankara. As can be seen at Figure 6.2, approximately 85% of the Ankara population lives in the urban area within the border of Ankara.

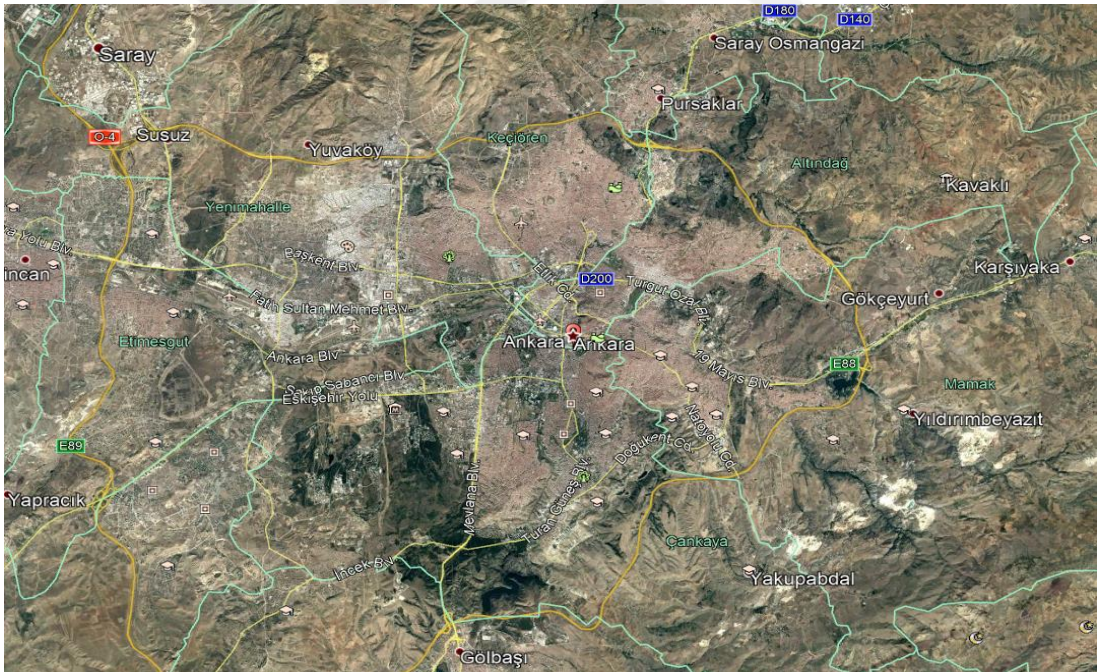


Figure 6.2. Image shown district of Ankara

(Taken from Google Earth)

6.2.1.2. Spatial Plan Used as Base in Ankara Transportation Master Plan

1/25000 scale Ankara Master Plan was prepared in 2006 by Ankara Metropolitan Municipality. While the Ankara Transportation Master Plan was prepared, the data were obtained from the Master Plan of 2023 with 1 / 25.000 scale. This plan,

- Based on the global structure of Ankara, its place and potential in the country and region, and in line with sustainable development policies,
- Aiming to establish the balance of protection and use by providing socio-economic and cultural development in a way that will not harm the assets and continuity of natural and human resources and potentials and enable optimum utilization,
- Aiming to create livable, healthy, quality of life, urban, semi-rural and rural life,
- Considering the principle of settlements and the carrying capacity of the city and natural structure,
- Determines spatial decisions and strategies related to site selection, size and distribution of uses, and macro-scale population distribution and density decisions, guiding sub-scale construction plans and applications,
- Aiming to protect natural, cultural, environment values, historical assets, water resources, agricultural and forest areas, to eliminate and reduce disaster risks, to take measures against disaster,
- Providing the principles of cooperation and coordination between the institutions and organizations related to the implementation of the plan and ensuring that the investments are realized in a coordinated manner,

The upper scale plan to divert the planned urbanization of the capital of the Republic of Turkey. For this plan, it is said that it is a high-scale reference framework for all research, planning, project design and implementation works to be conducted in

Ankara (1/25.000 Ankara Master Development Plan). Vision of the 1/25000 scale plan is that “Preserving and developing natural, environment, historical and cultural heritage and offering high quality to urban citizens in every aspect of urban life; develop a participatory approach to urban decision-making; science, culture, service center, world capital Ankara.”

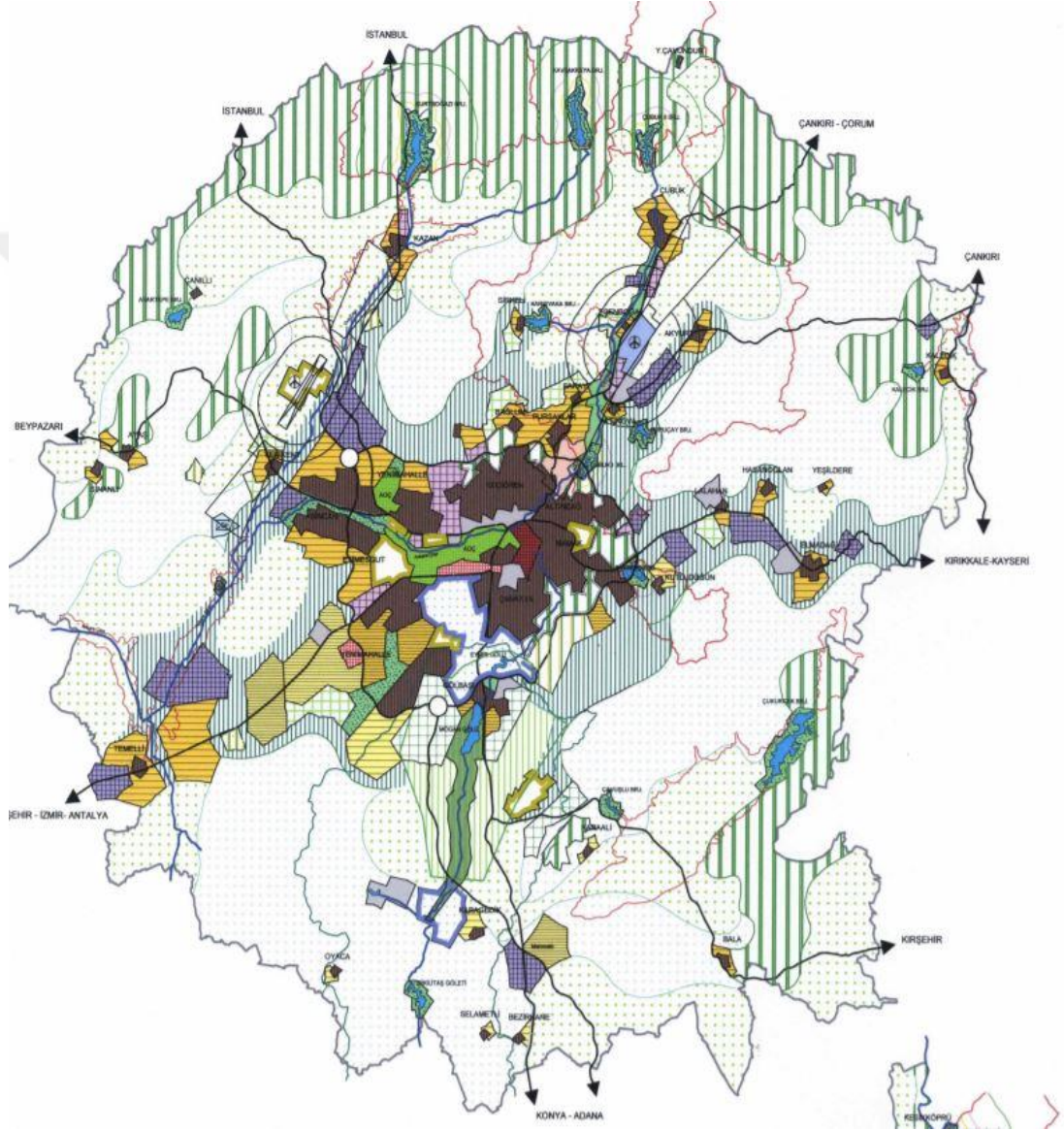


Figure 6.3. 1/25000 scale Master Development Plan of Ankara

(<https://www.ankara.bel.tr/files/9013/5901/7141/9-planlama-bolgeleri.pdf>, 2nd August, 2019)

6.2.1.3. Ankara Transportation Master Plan Studies

In this thesis Ankara Transportation Master Plan Study in 2017 and the target year is 2030 is analyzed in detailed. However, there are many studies about transportation master plan in Ankara. Information about the previous studies are below:

Ankara Transportation Master Plan (1972) was prepared by Ankara Metropolitan Municipality, Directorate General for Ankara Electricity, Gas and Bus Operations Organization (EGO) to defend the need for a metro system for Ankara. The proposal system was composed of two lines intersecting at Kızılay about 14 km long and it was an underground system. The first stage of the Project was the line between Dışkapı-Kavaklıdere (7 km) and the second stage was the line between Dikimevi-Beşevler (7 km).

Ankara Urban Rail Transit Project (1980) was carried out by an organization of urban transportation planners in EGO. The data for population, land use, topography and number of passengers carried by the transportation systems were collected. The present transportation system and demand of journeys were detected after the data collection. With the help of a mathematical model, projections for the year 1990 were made. A network of 25 km and 90% at ground rail transit system was recommended. The study consisted of only one corridor in the city. In this sense experts did not find it realistic and they claimed that it would be a system used overcapacity and that it was an expensive proposal. Construction of the system started in 1980 without having an approval. It was stopped by the government in a short period of time. (Özalp, M., 2007)

Ankara Urban Transportation Study (1985) is composed of four different studies: Transportation Study, Transportation Master Plan, Feasibility Study for Rail Transit Investment and Documents, Description of the System, Bid Documents and First Draft. The study determined the main public transportation corridors and recommended a rail transit system of 55 km long and a busway system. Ankara Urban Transportation Study is an integrated approach for urban transportation and urban

spatial development. The urban development plan proposed that Ankara would have a decentralized development along two corridors supported by metro systems (Babalık, 1996). The transportation study adopted these development pattern proposals as the basis of the rail investment plan. This study is a comprehensive and long-term study. On the other hand, the transportation study did not become a legally approved transport plan. Nevertheless, the construction of the rail system started. (Çubuk and Türkmen, 2003).

The land-use data is acquired Urban Development Plan prepared for Ankara Municipality in 1970s in which further estimations on projections of 1990s were included. 62 transportation zones were taken as references by grouping 327 districts under 5 sub-provinces of Ankara (namely Altındağ, Çankaya, Keçiören, Mamak and Yenimahalle) within the preparation process of this plan. Household interviews under one-percent sampling ratio that were realized in 1979 within the scope of transport study started by EGO were given priority among other transport research data. These household interviews on transportation posed base data for the calibration of computerized transport modelling. Projections on population and employment data for the year of 1990 were estimated and the modelling study counted on passenger travel demands of further years. As the second study, 14.107 household interviews on transportation under three-percent sampling ratio that were realized in 1980. Because of timing gaps, the data obtained could be used in 1985 Ankara Transportation Master Plan Study. Another data was collected by traffic counts completed 24 different points within the Ankara city-center in the period of 1979-1980. Passenger and vehicle volume for typical weekdays were counted in 1975 and 1980. Passenger and vehicle counts were renewed in 1985. Besides, traffic counts in junctions, speed surveys and passenger luggage of EGO city buses were taken into account as other important data resources for Ankara transportation studies. However, transportation system data were those directly collected from the passenger and transport firm statistics of EGO city buses and private owned cars, minibuses, taxis and inner-city rail transportation.

Ankara Transportation Master Plan (1994) was prepared by EGO. In fact, the plan adopted the main policies and principles of the previous transportation study; however, data were updated, and some changes occurred in plan proposals. Rail system network, rail and bus transport travel volumes were determined.

Ankara Transportation Master Plan (2009): After the transportation master plan in 1994, new transportation decisions were required in line with the development of the city and the increasing population of the province. During this period, Ankara Metropolitan Municipality planned to construct two main road axes (1071 Malazgirt Boulevard and Sabancı Boulevard). In order to make these roads, a legal basis was necessary, and the construction of these roads was made legal with the help of this transportation master plan.

Ankara Transportation Master Plan (2017)

This plan is the up-to-date transportation master plan of Ankara and it will be analyzed in detailed. The studies about the plan started in 2013 and completed in 2017. Target year of the plan is 2038. As it is mentioned before, transportation master plan analyzes the current transportation situation, identifies bottlenecks and develops solutions for the transportation problems of cities within 15 years. Target year of Ankara Transportation Master Plan is longer than the regular.

Vision: To develop an metropolitan area in a concentrated structure with a focus on public transport, which is in line with the identity of the capital Ankara, is the goal of an efficient, safe and reliable urban transport order that prioritizes people and accessibility, not vehicles, within the context of sustainability and integration principles.

Aims:

- Reducing future motor vehicle traffic
- Improving public transport infrastructure and directing traffic demand to public transport instead of individual transport

- Increasing mobility and accessibility in the city
- Providing sustainable transportation system with efficient use of transportation system
- Creating a more livable urban environment

It is stated in the Ankara Transportation Master Plan that the transportation plan integrated with the upper scale plans will be evaluated as an effective issue in the development of the metropolitan area. In addition, in order to analyze and evaluate the two-way relationship between transportation systems and land use decisions correctly in urban planning studies, it was stated that choices would be made to create a compact-concentrated, integrated urban macroform that would prevent the developments occurring on the basis of corridors to become an urban sprawl-disintegration. While interfering with approved plans that prevent the formation of a compact urban macroform, producing plan decisions for the creation of mixed uses will be designed in the same corridor context, integrating living and working spaces with other related uses.

As it is mentioned before, transportation master plans are prepared for the approval of rail system projects in Turkey. Therefore, to understand the spatial development of the city and compare with the spatial planning of Ankara, proposed rail system is analyzed in detailed.

6.2.1.4. Proposed Rail System of Ankara

Since Ankara is an important province in terms of political, economic and policy, its population is increasing. Especially population growth in central districts causes transportation problems. With the Transportation Master Plan of Ankara, a solution has been tried to be produced for road public transport and rail system suggestions have been made in places where the road public transport is inadequate.

The center of Ankara can be considered between Ulus and Kızılay. Although the connection of these two centers with other districts is provided by the existing rail

system, this is only possible on the west, north and southwest lines. With the new proposed lines, High Speed Train Station which is near the city center is planned as a transfer point in addition to Kızılay. The aim of these studies in the transportation master plan is to prevent the intensity experienced by single center transfer and to ease the traffic. There are metro and light rail systems in Ankara. In Ankara Transportation Master Plan, new rail systems are proposed in addition to the existing ones. Information about the current and proposed metro and LRT (light rail system) Lines is given in the Figure 6.4. The straight lines are the existing rail system lines and the dashed lines are the proposed rail lines. Also, black refers to metro lines and red shows the LRT lines. The purple line is suburban line.

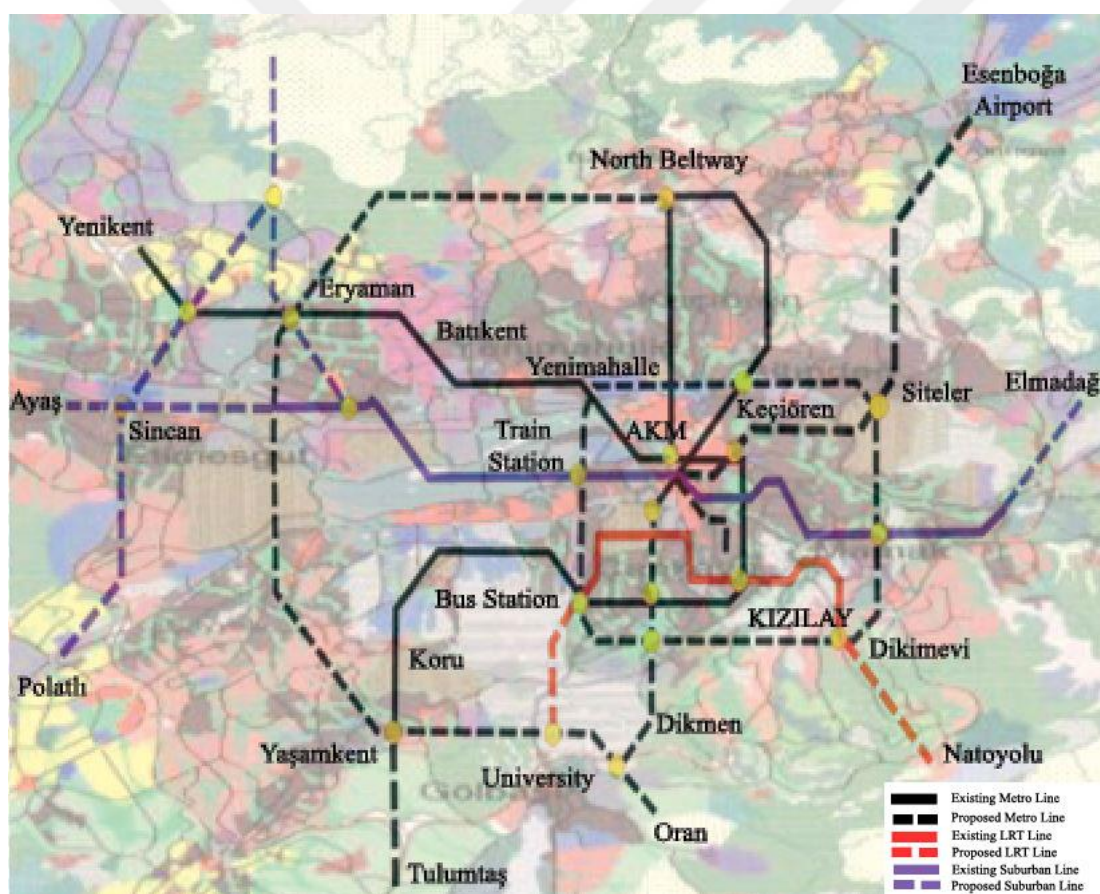


Figure 6.4. Proposal for rail system location in Ankara Transportation Master Plan

(Compiled by the author, 2019)

The proposed rail system lines are envisaged to be constructed in four stage by 2038. The table showing the years in which the lines on the map are planned to construct is given at Table 6.1.

Table 6.1. *Proposal for rail system location in Ankara Transportation Master Plan*
(Taken from Ankara Transportation Master Plan, 2017)

In the Short Term 2014-2018	In the Medium Term 2018-2023	In the Medium Term 2023-2028	In the Long Term 2028-2038
• Esenboğa Airport-Train Station • North Beltway-AKM • North Beltway-Keçiören • Bus Station-Söğütözü • Dikimevi-Natoyolu	• Sincan-Yaşamkent • Central Connection Line (O) • Koru-Yaşamkent • Dikmen-Gar	• North Beltway-Sincan • Yaşamkent-Oran • Sincan-Yenikent	• Koru-Tulumtaş

There are 63.36 km rail system line in Ankara. This figure is suggested to be 239.46 km by 2038, which is the target year of the Ankara Transportation Master Plan. The rail system lines planned to be constructed in four stage have not been completed except the existing ones.

Due to the characteristics of the population in Ankara, there exists general traffic problems in the morning and evening peak hours. As seen in the 1/25000 plan, there are denser residential and commercial areas in the center. The population from the less

dense residential areas to the center is quite high. Industrial zones are gathered at certain points of the city. Most of the universities are located on one of the major axes of the city. The existing rail system serves some of these, but due to the integration problem, Ankara is not a province that can fully use the rail system line. Although the rail system lines proposed in the transportation master plan are important lines for connecting districts with high population density and providing additional airport connections, connection line (c) and central connection line (O) do not make sense until all other lines are completed. Even if the purpose of these collection lines is to provide the transfer point from a single center and to provide comfort, it does not constitute a priority. The new ring road and highway analyzes proposed in the Ankara Transportation Master Plan are critical issues. As a result of these suggestions, it is argued that the solution of the traffic problem cannot be provided and that it will cause uncontrolled development of the city.

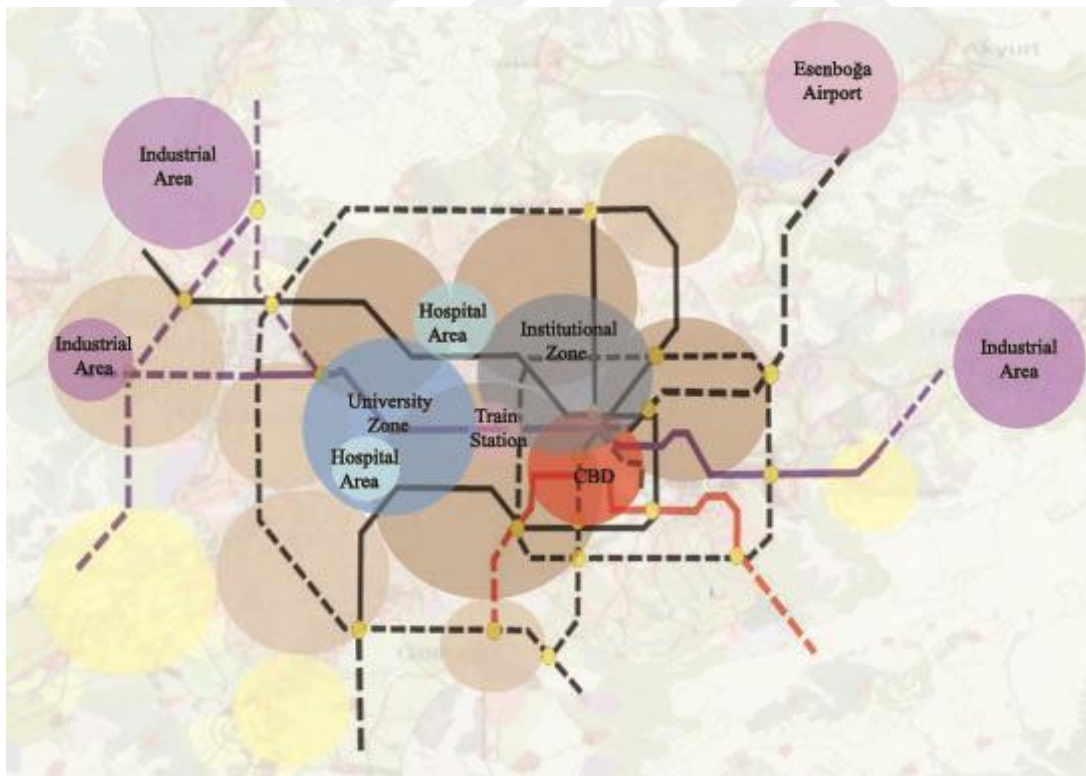


Figure 6.5. Concept study of proposed rail system in Ankara

6.2.1.5. Proposed Road System of Ankara

As can be seen in the Figure 6.6. new roadways have been recommended in the Ankara Transportation Master Plan in areas where traffic density increases day by day. However, recommended new roadways are not the solution on existing central business district (CBD) Kızılay-Ulus corridor. In Ankara all of the travels from north to south axis are not possible without passing by CBD. In the public transport with rubber wheels, the service to the north of the city is provided from Ulus and Sıhhiye and to the south and west of the city from Kızılay. As an alternative road connection is not recommended, there is no solution to the traffic problem in the city center.

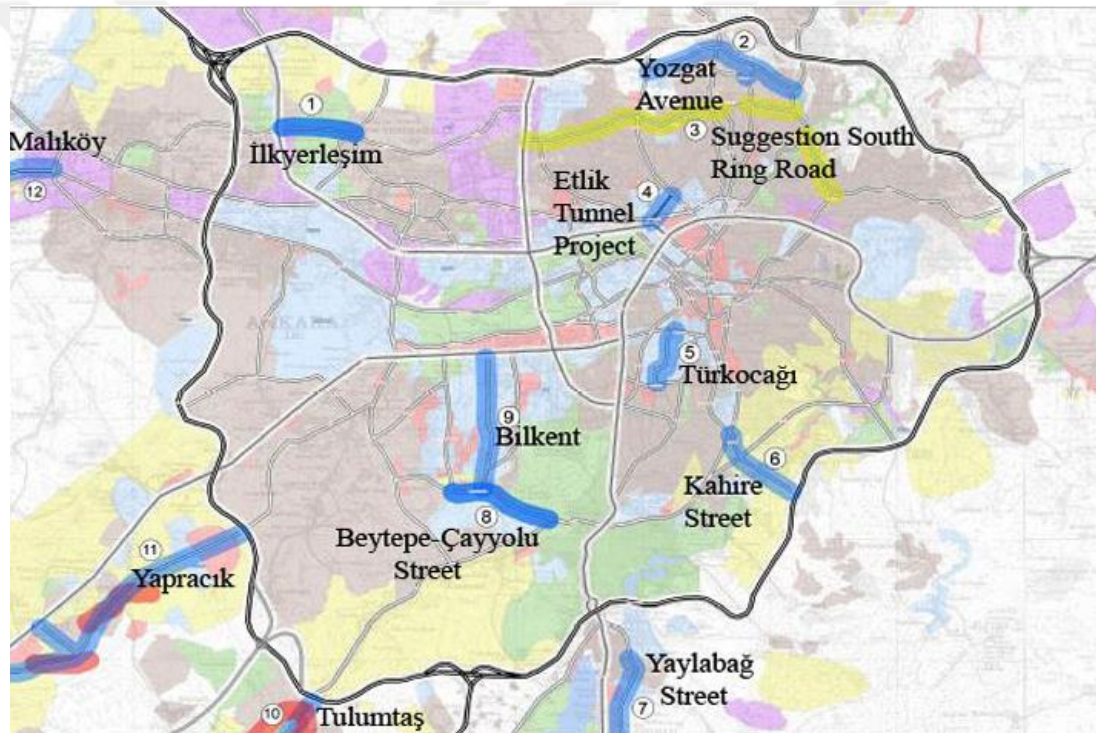


Figure 6.6. Proposed road system of Ankara

(Taken from Ankara Transportation Master Plan)

6.2.1.6. Assessment of Ankara Transportation Master Plan and 1/25000 Scale Ankara Master Plan

The 1/25000 scale Ankara Master Plan is prepared in 2006 and the target year of the plan is 2023. On the other hand, transportation master plan is published in 2017 and target year is 2038. The most important problems occur in this point. Consequently, data getting from this plan does not reflect the current situation. Table 6.2. shows the information getting from the spatial plan and plan report that is analyzed detailed in the methodology part of the thesis.

Table 6.2. The information getting from Ankara spatial plan and plan report
(Compiled by the author, 2019)

		1/25000 Ankara Master Development Plan	1/25000 Ankara Master Development Plan Report
Location Decisions for Primary Land-Uses	Residential Areas	X	
	Commercial Areas	X	
	Educational Areas	X	
	Health Areas	X	
	Industrial Areas	X	
	Administrative Areas	X	
	Social Services	X	
Transportation Decisions	Road Hierarchy	X	
	Major Roads	X	
	Railway Network	X	
Transportation Nodes	Airport	X	
	Bus Terminal	X	
	Port	X	
	Train Station	X	
The Population and Employment Data	Population Data		X
	Employment Data		X

Ankara Transportation Master Plan provides recommendations to sub-centers where the population increases rapidly, and traffic problems occur. As mentioned before, in order to solve the traffic problem in the city, a rail system is suggested where the traffic cannot be solved by means of rubber wheeled transportation vehicles. The rail system recommendations shown in Figure 6.4. in Ankara transportation master plan are aimed at solving the traffic problem of the city.

As it is mentioned before, spatial plans are used as a base while preparing urban transportation master plan. Rail system lines in the city center are recommended for origin and destination points through which density and population are high as seen in the spatial plan. Ankara is a high populated city and has a problem of being single-centered. However, there is a controversy with the spatial plan on the proposed lines until 2023, which is the target year of the 1 / 25.000 scale plan in the transportation master plan. These items are;

- The suggested metro line between Sincan and Yaşamkent, which is proposed to be constructed by 2023, was proposed in spite of the fact that there is no dense settlement in the spatial plan and no new attraction area for passengers is established. After Ankara spatial plan has been updated, it may be necessary to construct this metro line if there is an intense new construction.
- Although the rail system lines are not connected to the airport, the connection system (C) and the central connection line (O) do not make sense until all other lines are completed. . Even if the purpose of these collection lines is to provide a single center and provide comfort, it does not constitute a priority.
- The rail system proposals are determined according to the trip generation and household surveys that are carried out at the beginning of the transportation master plan process. In the Ankara Transportation Master Plan, rail system recommendations have been made to the places where population density is high. This should be done according to tendency of passengers.

Even if in transportation master plan rail system recommendations have been made according to population increase in the district, since no spatial plan was taken as base, the decision was not taken in line with the spatial plan for the North Beltway-Sincan, Yaşamkent-Oran, Sincan-Yenikent and Koru-Tulumtaş lines planned between 2023-2038. No comparison is possible.

Timing scheme of the Ankara Transportation Master Plan and the 1/25000 scale Ankara Master Plan does not overlap with each other especially in terms of their target years. Spatial plan was prepared in 2006 have been used in Ankara Transportation Master Plan published in 2017. However, it does not reflect up-to-date information. In the semi-structured interviews, the importance of the current spatial plan is mentioned, and the importance of this issue is reflected in Ankara Case hereby.

6.2.2. İzmir

6.2.2.1. General Information

İzmir is one of the three largest provinces of Turkey in terms of socio-economic development (TÜİK, 2019). The province is located on the coast of the Aegean Sea, surrounded by Manisa in the east, Balıkesir in the north and Aydın in the south. The place of İzmir in the country and region is shown in Figure 6.7.



Figure 6.7. Location of İzmir in Turkey

(<https://images.app.goo.gl/5Gafhvk3QkoZuFzw7>, last access date: 2nd August 2019)

The city center of İzmir is located between the provincial centers which are accessible by road, railway, air and sea transportation opportunities.. There are two highways (İzmir-Aydın ve İzmir-Çeşme Otoyolu) and four main roads (D-550 İzmir-Çanakkale, D-565 İzmir-Kırklareli, E-881 İzmir-İstanbul, D-300 İzmir-Ankara) which are located within the borders of İzmir and connect the province to the country road transportation network. İzmir province has extensions for Manisa-Uşak-Afyon railway and Balıkesir-Kütahya-Eskişehir railway lines. Thus these are two railway lines connecting the province to the national railway network. Civil air transportation in İzmir is carried out at Adnan Menderes Airport that is located between Gazimir-Menderes districts and 18 km far away from İzmir City Center. There is also maritime

transportation centers in İzmir. İzmir Port, Çeşme Port and Aliğa Port are the important freight or lading center Within the boundaries of the province. In addition, cruise passengers are transported in İzmir Alsancak Port, Cesme Port and Dikili Port.

According to the Address Based Population Registration System of 2014, the population of İzmir is 4.113.072. İzmir is the Turkey's 3rd largest city in terms of population size. There are 30 districts in the province. When the districts are examined, the districts of Bornova, Buca and Karabağlar are the districts with the highest population size. In addition, the district of Dikili is the most prominent district in terms of its population growth rate. While the population of the districts generally increases, the population of the Bayındır, Beydağ, Kınık, Konak and Kiraz districts have tendency to decrease. 2030 population projection of the province is 5.602.620 people (1/25.000 Scale İzmir Metropolitan Area Environment Plan, 2013).

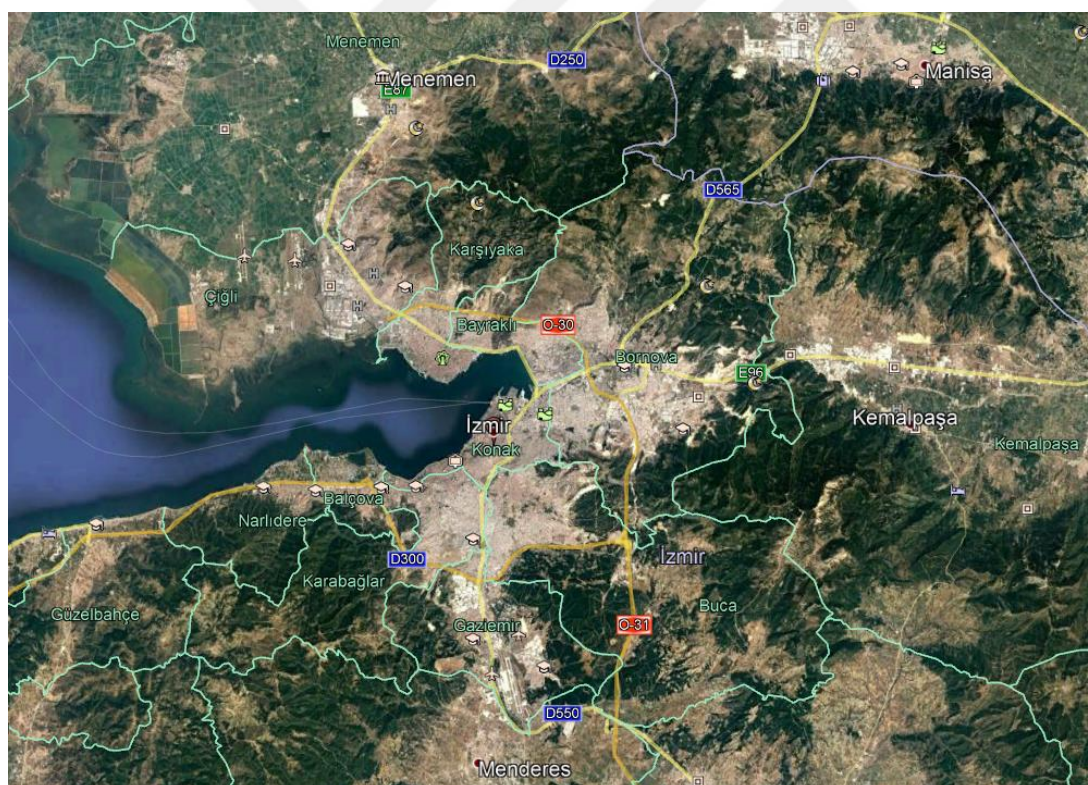


Figure 6.8. Image shown district of İzmir
(Taken from Google Earth)

6.2.2.2. Spatial Plan Used as Base in İzmir Transportation Master Plan

While preparing the İzmir Transportation Master Plan, data from the provincial scale are taken from the 1/100.000 scale Environment Plan consists of Manisa and İzmir Provinces. In addition, the existing land use data is obtained from the 1/25.000 scale İzmir Metropolitan Environment Plan. Data obtained from 1/5.000 and 1/1000 scaled plans are used limitedly.

In the following part, all used spatial plans will be explained in detail. İzmir-Manisa 1/100.000 Scale Environment Plan was prepared in 2014 and the target year of the plan is determined as 2025. In this plan, strategy and planning decisions were determined for 30 districts covering İzmir and Manisa provinces within the framework of general principles and targets. At the beginning of these decisions, exploring the identities of settlements, their relations with each other, and the determination of the economic and social development strategies in the country are the main issues. Furthermore, 1/25.000 Scale İzmir Metropolitan Area Environment Plan was prepared in 2013.

The plan, which covers 21 districts in İzmir province, has been established within the framework of the land use structure and the Law No. 5216 on the Metropolitan Municipality. Below are the plans which are still in use and also used while preparing İzmir Transportation Master Plan.

- 1/100.000 scale İzmir - Manisa Environment Plan (2014)
- 1/25.000 scale İzmir Metropolitan Area Environment Plan (2013)
- 1/5.000 scale Master Development Plans for districts (No specific date, constantly updated according to investments)
- 1/1000 scale implementation plans (construction plans, validity is not clear and update is revised considerably, plan modification is done)

transport system of İzmir and to offer solutions to improve the transportation system in short and long-terms.

İzmir Transportation Master Plan (1992), the decision was made to prepare a more comprehensive transportation study determining the present conditions and to produce solutions for the target year 2010. The travel demand corridors were determined. In the Transportation Master Plan (1992), the new data were not gathered, and the previous data was not updated, and this brought about the need to update the study.

İzmir Transportation Master Plan Update Study (1997) was a revision study of the 1992 Transportation Master Plan and estimations and projections were made not using a transportation model, new lines were added to the system and a financial analysis was provided.

İzmir Transport Study Revision (2007) was an interim report of İzmir Transportation Master Plan. The Master plan was s status of a typical regional plan; however, İzmir transport Study revision only covers the center of the city, and analysis the surveys and the traffic counts. It includes the suggestions for future transportation network as well.

İzmir Transportation Master Plan Conclusion Report Summary (2009) was prepared to provide integration between the transport plans and the development plan of the city. The plan dealt with the transportation and traffic problems of the city. Detailed land use and traffic studies were prepared, and alternative solutions were given. In the interviews, the history behind the current system was questioned and each interviewer told different stories according to their participations in the implementation and construction of the system.

İzmir Transportation Master Plan (2017): This the most recent transportation planning study of İzmir and in this thesis this master plan will be analyzed in detail. The main objective of the plan is to resolve the problems and bottlenecks in urban transportation within the framework of the strategy and development proposals in the

1/25.000 Scale Environment Plan. In addition, the restructuring of transport and traffic infrastructure and operations and prioritization of public transport systems are presented as other aims. The aim of the transportation master plan is to introduce the solutions that will be implemented in the short, medium and long terms for the solution of the current and further potential transportation problems expected in the city today..

Within the scope of İzmir Transportation Master Plan; alternatives as public transport opportunities and additional pedestrian ways have been proposed. In all alternatives, depending on the development of the city, it is foreseen that travel distances, travel time and number of transfers are increasing. The 1/25.000 scale plan decisions of the city have an effect on this. While the residential development areas are located in the northern part of the city, areas of the study are concentrated in Kemalpaşa and south of Bornova.

As it is mentioned before, transportation master plans are prepared for the approval of rail system projects in Turkey. Therefore, to understand the development of the city and compare it with the spatial planning of İzmir, proposed rail system is analyzed in detail.

6.2.2.4. Proposed Railway System of İzmir

Both light rail system and tramway system are provided for İzmir. In İzmir Transportation Master Plan, new rail system lines are proposed in addition to the existing ones. Information about the current and proposed LRT (light rail system) and tramway lines is given in Figure 6.10. The straight lines are the existing rail system lines and the dashed lines are the proposed rail lines. Also, red refers to the LRT lines and blue lines represent the tramway lines.

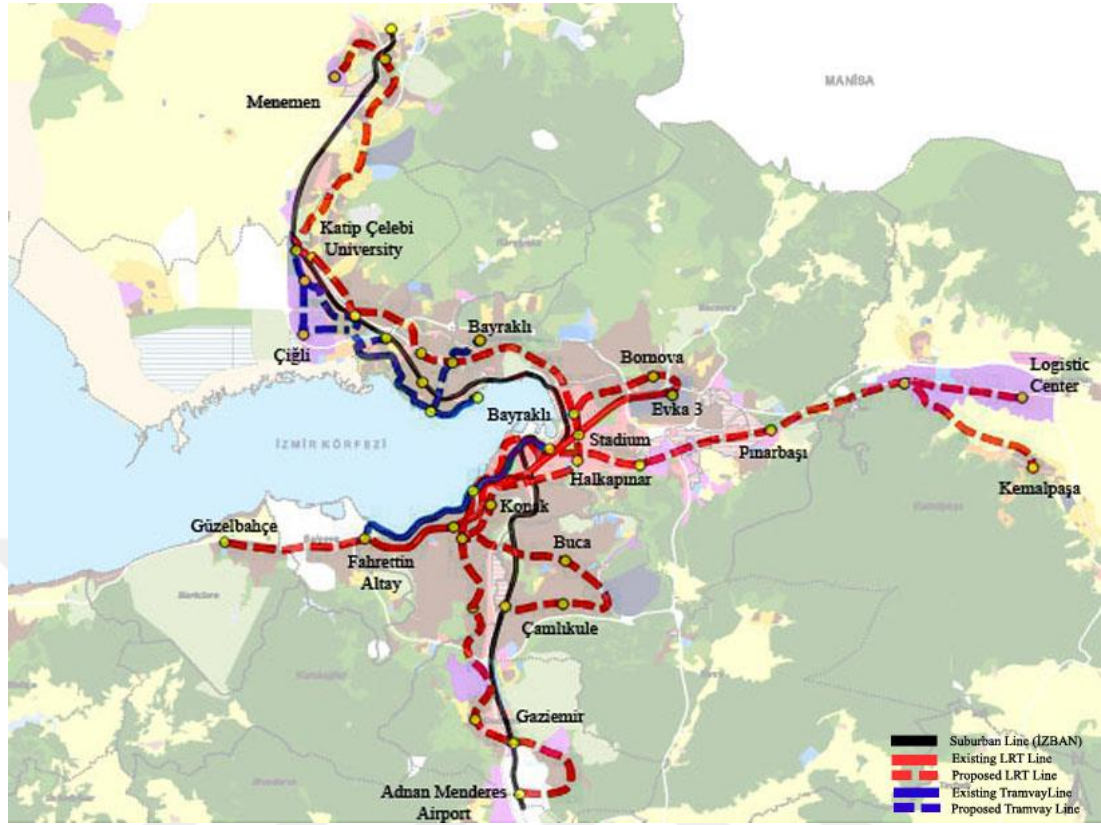


Figure 6.10. Proposed rail lines in transportation master plan
(Taken from İzmir Transportation Master Plan)

The proposed rail system lines are planned to be constructed in 3 stages by 2030. The table showing the years in which the lines on the map are planned is given at Table 6.3.

Table 6.3. Proposal for rail system location in İzmir Transportation Master Plan
(Taken from İzmir Transportation Master Plan, 2017)

In the Short Term (2017-2020)	In the Middle Term (2020-2025)	In the Long Term (2025-2030)
- Çiğli Tram - Üçyol-Çamlıkule - Halkapınar-Pınarbaşı	- Girne Tram - Üçyol-Bayraklı - Stadium-Airport - K.Çelebi-Bornova	F. Altay-Güzelbahçe K. Çelebi-Menemen - Pınarbaşı-Kemalpaşa

There are 39.7 km rail system line in İzmir. This figure is suggested to be 197.83 km as the total rail system line by 2030, which is the target year of the Transportation Master Plan. The proposed rail system lines within the scope of İzmir Transportation Master Plan are depicted in the map above. According to the population projection, the districts with the highest increase in the province of İzmir are Çiğli, Menemen and Aliaga in the north. In the east, the population of Kemalpaşa, which will be used as a logistics center, is expected to increase rapidly. In line with the decisions made by the spatial plans, the proposed rail system lines are in the same direction. It is correct to assert that any soft and hard measures on the rail system are recommended in areas where the rubber-tired-vehicle dependent transportation is not sufficient so that the dominant alternative mode in urban transportation is usually attributed to the rail system. The same approach is reflected to this plan.



Figure 6.11. Concept of rail system of İzmir

6.2.2.5. Proposed Road System of İzmir

New road recommendations are made for Konak and Karşıyaka regions which are the most crowded centers in the city. However, the most intense recommendations are put forward to connect the districts to each other. In addition, new roads are proposed for the rapidly developing region of the city, Buca. İzmir Gulf is included in the trend analysis of the transportation master plan. Before the submission of alternatives in the transportation master plans, the finalization of investment projects and all other proposals are based on this trend analysis. It is planned that the connection between İzmir Gulf Pass and the north and south of the city will be made by the transition to the sea without entering the urban traffic. No work has been initiated for the project yet, which is planned in the transportation master plan definitely.

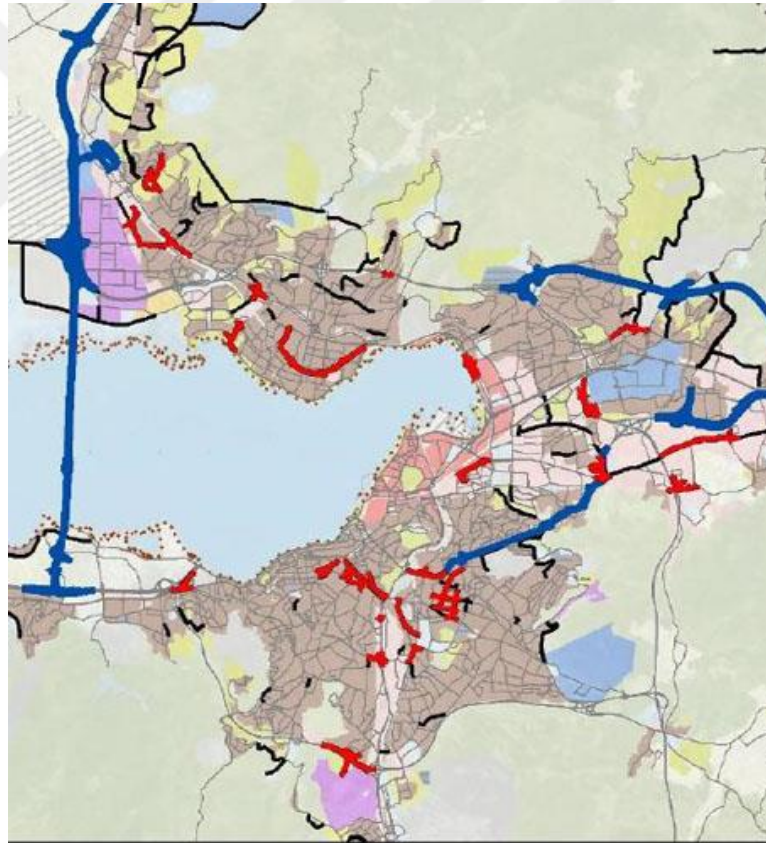


Figure 6.12. Proposed road lines in İzmir Transportation Master Plan

(Taken from İzmir Transportation Master Plan)

6.2.2.6. Assesment of İzmir Transportation Master Plan and Spatial Plan Used as a Base of Transportation Master Plan

1/25000 scaled Environment Plan completed in 2013 was taken into account for the preparation of İzmir Transportation Master Plan completed in 2017. General population data of the city, employment data and general transportation structure of the master plan is taken from this spatial plan but 1/5000 scaled master development plans, which are previously prepared on district bases, are made reference for inner-city road gradations. The data, which are provided from spatial plan taken as basis for transportation plan, is up-to-date because timings of both preparations for transportation master plan and the referenced spatial plan are near. Table 6.4. shows the information getting from the spatial plan and plan report that detailed in the methodolgy part of the thesis.

Table 6.4. *The information getting from İzmir Spatial plan and plan report*
(Compiled by the author, 2019)

		1/25000 İzmir Metropolitan Environment Plan	1/25000 İzmir Metropolitan Environment Plan Report
Location Decisions for Primary Land- Uses	Residential Areas	X	
	Commercial Areas	X	
	Educational Areas	X	
	Health Areas	X	
	Industrial Areas	X	
	Administrative Areas	X	
	Social Services	X	
Transportation Decisions	Road Hierarchy	X	
	Major Roads	X	
	Railway Network	X	
Transportation Nodes	Airport	X	
	Bus Terminal	X	
	Port	X	

	Train Station	X	
The Population and Employment Data	Population Data		X
	Employment Data		X

In İzmir case, 1/25.000 scale İzmir Metropolitan Area Environment Plan is used as a base of urban transportation master plan. This spatial plan is deemed an up-to-date plan that is prepared in 2014. The most appropriate spatial plan to use as a base for transportation master plans are 1/25000 and 1/5000 scale master development plans. In this 1/25.000 scale İzmir Metropolitan Area Environment Plan, the general strategies and recommendations of the city are included. On the other hand, railway network information is taken from both 1/5.000 Master Development Plan & 1/1.000 Implementation Plan & 1/25.000 İzmir Metropolitan Area Environment Plan. The assessment of İzmir Transportation Master Plan and spatial plan used as a base are below:

-Most recommendations of İzmir Transportation Master Plan to solve the traffic problems are based on railway system. Current urban railway system networks in İzmir remain inadequate. İzmir Suburban Transportation Association (IZBAN), which became operational in year 2010, is established under the partnership of İzmir Metropolitan Municipality and Turkish State Railway. IZBAN transport services include 40 stations over 136 km-track between Aliğa and Selçuk districts and lessens the traffic load in the city center.

-Konak and Karşıyaka are the most densely populated central districts of İzmir. In addition, Buca with its rapidly increasing population is located near central business district. New suggestions are made intensively for areas near Buca.

-Because of the current spatial plan, the proposed lines in transportation master plan are put forward for districts whose population is increasing day by day. As it is mentioned before there are recommendations for short term, middle term and long term and these are compatible with the spatial development of the city.

-When considering ‘the relation between transportation master plan and spatial plan’, these two plans of the city are consistent with each other because the data of 1/25000 scaled spatial plan are actual and the transportation master plan is newly prepared with reference to the actual household interviews and mass transportation data, rather than as revised. On consideration of the recommendations in transportation master plan, it is understood that those recommendations are directed to solve problems arising in city center, the regions with increase in housing, industrial and healthcare fields.



6.2.3. Bursa

6.2.3.1. General Information

Bursa is the fourth province of Turkey with the highest population (TÜİK,2019). Bursa located in the southeast of the Marmara Sea in the northwestern part of Turkey. Bilecik in the east, Adapazarı, Izmit, Yalova, Istanbul and the Sea of Marmara in the north, Eskişehir, Kütahya in the south, and Balıkesir in the west. There are 17 districts within the boundaries of Bursa which has the area of 10.886 km² (TÜİK, Bölgesel İstatistikler, 2002).



Figure 6.13. Location of Bursa in Turkey

(<https://images.app.goo.gl/kTE3ouTGYxWoLLmN8>, last access date: 2nd August, 2019)

Bursa city center; It is located between the provincial centers which are accessible by road, air and maritime transportation opportunities. It is possible to maintain about a highway and four main highway axes in the province of Bursa, which connect the province to the rest of national road transport network. Civil air transport in Bursa is carried out via Bursa Yenişehir Airport. Freight and passenger in terms of maritime transportation is carried out from Mudanya Port within the boundaries of the province and only freight transportation is carried out from Gemlik Port.

According to the Address Based Population Registration System for 2017, the population of Bursa is 2,936,803 people. Osmangazi, Yildirim, Nilüfer districts are the districts with the highest population size. In addition, Gürsu district is the most prominent district with its population growth rate. According to the projection made by the Department of Development and Urbanization for Bursa city center, it is estimated that the number of inhabitants will be 3.098.000 inhabitants in 2035, while this value is predicted as 4.055.000 for whole Bursa province. The western planning region is designated as the development direction of the city Due to population growth and immigration, the city needs to expand and as a result, it is aimed to overflow the large and fertile agricultural areas in the periphery of the existing settlement, and to regulate the condensation of residential areas with plan decisions and strategies.

6.2.3.2. Spatial Plan Used as Base in Bursa Transportation Master Plan

In the scope of the 1 / 100.000 Scale Environment Plan for the target year 2020, which was carried out in 1998, some definitions have been introduced considering the development trends of the city. One of them is Bursa Metropolitan Area. Seven sub-planning regions were defined within the metropolitan area covering the regions where intensive urban activities took place and 1 / 25.000 scale master plans were prepared for these sub-regions. These planning zones are:

- Central Planning Region
- Western Planning Region
- Mudanya Planning Region
- North Planning Region
- Gemlik Planning Area
- East Planning Region
- Alaçam (Uludağ) Planning Region (BBB, 1/25.000 Scale Master Development Plan of Bursa, 2005)



Figure 6.15. 1/5.000 scale Bursa Spatial Plan
(Submitted by Bursa Metropolitan Municipality)

6.2.3.3. Bursa Transportation Master Plan

Bursa Transportation Master Plan (1987) was prepared to solve the urban transportation problems in the long-term by Bursa Metropolitan Municipality. In the study, estimations for the target year 2005 were made, problems were analyzed, and solutions were offered. Traffic regulation strategies, structural suggestions such as multi-story car parks, multi-level junctions and bus stations and a busway in the high public transport demand corridor were proposed. In that corridor it was stated that a rail transit system would be appropriate to meet the demand of the corridor and an 11,5 km long LRT system was suggested.

Bursa Urban Development Project Urban Transport Improvements Study (1997) defined general strategies supporting the new proposed light rail transit system as protection of the line, ticket integration, feeder services and the policies that should be implemented to other modes of transportation. In order to ensure success, the study recommended an integrated public transport system.

Bursa Transportation Master Plan (2012): There is another study for rail lines between 1997 and 2012 Bursa Transportation Master Plans. There is no new rail system proposal in this study. In order to bring new rail system proposals to Bursa and to have them approved, it is necessary to base it on a legal source and this plan was prepared.

Bursa Transportation Master Plan (2018): This is the up-to-date transport study of Bursa. This plan constitutes the form of a revision of the 2012 Bursa Transportation Master Plan. The process of transportation master plan studies take fewer time than the normal process because household interviews have not been carried out. The data used in the transportation master plan are the data produced approximately 6 years ago. This is the main problem of Bursa Transportation Master Plan.

Vision: To create a transportation system that protects the environment, is safe and accessible from anywhere in the region, provides the needs of the current and future city residents, workplaces, employees and visitors effectively, improves the quality of life, the economy, the characteristics of the local people and the business districts.

Mission: To ensure the greatest contribution to the economic, social and cultural development of the city, region and country without compromising the ability of future generations to meet their own needs, planning a multi-kind transportation system coordinated with appropriate land use plans to provide the highest level of mobility and access. The population projections, which are important in determining the demands for transportation investments, are provided by 1/100000 scale Environment Plan. Zone based population calculations and projections have been made by combining spatial decisions from 1/5.000 scale master plan. The reason why rail systems are taken as a benchmark tool is that the demand is high and the rail system investment is recommended in places where the highway is insufficient.

As it is mentioned before, transportation master plans are prepared for the approval of rail system projects in Turkey. Therefore, to understand the development of the city

and compare with the spatial planning of Bursa, proposed rail system is analyzed in detail.

According to population projections of 1 / 100,000 scale environment plan in line with 1 / 5.000 scale spatial decisions, significant population change is predicted in Nilüfer and Kestel district. The population of the Nilüfer district is expected to increase from 425,000 to 975,000 in 2035, which is the target year of the Transportation Master Plan, and from 60,700 to 135,000 for the Kestel district. This population is reflected in the production and shooting of the journey. According to the plan decisions, it is estimated that their center of attraction will be established in Nilüfer region, but the plan has not proposed enough infrastructure to meet this demand.

According to the decisions of the spatial plan, the population increases in Osmangazi and Yıldırım districts, but increase rate is about 10% for Osmangazi and about 2% for Yıldırım district. In order to meet the increasing population in these districts, areas of development were projected in the north of the districts. However, there is no significant change in population in the city center. The current uptrend continued. According to the plan decisions, while the organized industry remains as it is today, the new industrial areas are located mainly in the city of Nilüfer in the south of the Görükle region.

Other important industrial areas are located in the north of Osmangazi district and in the district of Kestel. As a result of the plan decisions, the working and residential areas of the city are scattered. The problems arising from the increase in demand will need to be solved. However, increasing travel amounts also affect the demands on transportation types. It will be necessary to establish systematically alternative transport links in both the road and public transport network,. The need for Transportation Master Plans starts at this point. In spatial plans, general decisions are made in the areas of living areas in the city, roads, etc. However, there are no clear solutions to public transportation and transportation networks. Transportation Master Plans provide for the elimination of this deficiency in spatial plans.

6.2.3.4. Proposed Rail System of Bursa

Bursa is an industrial sector oriented province. in which 18 small, medium and large industrial zones exist. In addition to this, the increase in the population and the circulation to the city center cause traffic jam. In the city center there are working areas as well as tourist areas. Many people come to there for its historical mosques. The purpose of the Bursa Transportation Master Plan is to provide a more comfortable transportation for people coming from residential areas to industrial areas and the city center. In the single-center province, traffic jam generated in the main alteration is the biggest problem. In order to overcome insufficient public transportation because of dense population, rail system lines are proposed in the transportation master plan.

There are light rail systems and tramway systems in Bursa. In Bursa Transportation Master Plan, new rail systems are proposed in addition to the existing ones. Information about the current and proposed LRS and Tramway Lines is given in Figure 6.16. The straight lines are the existing rail system lines and the dashed lines are the proposed rail lines. Also, red refers to LRT lines and blue shows the tramway lines.

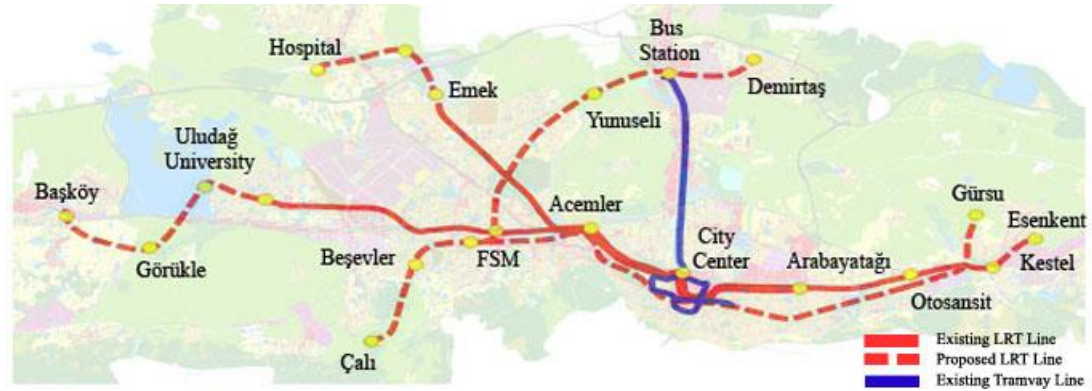


Figure 6.16. Proposed rail system lines in Bursa Transportation Master Plan

(Taken from Bursa Transportation Master Plan)

The proposed rail system lines are planned to be constructed in 3 stages by 2030. Table 6.5. shows the years in which the lines on the map are planned.

Table 6.5. *Proposal for rail system location in Bursa Transportation Master Plan*
(Taken from Bursa Transportation Master Plan, 2018)

In the Short Term 2018-2023	In the Medium Term 2023-2028	In the Long Term 2028-2035
• Emek-Hospital • Üniversite-Görükle • Beşevler-Yunuseli	• Görükle-Başköy • Beşevler-Otosansit • Yunuseli-Demirtaş	• Kestel-The South of the Kestel (Esenkent) • Beşevler-Çalı • Otosansit-Gürsu

There is 65.1 km rail system line in Bursa. This number is expected to be 133.52 km until 2035, which is the target year of the transportation master plan. As it is shown at Figure 6.17, most of the employment in Bursa serves for the industrial sector. The existing rail system network is located on the east-west axis and the northwest-east axis of the city. Although Bursa is a province with an increasing population, the city cannot develop to the south due to its geography. For this reason, the city is developing in the east-west direction.

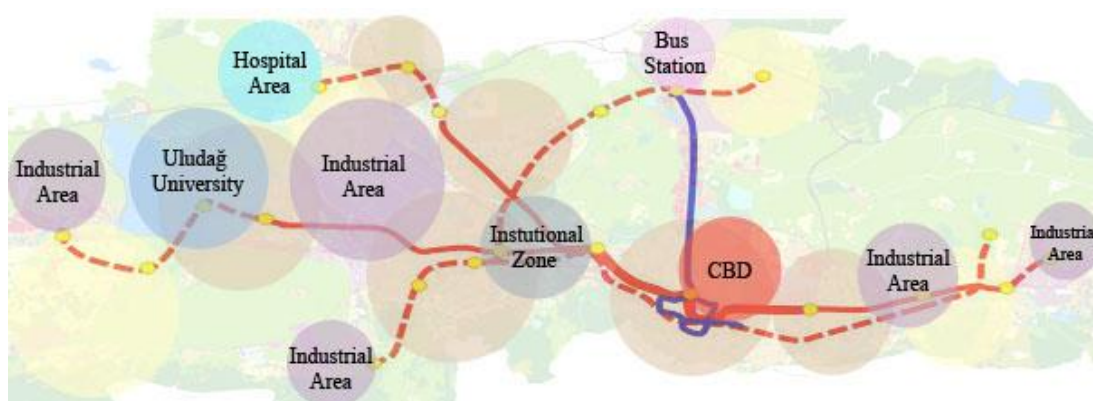


Figure 6.17. Concept of proposed rail lines of Bursa

6.2.3.5. Proposed Road System of Bursa

When the road transportation recommendations are examined in Bursa Transportation Master Plan, it is seen that new urban roads are proposed to FSM, which is accepted as the city center and Acemler region. The proposal is designed to feed the road networks and the existing rail system networks. If the recommended road networks is in parallel direction with railway, the travel demand for railway system will reduce. The supply lines are therefore a reasonable choice. In addition, new road networks have been recommended to bus stations and industrial zones.



Figure 6.18. Road system lines in Bursa Transportation Master Plan

(Taken from Bursa Transportation Master Plan)

6.2.3.6. Assesment of Bursa Transportation Master Plan and Spatial Plan Used as a Base of Transportation Master Plan

In the Bursa Transportation Master Plan, which was completed in November 2018, population data have been obtained from 1/100.000 scale environment plan and other spatial data have been taken from a specific 1/5000 scale plan. The 1/5000 scale plan is a plan that has been amended in line with the decisions made for the city and this plan is in constant change for metropolitan municipalities. For this reason, the data used in the transportation master plan does not fully reflect the reality, as it is not obtained from the plan for which the city's general decisions are made and the target year is specified. While land use decisions affect the formation of the transportation

system and the choice of mode, transportation options and the structure of the system play an effective and guiding role in the formation of the land use pattern. For this reason, urban transportation master plan preparation or planning according to the current land use plan decisions of the city is of great importance for the success of both land use plans and transportation plans (Öncü, 2005). Table 6.6. shows the information gathering from the spatial plan and plan report that is stated in the methodology part of the thesis.

Table 6.6. *The information getting from Bursa spatial plan and plan report*
(Compiled by the author, 2019)

		1/5000 Bursa Spatial Plan	1/5000 Bursa Spatial Plan Report
Location Decisions for Primary Land-Uses	Residential Areas	X	
	Commercial Areas	X	
	Educational Areas	X	
	Health Areas	X	
	Industrial Areas	X	
	Administrative Areas	X	
	Social Services	X	
Transportation Decisions	Road Hierarchy	X	
	Major Roads	X	
	Railway Network	no information	
Transportation Nodes	Airport	X	
	Bus Terminal	X	
	Port	X	
	Train Station	X	
The Population and Employment Data	Population Data		X
	Employment Data		no information

In general, when the relationship between Bursa Transportation Master Plan and spatial plans is examined, it is seen that the recommended investments are consistent in particular shape. In spatial plans, new investments have been suggested to the places where population growth is high. Particularly, rail system investments have been recommended in the city center where high density is located and in regions where new constructions are developing rapidly.

The main problem of the Bursa Transportation Master Plan is that this plan is not based on real-time data on household interviews. . The transportation master plan, which was completed in 2018, is not a plan that collects the up-to-date information from surveys of households and evaluating alternatives. Household survey data obtained from the study conducted in 2012 have been used and alternatives are built on this.

In Bursa case, 1/5.000 Development Plan is used as a base for the transportation master plan. Since 1/25.000 scale plan prepared for Bursa is not up to date, 1/5.000 scale plan prepared separately for districts is used. Plans with a scale of 1/5000 are the types of plans that are continuously modified. For this reason, it is a problem to make the transportation master plan only in accordance with this plan. And also,

-One of the proposed rail system line between Yunuseli and Demirtaş is planned to pass through approximately 4 km section of a fertile agricultural land. According to the spatial plan there is no recommendations with high populated residential area. Therefore, if there is no dense population, the construction of a rail system by damaging fertile agricultural lands is not a solution. As mentioned above, Bursa has limited area for urban development, but this is not a reason to justify damaging agricultural area.

-The Çalı-Gürsu Rail System, which is proposed in order to maintain the integration of the city center and the industrial area in the north, is an important proposal for the connection of industrial areas and residential areas.

-One of the new proposed lines is the Başkay-Göksu rail system, although it goes parallel with the existing University-Kestel LRT line. Although the lines go close to each other, it is not within walking distance due to the geographical conditions of the region. Emek - Hospital rail system proposed as an extension of the existing Emek-Arabayatağı Light Rail System is planned as a priority.

-In general, there is a traffic problem in Bursa center. Concentration of sectors without industry is located in the city center and this causes traffic problems. Therefore, one

of the most important objectives of the Bursa Transportation Master Plan is to reduce the vehicle density in the city center. It is considered to be the correct choice to remove the parallel lines to the rail systems and to propose feed lines as highway public transport.

6.3. Chapter Summary

In this chapter, first of all to understand the process of relationship between transportation master plan and spatial plans in practice semi-structured interviews that have been carried out by Municipalities, private sector firms and academic staff are evaluated. In addition of these participants, semi-structured interviews have been also carried out by 4 participants from The Ministry of Transport and Infrastructure; contract manager of the project titled as “National Transport Master Plan”, respective branch managers, head of department. Until the enforcement of the regulation on Energy Efficiency for Transport published 2nd May,2019, Municipal Administrations have submitted only urban transportation master plans included rail system works project to the Ministry in order to apply for its prior approval. Briefly, the Ministry is the control side of the transportation master plan.

Hereby, both the Ministry, the Municipality and the firms say there is a relationship between transportation master plan and the spatial plans. Municipalities as laid down by the code of Metropolitan Municipalities numbered 5393 and by the code of Municipalities numbered 5216 are the interlocutor of the transportation master plan process so they are the authority. Privately Owned Firms that the municipalities are provided the service of preparation of Urban Transportation Master Plans via public procurement procedures are the participant of the process that advances the course under the leadership of the municipality and works on this issue. The firm working in the process has to dominate the issue at least as much as the Municipality. The Ministry of Transport and Infrastructure until the enforcement of the regulation on Energy Efficiency for Transport, Municipal Administrations have submitted only urban transportation master plans included rail system works project to the Ministry

in order to apply for its prior approval. It is now obligated that Municipal Administrations have to prepare urban transport master plans and Ministry is entitled to review and issue its technical opinion in return to municipalities is the control side of the process as it is mentioned before.

As a second part of the chapter, transportation master plans of Ankara, İzmir and Bursa provinces have been chosen as case study and the relationship between transportation master plans and spatial plans are examined. In order to determine the relationship between spatial plan hierarchy and urban transportation master plans, transportation master plans of 3 selected cities (Ankara, İzmir, Bursa) have been examined on the basis of inputs coming from conventional spatial plans that provide reference to transportation master plans. In Ankara and İzmir Province Transportation Master Plan 1/25.000 scale spatial plans of the provinces are used as a base. On the other hand, in Bursa Transportation Master Plan 1/5.000 scale spatial plan is used as a base. Therefore, based spatial plans are examined to compare urban transportation master plans of Ankara, İzmir and Bursa. Spatial plans and plan reports of 1/25.000 for Ankara, 1/25.000 for İzmir and 1/5.000 for Bursa, have been analyzed based on;

- Their transportation decisions (road hierarchy and major roads),
- Transportation nodes (airports, bus terminals, ports, etc.),
- The population and employment data, and
- Location decisions for primary land-uses (Residential, education, commercial (and central business district), industrial, health, administrative, social services, recreation (including green areas))

These main topics are determined because, this information has to be included both in spatial plans and urban transportation master plans and when the information is categorized these four main topics occur. As it is mentioned before, Municipalities are preparing urban transportation master plans for rail system projects in Turkey. Therefore, especially rail system recommendations in urban

transportation master plans and spatial plans of Ankara, İzmir and Bursa used as a based in urban transportation master plan process are detailed.

In Ankara Case, the main problem is that there are time difference between Ankara Transportation Master Plan and the 1/25000 scale Ankara Master Plan target year . Spatial plan was prepared in 2006 have been used in Ankara Transportation Master Plan published in 2017. However, it does not reflect current information.

In İzmir Case, although the plan is 1/25.000 scale, it is not the master development plan. That means it does not includes details. However, the general decisions about the city and urban development are available in the plan. And, the spatial plan is a current plan and target year is almost the same with the transportation master plan. It is the best case between Ankara, İzmir and Bursa cases in terms of compliance with spatial plans.

In Bursa Case, 1/5000 scale plan is used. 1/25000 scale master development plan in metropolitan municipalities and 1/5000 scale master development plan in municipalities are the most suitable plans to use as a base for transportation master plan. However, Bursa is a Metropolitan Municipality and 1/5000 scale plan is not a master development plan. For each investment, plan amendment has been implemented. This type of plans does not give correct information about the development of the city and they do not give general idea about the city. Briefly, 1/5000 scale plan is not a suitable plan for transportation master plans in metropolitan municipalities.

CHAPTER 7

CONCLUSION

Both understanding the structure of planning and urban transportation master plan and the relationship between these plans is the main purpose of the thesis. This topic has been chosen to better understand the urban planning literature and to determine the importance of transportation, which is an inseparable issue in urban planning. Therefore, qualitative research on three cases from Turkey has been carried out. Ankara, İzmir and Bursa Provinces have been chosen as case studies because these provinces's transportation master plans are three of the most current transportation master plans. While spatial data is reflected from the mapping, interviews have been carried out in order to make sense of how this process goes on in practical.

7.1. Summary and Findings of the Research

This study covered seven chapters included introduction and conclusion. General information on content, aim and scope of thesis is submitted in the first chapter.

Second chapter includes planning in the world. In this context, definition, types and history of planning have been defined at first. In addition to these information, development of planning approaches also have been studied in order to understand the variety of transportation master plan. After all definitions, it is seen that transportation master plan is a specific type of strategic planning. These plans are prepared within the framework of a certain mission and vision, which do not have a scale and where transportation strategies for the city are determined. Interaction with other plans is important when preparing these plans.

Transportation master plans are spatial strategic plans but the master plan and strategic plans differ in some points that can be listed as being complementary, giving priority to the projects and giving importance to participation (Borja et al., 1997).

As it is mentioned in the 2nd chapter strategic plans are complementary plans. They give priority to general identification of projects. However, it is not necessary to determine where the projects will take place. Also, strategic plans are based on conciliation and participation at every stage and quantitative analysis methods are used in these plans. In addition, these plan types are action plans and based on consensus among actors in actions requiring intervention in the short term. On the other hand, master plans regulate urban spaces. This kind of plan types define the uses of land and identifies the general system of the city and the location of large public spaces. For a master plan, in contradiction to the strategic plans, the participation of all actors is important only at the result or outcome phase of the study. In master plans, spatial and physical field studies are used. This plan types are not action plans. These plans revise actions and make addition if needed. Besides, master plans are regulatory plans as mentioned before. This plan types regulate the potential future of action (Borja et al., 1997).

The third chapter is about planning in Turkey. It can be said that the concept of planning, which started with traditional planning in the world and developed with strategic planning approaches, is limited only with physical planning in Turkey (Ayrancı, 2013). After defining planning in the world, planning in Turkey is expressed in order to understand ‘the relation between planning hierarchy and urban transportation master plans’ that is the subject of this thesis. The relation between planning and transportation arises while determining general strategies on transportation that take place in objectives and targets section of country-wide plans.

There is a reciprocal interaction between urban transport and land use. Land use decisions impact the type and scale of a required transport system. To the contrary, transport options and the structure of a given transport system influences people’s

movements and can subsequently influence the value of land. As such it is recommended that an urban transportation master plan is prepared simultaneously with the master land development plan to optimize the efficient interaction between land use and transport.

Accordingly, the urban transportation master plan must be developed in parallel with the master land development plan, and with respect to the upper tier land use plans which are:

- National Spatial Strategy Plans (Ministry of Environment and Urbanisation);
- Regional Plans (Ministry of Development);
- Regional Spatial Strategy Plans (Ministry of Environment and Urbanisation) and
- Territorial Plans (Ministry of Environment and Urbanisation)

With regard to scale, the urban transportation master plan should be developed at the scale that is consistent with the master development plan in the Municipality (typically 1/25.000 scale) so as to drive efficiencies and consistencies in GIS systems, and to align with the higher tiered plans. Once the transportation plan is determined at the same scale as the master development plan, the Municipality may select to develop plans at the 1/5.000 scale where interventions are focused on a specific corridor or a smaller geographical footprint, however this is not deemed as an essential requirement. A 1/1.000 scale plan is only required for construction, and not required at the planning stage.

As it is said before, 1/5.000-1/25.000 scale development master plans in metropolitan municipalities and 1/5.000 scale development master plan in other municipalities are coordinated with transportation master plan.

In the next chapter of the study, an urban transportation master plan is defined. Also, historical process in Turkey and the preparation process of transportation master plan is explained. A transportation master plan example is supposed fundamentally to create a set of proposals for strategy, policies, measures and an indicative action plan

with budget forecasts covering a long term vision for a period of 15 years in order to develop mobility opportunities in a given space and suggest alternative solution packages to future mobility-based problems forecasted for the same space by some sort of statistical transport researches carried out as a part of master plan. It represents a very dynamic dimension of human-space interaction. Because of the fact that a transportation master plan is mainly drafted on vision-based or strategic level but also hard suggestions on implementation level are also included in the plan for the movement of people with their activities and freights in a specific space; a transportation plan including movement-space dimension is classified as a some sort of spatial planning activity specifically focused on the mobility of people and accessibility to all kind of activity-based areas. This chapter aims to understand the terminology of transportation master plan and to relate to planning.

In the 5th chapter, the related studies about the thesis subject and the methodology of the thesis are defined. In the first part of the chapter, literature review is detailed. Studies about accessibility, about the plan content and the relations of urban transportation master plans with land use is described. After that, these studies are compared to this thesis in terms of research method, case study and content. This study aims to show in which points this thesis subject differs from the other studies that are determined in this studies. In the methodolgy part, qualitative research method is described and also definition of the thesis methodology is stated in detail.

Chapter 6 covered the case studies of the thesis. The aim of the study is to identify the relationship between urban transportation master plan and plan hiearchy. As the first part of the chapter, semi-structured interviews have been examined. While spatial data is reflected from the mapping, interviews have been carried out in order to make sense of how this process goes on in practice. There have been performed 13 interviews whose type is defined as semi structured interview, one of the qualitative research methods. 6 of the interviews are performed in person, 4 of them are contacted via e-mail correspondence and the remained 3 interviews are completed by telephone communications. All interviews have been carried out between July 25, 2019 and

August 15, 2019. These interviews have been carried with the representatives of expertise stakeholders that are participants of urban transportation arrangement process. The inquiries of semi-structured interview are organized as below:

1. Do you think if any relation exists between transportation master plan and spatial plans? Please clarify the nature of relations, if any.
2. What kind of spatial plans are taken as references to prepare a transportation master plan? On preparation of a transportation master plan, which specific feature of spatial plans take precedence over the another, the scale or actuality?
3. Do you think that there should be a certain order of priority between the preparation timing of transportation master plans and spatial plans or preparation process of both a transportation master plan and a spatial plan should be carried out simultaneously?
4. On preparation of a transportation master plan, do you think that planning and transport department of municipal administrations is in interaction with each other? Please clarify the interaction process, if any.

The common outcomes of the answers obtained by interviews is as follows:

- There is relationship between transportation master plan and plan hierarchy as the spatial plans are used as bases during the preparation of transportation master plans.
- 1/5000 and 1/25000 scale master development plans are the most appropriate plans to use as bases for urban transportation master plans. Also, the general idea about the most important feature of planning is the actuality on preparation of a transportation master plan, rather than base plan scale.
- It is claimed that the most ideal method for reflecting the real conditions and proposing effective transport solutions is to carry out spatial planning and urban transportation master plan processes simultaneously. The second

suggestion is that spatial plans should be made shortly before transportation master plan.

- The general discourse is that both planning and transport department of municipal administrations do not interact with each other. The fact that they do not want to carry out the works together is stated as the main reason of this inadequate coordination between these two different departments.

In the following part of the 6th chapter, in order to determine the relationship between spatial plan hierarchy and urban transportation master plans, transportation master plans of 3 selected cities have been examined on the basis of inputs coming from conventional spatial plans that provide reference to transportation master plans. Ankara, İzmir and Bursa Provinces from Turkey have been chosen as case studies because these provinces's transportation master plans are three of the most up-to-date transportation master plans. Also, size of the population in Turkey, the first four most populated provinces, respectively in Istanbul, Ankara, Izmir and Bursa. However, İstanbul differs from the other cities in order to its studies about transportation master plans in terms of fiction and content. There is no current study of urban transportation master plans in İstanbul. Therefore, the second third and fourth largest provinces of Turkey have been chosen as a case study.

As it is seen in both Ankara, İzmir and Bursa examples, spatial plans are used as base during transportation master plans. In Table 7.1. it is pointed the set of data used in urban transport master planning process.

Table 7.1. The set of data use in urban transport master planning process
(Compiled by the author, 2019)

	ANKARA	İZMİR	BURSA
Total Population Projection	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	1/100.000 Environment Plan
Employment Data	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	
School Areas	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan & 1/5.000 Master Development Plan	1/5.000 Development Plan
Hospital Areas	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	-
Industry Areas	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	-
Social Places	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	-
Highway Network	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	1/5.000 Master Development Plan
Road Hierarchy	1/25.000 Ankara Master Development Plan	1/25.000 İzmir Metropolitan Area Environment Plan	-
Railway Network	1/25.000 Ankara Master Development Plan	1/5.000 Master Development Plan & 1/1.000 Implementary Development Plan & 1/25.000 İzmir Metropolitan Area Environment Plan	-

In Ankara Case, the main problem is that there are time gap between Ankara Transportation Master Plan and the 1/25000 scale Ankara Master Development Plan in terms of their target years . Spatial plan that was prepared in 2006 have been used in Ankara Transportation Master Plan that was published in 2017.

In İzmir Case, although the plan is 1/25.000 scale, it is not the master development plan. That means it does not includes details. However, the general decisions about the city and urban development are available in the plan. And, the spatial plan is a current plan and target year is almost the same with the transportation master plan. It is the best case among Ankara, İzmir and Bursa cases in terms of compliance with spatial plans.

In Bursa Case, 1/5000 scale plan is used. 1/25000 scale master development plan in metropolitan municipalities and 1/5000 scale master development plan in municipalities are the most suitable plans to use as a base for transportation master plan. However, Bursa is a Metropolitan Municipality and 1/5000 scale plan is not a master development plan. For each investment, plan amendment has been implemented. This type of plans does not give correct information about the development of the city and they do not give general idea about the city. Briefly, 1/5000 scale plan is not the convenient plan for transportation master plans in metropolitan municipalities. For this reason, the data used in the transportation master plan does not fully reflect the reality, as it is not obtained from the plan for which the city's general decisions are made and the target year is specified.

As a result, in these 3 provinces selected as case studies, the province where spatial plan is used most accurately in the transportation master plan process is İzmir Province in terms of both the scale and the actuality of the plan.

In this thesis the aim is to find answer the questions “What is the relationship between spatial plans and transportation master plans?” and “In which points do these two plans jointly make decisions?”. Under favour of the semi-structured interviews and case studies, the answer of the questions are below:

- Spatial plans are used as a base for transportation master plans. The most appropriate scale of spatial plans to use as a base is 1/25000 master development plan in metropolitan municipalities and 1/5000 master development plan in municipalities.
- For a typical strategy-based spatial plan, transportation phenomena is just one concern among all and it is not the overall or primary concern that is attributed more importance than another policy subject such as housing in the plan. The connection is formed as follows; strategy, vision or policies suggested by a transportation master plan should not contradict with the overall strategy and policies decided by strategical spatial plans. In this respect, strategical spatial plans must be taken as basis while a transportation master plan is drafted but implementary or practice based and low-scaled spatial plans with their additional, revised versions should be decided taking prior account of transportation master plan sections in which measures and an indicative action plan with forecasts probably including high-budget infrastructure project proposals to overcome future mobility-based problems are envisaged in that master plan.

The hypothesis that is “If spatial plans aim the identification, design and implementation of all kind of sectoral policies related to urban development, and if spatial plans emphasize the continuity and consistency of plan hierarchy; urban transportation master plans should not contradict with the spatial plans.” has proved to be a correct proposition in line with the answers to the questions of the thesis.

7.2. Policy Implications

Spatial plans those especially prepared on strategic or vision level is directly related transportation master plans. However, strategy, vision or policies suggested by a transportation master plan should not contradict with the overall strategy and policies decided by strategical spatial plans. In this respect, strategical spatial plans must be taken as basis while a transportation master plan is drafted but implementary or practice based and low-scaled spatial plans with their additional, revised versions

should be decided taking prior account of transportation master plan sections in which measures and an indicative action plan with forecasts probably including high-budget infrastructure project proposals to overcome future mobility-based problems envisaged in that master plan.

The reference spatial plans are differentiated in respect to the scope of the transportation master plan. Any environment and spatial plan that can be classified as country or regional-wide strategic plan is taken into account to prepare a national transportation master plan in which long-term visions on inter-city or inter-regional transport is foreseen. On the other hand, master development plan of the city is the basic reference spatial plan, but transportation strategies and policies to be suggested by urban-wide transportation plan should not pose obstacles for the achievement and implementation of inter-city or inter-regional transportation strategies and policies stated in these plans. The appropriate scale of an urban master development plan, which is also taken as basis for the preparation of urban transportation master plan, should be decided for alternative distribution of population density and human-based activities upon urban spaces. A clear majority of residential, economic and other activity based areas envelops specific confined spaces of the city; small-scale is preferred for urban master development plan, or vice versa. Therefore the scale choice of the reference spatial plan is the primary consideration that had to be decided well before the commencement of transportation master plan study. In this context, the actuality of decided strategies and other relevant determinants for the master development plan to be taken as basis for the preparation of transportation master plan takes precedence over any other feature of city development plan. Transportation plan should be started to be studied shortly after the completion of master development plan. If transport infrastructure projects are proposed and programmed roughly with transportation master plan, spatial implementation plans should be prepared, revised or amended respectively.

The order of priority between the preparation timing of transportation master plans and spatial plans should be listed below;

- Strategical spatial plans
- Transportation master plans
- Spatial implementation plans.

However, transportation master plan should be started to be studied shortly after the completion of strategic spatial plans.

Strategic spatial plans is not needed to be updated following the completion of transportation master plan preparation period, but spatial implementation plans should be prepared, revised or amended respectively.

In Turkish practices, especially in city planning level, most of urban transportation master plans are prepared if specific transport infrastructure projects are desired to be designed by local governments and if the central government approval is needed for crediting because the budget resources of these local governments are inadequate for the project implementation. In this context, transportation master plan is not effectively prepared but only adjusted to prior demanded transport infrastructure projects and already prepared spatial implementation plans. Therefore, most spatial plans are not updated following the completion of transportation master plan preparation period.

Most of transportation master plans, especially in urban ones is not prepared effectively enough and is not essentially prepared to create a set of proposals for strategy, policies, measures and an indicative action plan with budget forecasts covering a long term development of mobility opportunities in a given space and suggestion of alternative solution packages to future mobility-based problems forecasted, therefore changes in socio-economic variables are limitedly taken into consideration within the time period for the preparation of transportation master plans. In result for Turkish practices, almost only appropriate variable alterations which

would be useful for the legitimization of pre-demanded transport infrastructure projects could be taken into consideration for the preparation of transportation master plans.

As it is mentioned before, spatial plans are used as a base in transportation master plans. Transportation is one of the specific issues of spatial planning. Spatial plans address not only transportation but also land uses, residential areas, etc. In developed countries, transportation infrastructure is considered before residential area planning. In other words, a road or rail system infrastructure is first established in an area and the land use is shaped accordingly. However, as the current situation in Turkey transportation problems cannot be solved. Transportation investments do not plan before land use decisions. Especially rail system investments requiring high costs are not planned for underpopulated areas. In addition, there are a few examples in which the supply of transport occurs before the demand. For example, Ankara Batıkent Metro Line. According to the Jansen plan in 1926, the development of Ankara was planned to expand to the west direction. When the Batıkent Metro was started to service in 1997, it was an area with low population density and not much settled. However, after taken into service of the metro line, it has improved in the last 20 years and a planned development has been observed in comparison to other districts. As can be seen in this example, supply as transportation infrastructure or whole systems constructed goes before and motivates transport demand so that transportation infrastructure project may lead to positive contribution on urban spatial development regularly.

7.3. Recommendations for Further Studies

In this thesis, the relationship between urban transportation master plan and plan hierarchy is explained. In this context, firstly what is planning and historical process of planning in the world have been examined in order to understand where the transportation master plan is in the world planning. Also, planning in Turkey is examined to understand the relationship between transportation master plan and plan hierarchy. The result is spatial planning consists of planning in Turkey and the

relationship between spatial planning with urban transportation master plan is only that spatial plans are used as base for the transportation master plans. In this thesis, three provinces from Turkey have been chosen to show the aforementioned relation. A semi-structured interviews have been conducted to obtain information about the process. As a result, the relationship between them is only the use of spatial plans as a base during the transportation plan process. 1/25.000 scale master development plan for Ankara, 1/25.000 scale environment plan for İzmir, 1/5.000 scale plan for Bursa and these provinces' transportation master plans have been compared with spatial plans as a case study. The general answer given to the question of whether there is a change in the spatial plans after the transportation master plan in the interview is given as 1/5000 and 1/1000 plans if investment projects such as rail system, new residential area are made.

If I had the opportunity, all 1/5000 and 1/1000 plans of the cities could be examined within the framework of the investment projects proposed in Ankara, İzmir and Bursa Transportation master plans. In this way, plan alterations could be shown. If studies were carried out in this context, the relation between the transportation master plan and the plan hierarchy would be seen in the next step.

In addition, if the time given for the thesis were longer, I would rather take part in the process of the transportation master plan of a newly started city instead of a completed transportation master plan. It would be great to present an impressive thesis. If the thesis is to be written on this subject, it is recommended to participate in the process from the beginning by deciding on the subject before starting the thesis.

In general, for further studies, the relationship mentioned in this thesis should be taken one step further and how it affects spatial planning in the processes following the transportation master plan should be determined. Also, If possible, they are advised to choose a transportation master plan as a case study in which the process can be followed from the beginning.



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