INTEGRATION AND COORDINATION BETWEEN REGIONAL/URBAN PLANS AND TRANSPORTATION PLANS: THE CASE OF THE RAIL TRANSIT INVESTMENTS IN GAZIANTEP

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ABSTRACT

INTEGRATION AND COORDINATION BETWEEN REGIONAL/URBAN PLANS AND TRANSPORTATION PLANS: THE CASE OF THE RAIL TRANSIT INVESTMENTS IN GAZIANTEP

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Transport and urban development are in a constant interaction with each other. Hence, urban planning and transport planning should be carried out in integration and coordination. Best practice cases in the world reveal that this integrated and coordinated approach should be established from regional plans to metropolitan and urban plans. When strong integration is maintained, transport investments can become effective tools in helping realize urban and regional plan strategies. Within this framework, the thesis reviews policy documents and legislations in Turkey in terms of integrated planning of regional/urban and transport plans. Gaziantep case is analyzed in detail within the same perspective.

Keywords: Transport, urban development, integration, coordination, urban and regional planning

ÖZ

BÖLGESEL/KENTSEL PLANLAR VE ULAŞIM PLANLARI ARASINDA BÜTÜNLEŞME VE EŞGÜDÜM: GAZİANTEP RAYLI SİSTEM ÖRNEĞİ

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Ulaşım ve kentsel gelişme sürekli etkileşim içinde olup, kent planlama ile ulaşım planlamanın bütünleşik ve eşgüdüm içerisinde ele alınması gerekir. Dünyadaki en başarılı planlama örnekleri bu eşgüdümün bölge planı düzeyinden başlayıp, metropolitan ve kent planlarıyla devam etmesi gerektiğini göstermiştir. Bütünleşik bir planlama yaklaşımı, ayrıca ulaşım yatırımlarının kent ve bölge planlarının hayata geçirilmesini sağlayacak etkin bir araç olmasına da hizmet edeceği için önemlidir. Bu çerçevede, bu tezde Türkiye'de politika belgeleri ile yasal çerçeve incelenerek kent/bölge planlamanın bütünleşik olarak gerçekleştirilmesinin koşulları tartışılmakta; ardından Gaziantep örneğinde konu incelenmektedir.

Anahtar Kelimeler: Ulaşım, kentsel gelişme, eşgüdüm, bütünleşme, kentsel ve bölgesel planlama

To My Dear Friend;

Aras Kansay…

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Interviews have been made as a part of this study; thus, I would like to express my sincere gratitude to all interviewed persons during thesis process.

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CHAPTER 1

1. INTRODUCTION

In this chapter, informative and broad explanation about the integration and coordination between regional/urban plans and transport plans will be provided in order to present an introductory outlook. Initially, the context of the thesis is identified; afterwards, aim and research questions of the study are clarified for a better understating of the subject. In addition, data collection and methods of the thesis are pointed out; and finally, the structure of the thesis is described and the content of each chapter is summarized.

1.1. Context of the Research

There is a two-way interaction between transport and urban development. Throughout the history, every new transport technology had profound impacts on land-use and development patterns. In return, whenever land-use patterns changed this impacted on trip lengths, travel behavior and transport mode choice. This close interaction suggests that there should be strong integration and coordination between regional/urban and transport plans. The importance of integrated and coordinated planning of regional, urban and transport plans is also evident in numerous international case studies, which show that when planned in integration with regional and urban plans, transport investments can become effective tools in helping realize these urban and regional plan strategies. In this respect, the research reviews the literature and best-practice world examples, and analyzes policy documents and legislations in Turkey. Gaziantep case is also examined within this perspective.

1.2. Aim and Research Questions of the Study

The main aim of this research is to investigate whether the political and legislative framework in Turkey ensure an integrated and coordinated approach in urban and regional planning and transport planning. Through both the analysis of Turkish political documents and legislations, and the analysis of a case study from Turkey, this issue is investigated.

The thesis highlights the importance of integration and coordination between regional/urban plans and transport plans, and puts forward that transport investments can become effective tool for shaping urban development and realizing regional plan strategies. In this context, the study emphasizes the link between transport and urban development and presents examples from different parts of the world. It also evaluates the policy documents and legislations in Turkey. Considering that there are many studies about Ankara, Istanbul, and Izmir in the literature, a particular focus is given to Gaziantep in this research and transport plans and investments in Gaziantep are examined within a view to assessing the level of integration and coordination between regional and urban plans and transport plans. Gaziantep has been subject to significant transport investment in recent years, particularly in urban rail development, and there are further plans to extend the existing urban rail lines as well as introducing a new commuter rail line. Hence, it appears to be an appropriate case study to explore for the main purposes of this thesis. The study also evaluates whether these transport investments in Gaziantep have been used as an instrument for shaping urban development and urban macro form.

The research questions of the study supported by some sub-questions, which serve fundamentally to achieve and improve the aim of research, can be stated as follows:

1. Is the political and legislative framework in Turkey adequate to ensure an integrated and coordinated approach in urban and regional planning and transport planning?

2. Does the case of Gaziantep, with its various recent transport investments, reveal an example of integrated and coordinated planning in regional/urban plans and transport plans?

In order to help answer the above questions, following sub-questions are to be answered throughout the study:

3. On which planning level, strategic transport nodes and corridors should be started to be identified?

4. How is the integration between regional/urban plans and transportation plans established in best practice examples in the world? What are the difficulties in providing coordination between spatial plans and transport plans?

In order to explore the case of Gaziantep, the following sub-questions have been identified:

5. To what extent are regional/urban plans and transportation plans being prepared in integration and coordination with each other in Gaziantep?

    - How effective are regional and urban plans in directing regional and urban transport investment planning decisions and transport investments in Gaziantep?

    - Are transport investments implemented according to the transportation master plan which is coordinated with urban spatial plans?

    - In Gaziantep, is integrated and coordinated planning approach achieved by local authorities?

    - Are transport investments being used as a tool for shaping urban development and realizing urban development strategies?

1.3. Data Collection and Method of Analysis

Collecting plans and strategy and legislation documents constitute the main data collection method of the study. In this respect, national development plans, strategy, policy and legal documents related with transport and regional/urban planning have been obtained and Gaziantep's regional, metropolitan and transportation plans have also been acquired at the local level.

A case study approach provides in-depth understanding about how the policies and legislations at the national level translate to the local level. Hence, the different case studies from all around the world are evaluated with a focus on the level of integration between regional/urban plans and transportation plans.

In-depth interviews are carried out with two different focus groups. Initially, information about the integrated and coordinated planning approach for Turkey is obtained from academicians and transport planners within semi-structured interviews that focus on the difficulties and solutions for providing integration and coordination between transport and urban plans in Turkey. In-depth interview questions are presented below and their explanatory sub-topics are also revealed on Appendix A.

> *Many national policy documents in Turkey (National Development Plans, National Transportation Master Plans, Council of Urbanization (2009) etc.) underline the importance of the coordination and integration between transportation and urban planning. However, these strategies and policies has not been successfully implemented in practice.*
>
> **1.** *In Turkey, what are the difficulties in providing coordination and integration between spatial plans and transport plans in practice?*
>
> **2.** *How coordination and integration between urban and transportation plans can be achieved in Turkey? Which practices and arrangements should be made?*

In addition, in-depth interviews were carried out with city planners from Gaziantep Metropolitan Municipality (Department of Transportation Planning and Rail Systems and Zoning and Urban Development Department) and head of the Planning, Programming and Coordination Unit from the Silk Road Development Agency. Integrated planning approach is tried to be determined in Gaziantep within open-ended interview questions.

1.4. Structure of the Thesis

Following this introductory chapter, Chapter 2 clarifies the interaction between transport and urban development within a historical perspective to provide a better understanding of the two-way relation between these two areas. Different urban forms, which are generated from different transport technologies are presented; and consequently, transport is highlighted as an important instrument in shaping urban development and in realizing urban development plans. The chapter concludes with an emphasis on the need for integrating urban/regional plans and transport plans.

In Chapter 3, integration between spatial plans and transportation plans is exemplified in order to provide a better understanding about the necessity of the need for integrated planning approach. It is shown that best examples have benefited from strong regional visions and that integration and coordination between transport and urban development should be started from the regional level. Furthermore, high capacity of transport investments produce desired urban form in these best-practice cities. Other cases are also important for recognizing the opportunities and challenges arisen from the integration between transport and urban development.

Chapter 4 presents the integration between transport and urban plans in Turkey and recent public transportation policies are explained to provide a better understanding for Turkish cities. Moreover, upper scale plans and policies such as national development plans, national transportation master plans, strategy and action plan documents and legislation are examined in detail and difficulties and solutions for integration and coordination between transport and urban plans in Turkey are also represented in this chapter.

In the 5th Chapter, Gaziantep case study is evaluated within integrated planning framework. Development pattern of the city is studied with the historical perspective in order to identify the level of the coordination between urban development and transportation investments from past to present. Subsequently, regional and spatial plans are examined for understanding the implications of these plans on transport investments; and how transport investments can be used as a tool for realizing urban and regional planning vision in Gaziantep. Transport plans and investments in the city are also analyzed to identify whether transportation investments in Gaziantep are shaped in accordance to regional and urban plans or not.

Finally, in Chapter 6, the research is summarized in general terms. Main aims and findings of the research is highlighted and recommendations are given for future implementations in Turkey as well as in Gaziantep. Further research areas are also pointed out and proposals are made for future studies.

CHAPTER 2

2. THE LINK BETWEEN TRANSPORT AND LAND USE: THE NEED FOR COORDINATED PLANNING OF TRANSPORT AND URBAN DEVELOPMENT

In this chapter, the interaction between transportation and urban development is clarified and the historical process is presented to provide a better understanding of the reciprocal relation between urban space and transportation. Walking, transit and automobile city concepts are examined in terms of understanding how transport technologies shaped urban development. Different urban forms which are generated from transport technologies are represented, and consequently, transport is highlighted as an important tool in shaping urban development and in helping realize urban development plans. The chapter concludes with an emphasis on the need for integrating urban development plans and transport plans, and hence the need for coordinated planning in these two areas that are in constant interaction with each other.

2.1. Interaction between Transport and Urban Development: A Historical Perspective

Settlements incorporate various urban layouts in terms of economic, social and technological systems which belong to the different periods, and transportation maintains its important condition on urban life (Kılınçaslan, 2012). When the relations between urban space and transportation is examined, it is seen that this relation is reciprocal. Urban activities, their location and distances between them create the need for transportation. To meet this need, transportation infrastructure and technology is being continuously developed. On the other hand, every new investment in transportation infrastructure and technology have an effect on the form and structure of city, urban activities and distances between them (Black, 1995 and Vuchic, 2007). Due to the strong impact of transport investments on the city form, discourses, such as

"transport makes the city", have dominated the planning practice. According to this view, the city is shaped with the advent of new transportation technologies, but at the same time the resulting urban form and density determines travel behavior and mobility pattern, i.e. creating pedestrian friendly, transit-oriented cities, or resulting in car-oriented patterns and car-based lifestyles, and hence the two-way interaction continues (Tekeli et al., 2006).

Planning mechanisms that handled by taking into consideration of future potentials, economic capability and future objectives determine the urban macro form. Transport planning decisions and investments are the significant elements for shaping the urban structure. Transportation modes alternatives as rail systems, road investments, cycling and walking opportunities are variety of tools for giving direction to the city's development. Therefore, Newman and Kenworthy (1999) classified cities into the three main groups which are the walking city, transit city, and thirdly the automobile city.

2.1.1. Walking Cities

In the early ages, walking distances determined cities' shape and size. During these ages, pedestrian movement was the main component of the city (Fruin, 1971). The initial cities were settled in the Middle East between 10.000 or 7.000 years ago, and the urban structures of those cities were developed in time according to walking pattern of society (Newman and Kenworthy, 1999). In Classical Athens, the determining factor in locating structure and other urban elements was the pedestrian movements. Also, in Roman cities, main roads allocated for movement of products and secondary roads were used by pedestrians. Come to the medieval city, pedestrian access with narrow and twisted streets gained an importance and freight transport took the secondary place. Thus, wide streets were not necessary and streets designed in accordance to the topography and natural contours. Besides, plazas and squares were designed for pedestrians and they were banned for carriages (Fruin, 1971).

Before the Industrial Revolution, walking distance was the most important factor for the urban growth and size of the cities was enough to travel by foot and horse-drawn vehicles. Cities were formed with high density because urban activities had to be

located within walking distance of each other and cities developed as occupying less space (Vuchic, 2007). Over the long period of time, all cities were fundamentally based on walking for their movement requirements. Traditional walking city which is conceptualized in Figure 1, had to provide accessibility to the all destinations about half an hour with the 5 km/hour travel speed that is the speed of walking. For this reason, cities had to remain small and dense with the highly mixed land uses and farming land, forest areas and open spaces encompassed from their periphery (Schiller et al., 2010).

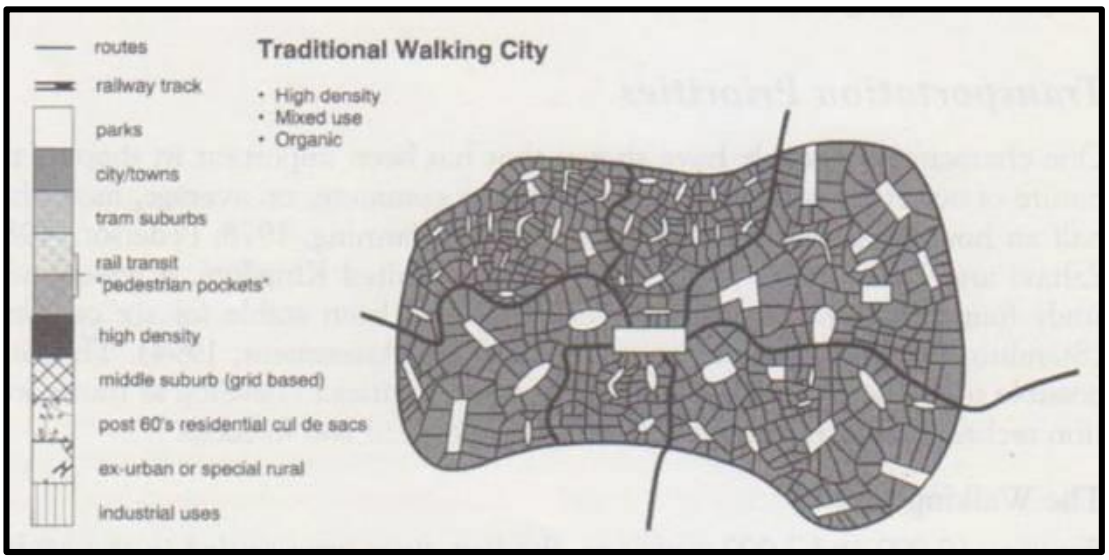

Figure 1: Conceptual Diagram of the Walking City

Source: (Newman and Kenworthy, 1999)

Traditional walking city demonstrates high density (100-200 people per hectare), mixed land use and narrow streets with organic forms and half an hour walking distance between all urban activities (Newman and Kenworthy, 1999). Also, it offered the advantage of access to everyone equally. However, many walking cities lost their typical features with widespread use of automobiles during the 1950s and 1960s. Although, it is known that only some historical urban areas have kept this kind of a features in recent years, some cities like Freiburg and Munich in Germany and Copenhagen in Denmark have tried to regain their walking city characteristics again. From the 1967, Copenhagen began to transform central car parking areas to open space and aimed to revive traditional walking city structure again (Schiller et al., 2010).

2.1.2. Transit Cities

With the industrial revolution, transit or public transport city appeared with the invention of new transport technologies that used steam and electric energy. Rail transportation systems were introduced as the main public transport mode with the significantly higher speed provided by the rail technology. Therefore, mass transport began to be used in the cities and railways became an important transport mode which affected and shaped the urban form (Müller, 1997). Urban developments had spread to the rural areas throughout the railway corridors and initial suburban settlements started to occur around the railway stations (Kılınçaslan, 2012). Suburbanization started to be an important urban development pattern. This development increased speed of travel, and hence distances that urban areas could develop over. However, settlement patterns were still high-density and rail system and stations were well integrated with pedestrian areas and routes (Newman and Kenworthy, 1999).

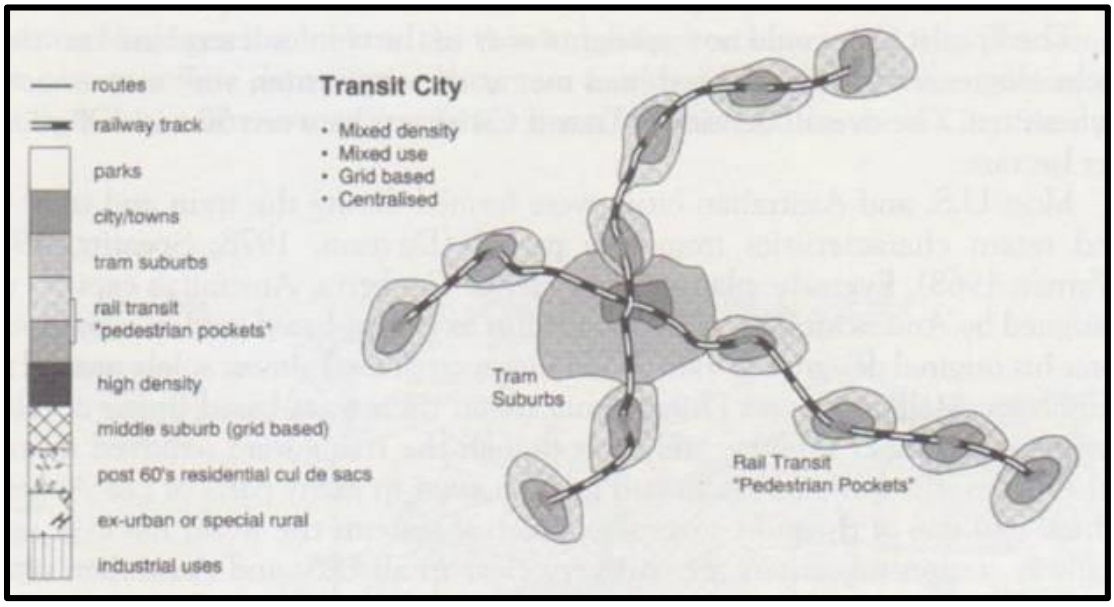

Figure 2: Conceptual Diagram of the Transit City

Source: (Newman and Kenworthy, 1999)

From the mid-19th century, such transportation modes as railways, metro systems and trams, provided faster travel (travel speed roughly increased from 5 km/hour to 15 km/hour). Even in big cities, urban activities still had an easy access by walking and bicycle trip to the rail station or tram stops and public environments (streets, square

and other places) were still people oriented. These cities still had a high dense and mixed-use urban structure meaning that urban settlements were well-defined with nodes around the rail stations and corridors along public transport lines (Schiller et al., 2010). Conceptual urban form of the typical transit city is shown on Figure 2 and tram-based inner suburbs and distinct nodes around the railway stations are obviously perceived from it. This type of city form tended to be dominant in developed countries (especially in western counties) that experienced the industrial revolution. However, less developed countries where new technologies did not emerge walking city structure was still dominant. In these cities, period of public transport progress was not well defined and most of them have not formed according to linear corridor of public transportation lines. In addition, bus systems (dominant technology for land transport) started to provide services where rail systems could not reach. (Newman and Kenworthy, 1999). Furthermore, the impact of transportation technology directly take its effect on public realm in terms of quality of public spaces and the nature of social relations. Transit, by its nature, conglutinates people in common space and help them to make social relations (Schiller et al., 2010).

2.1.3. Automobile Cities

Undoubtedly, the biggest change in the transport technology had been seen with the automobile usage which would affect the shape and form of the modern city. In the 1900s, automobile was seen as an effective solution to mobility needs (Kılınçaslan, 2012). Newman and Kenworthy (1999) emphasized that starting from the Second World War, the automobile progressively became a transportation technology that shaped the city. They added that European cities were faced with a new migration wave after the war and that the centers of these cities, which were tried to be rebuilt among the ruins of war were designed for automobiles because automobile was seen as the most required invention of the past century (Torlak, 1983).

After the beginning of Second World War, automobile had become distinctive transportation mode for directing the urban form and cities were able to develop in any direction with excessive use of automobile. Before the automobile era, urban development occurred along the train and trams line and rail station or tram stops were important nodes for new urban developments. After that these new developments

started to occur approximately fifty kilometers away from the city center. Thus, the automobile city which is seen at Figure 3 showed excessive expansion of developed area relative to the walking and transit cities (Newman and Kenworthy, 1999).

Compared with the rail system, automobile appeared as an attractive urban transport mode since it provided door-to-door transport, relatively more comfort, privacy and convenience (Vuchic, 2007). According to Newman and Kenworthy (1999), this means that houses and businesses could be located almost anywhere since this form of personalized transportation could be used to join them together. Therefore, cities excessively became the places of automobiles and they began to decentralize and disperse. As a result, Newman and Kenworthy (1999) summarized this process as "the transportation and land use connection was broken and automobile dependency became established. In this way, the Auto City was born".

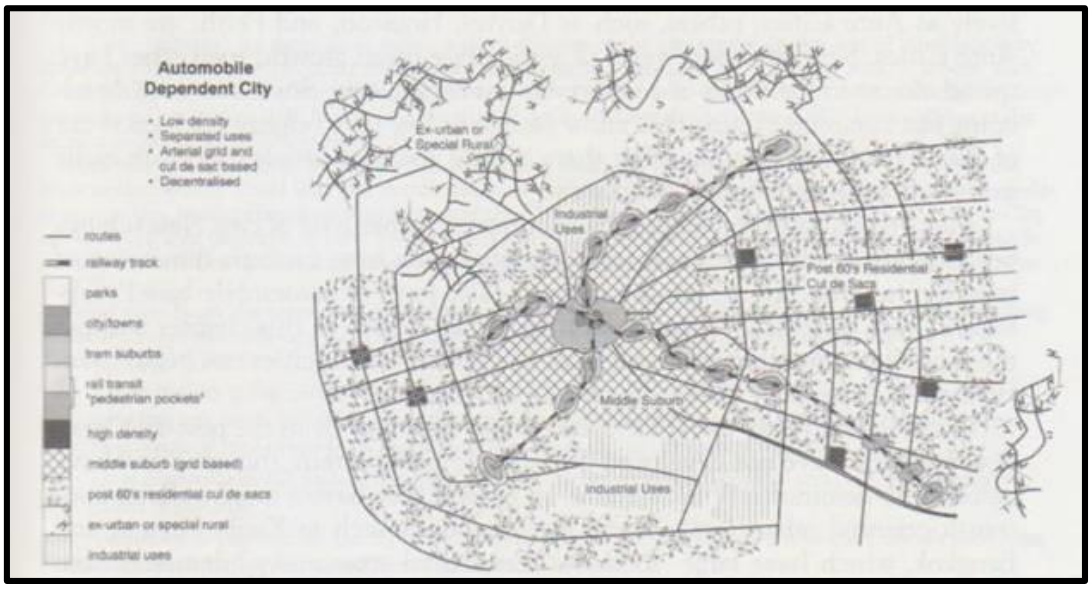

Figure 3: Conceptual Diagram of the Automobile City

Source: (Newman and Kenworthy, 1999)

Previously, urban development generally was concentrated around rail stations (in the form of satellite towns) outside the city centers but after the expansion of the car usage, less dense development and remote settlements on urban periphery began to be seen. New residential areas and commercial facilities that wanted to serve these new residential developments moved to the outside of the cities (Tekeli et al., 2006). Figure 4 indicates the eight decades of automobile suburbanization and Müller (1997) stated

that the enormous band of growth was added between 1950 and 2000 with freeway sector pushing the metropolitan frontier deeply into the surrounding zone of exurbia.

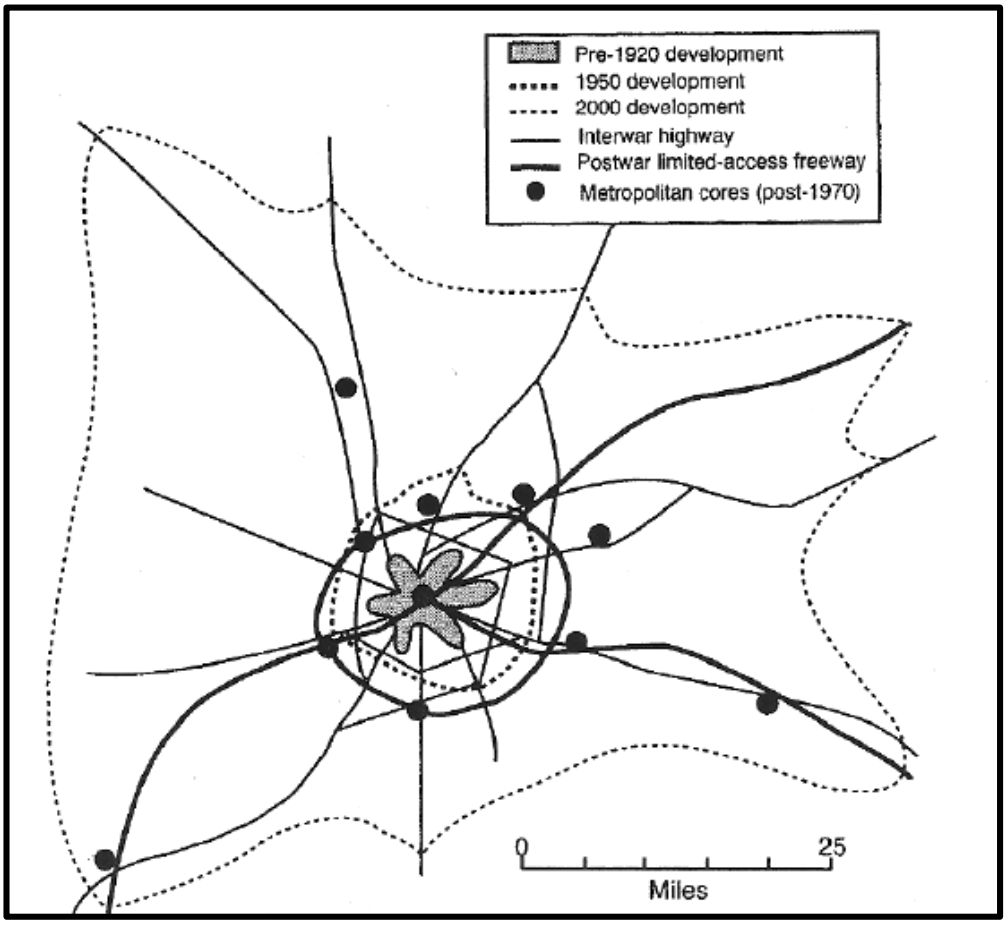

Figure 4: Spatial Pattern of Growth in Automobile Suburban since 1920

Source: (Müller, 1981)

Car usage cause the expansion of the city because people no longer had to rely on scheduled and fixed public transport systems. Instead the automobile provided the freedom of door-to-door travel and faster transport. Automobile offered greater travel speed and people chose to live in low-density areas of the urban periphery. For these reasons, travel distances dramatically increased for all journeys in cities and land uses became segregated into districts. The car began to displace public transport and non-motorized transport modes. For instance, automobiles approximately received a share of 80 to 90 percent from the all trips made in North American and Australian cities (Schiller et al., 2010). Nowadays, private vehicles create around half of the urban trips worldwide. In urban areas, private car usage in daily trips are estimated to jump from 3.5 billion in 2005 to 6.2 billion in 2025 within 80 percent rise. This particular

expansion is going to be experienced in developing countries too and hence all around the world (Pourbaix, 2011).

Significant increase of car usage causes the high levels of petrol dependency, traffic congestion, air pollution, urban noise, social segregation and loss of urban streets. Usage of public transportation and non-motorized transportation modes (walking and cycling) are also interrupted because of the traffic congestion and increased distances between activities (Stead and Banister, 2001). In addition, new suburban areas are located at further distances and increased distance create new travel demand. Therefore, when new roads are added or existing capacity is increased, new trips are added and they generally concentrate on further distances instead of the shifts in travel time or shorter distance (Litman, 2007) (Figure 5).

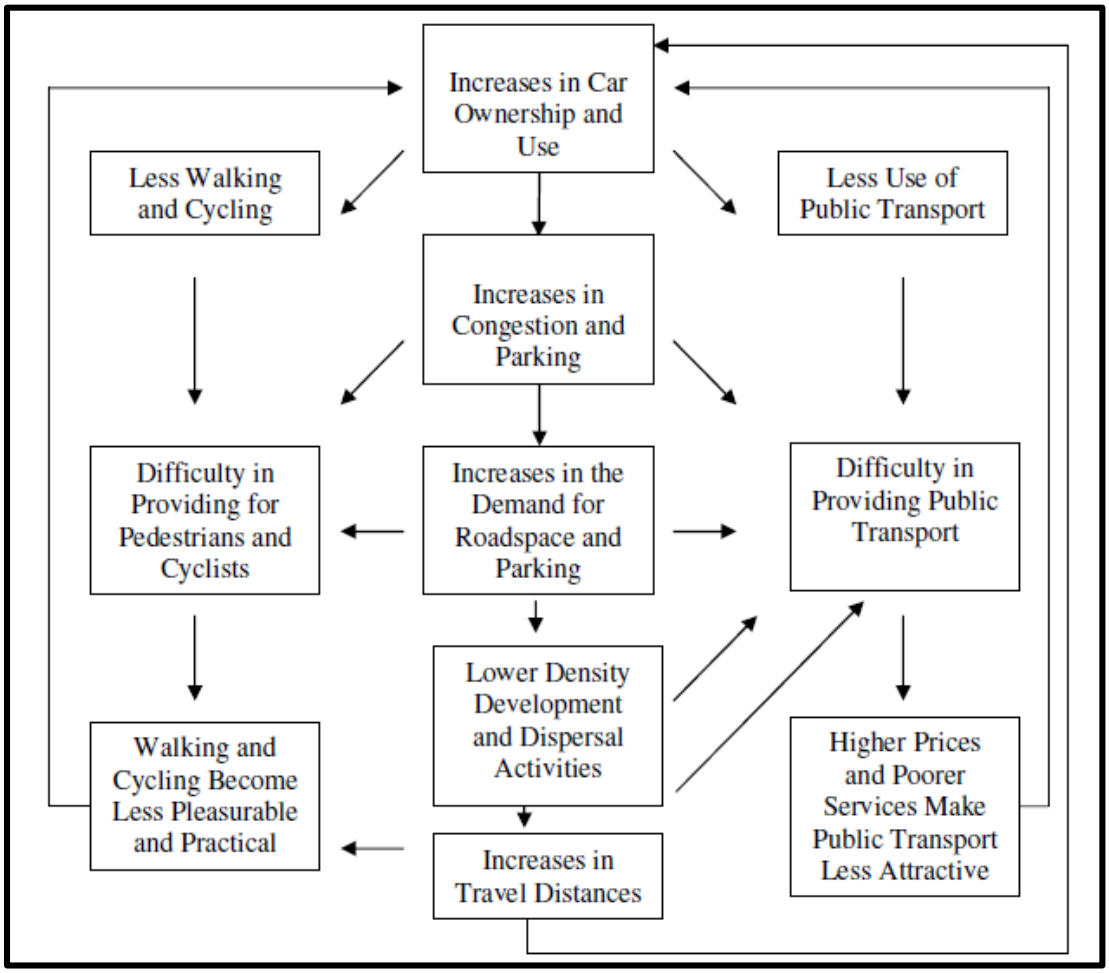

Figure 5: The Interaction of Forces behind Car-Dependency

Source: (Okulu, 2007 (adopted from Stead and Banister, 2001))

2.2. Interaction between Transport and Urban Development in Contemporary Cities

Urban form is defined as a general shape of the urban or region and identity of its main elements. It covers the spatial pattern of land uses (land use types, the degree of land-use mix) and land use characteristics (population density) with the spatial design of transport (transport patterns) and infrastructure provision. Urban forms are generally named according to the spatial distribution and relationships of land uses (concentrated or nucleated) or the structure of the transport networks (grid, radial or linear). For this reason, both urban functions and transport network determine the urban form (Stead et al., 2000).

Snellen et al. (2000) defined six different urban forms which are named as *radial concentric city (1), the lobe city (2), the linear poly-nuclear city (3), the concentric poly-nuclear city (4), the linear city (5) and grid city* (Figure 6).

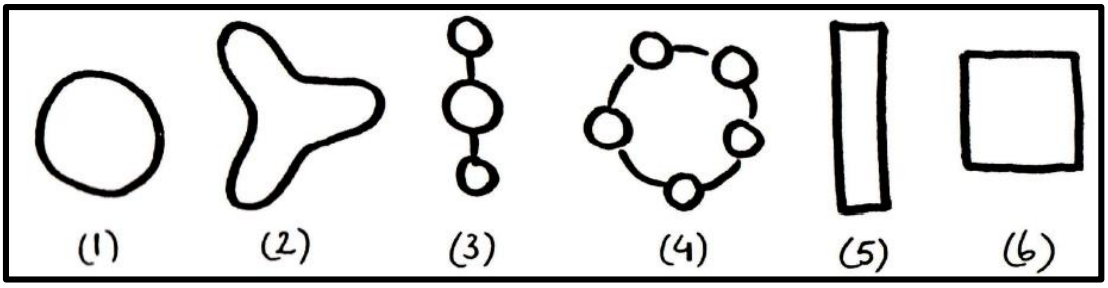

Figure 6: Types of Urban Forms

Source: (Snellen et al., 2000)

Snellen et al. (2000) also identified five transport networks; *the linear network (1), the radial network (2), the ring (3), the grid (4) and the shifted grid (5)* (Figure 7) and according to the their characteristics, these transportation networks can be used for different transportation modes. For example, linear network is useful for metro systems when grid network is effective for bus transport, car usage as well as pedestrian mobility.

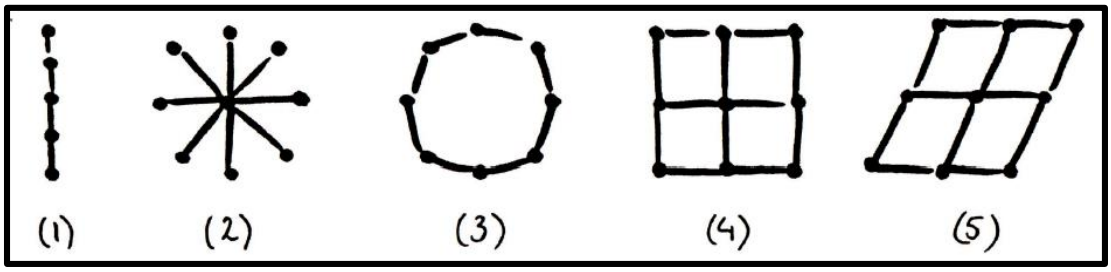

Figure 7: Transportation Network Types

Source: (Snellen et al., 2000)

In addition, Newton (1999) similarly identified some of the alternative urban forms within urban and regional level that are represented in Figure 8. According to Newton (1999), corridor oriented or pearl-chain development structure should generally be preferred on regional transit systems in terms of the distance covered by vehicle, energy consumption and air population. On the other hand, several basic structural options for urban development and these options are briefly described as follows.

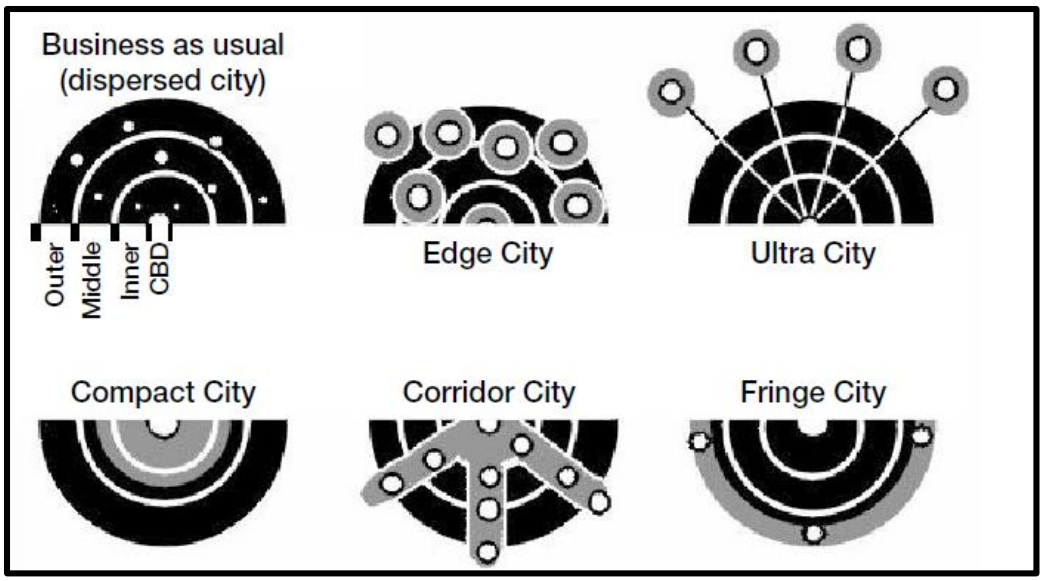

Figure 8: Structural Options for Urban Growth

Source: (Newton, 1999)

- **Dispersed city (business as usual):** This type of urban form is simply an extension of current development practices. It means low density of development with retail and commercial facilities concentrated on vehicle oriented structure by regional nodes (freeways of major arterial roads).

- **Compact city:** This type refer to increased population to the central area with associated investment in public transport.
- **Edge city:** This type refer to growth in population, housing density and employment at selected nodes and especially increased investment in freeways and highways junctions.
- **Corridor city:** In this type of urban form, growth arise along arteries which originate from the central business district and it is supported by public transportation systems.
- **Fringe city:** In this type of urban form, growth predominantly occur on the fringe of city (outskirts).
- **Ultra city:** Growth in regional centers within 100 kilometers of the CBD. From the regional centers to the city heart, high-speed trains support this form. Regional towns are separated from metropolitan area.

Urban space has to provide many different human being requirements like housing, working, social interaction, leisure and mobility of persons and goods. The spatial distribution of these needs and other activities determine the urban transport distance. Both high population density and mixed land use for different activities generate short distance journeys between the origins and destinations. On the other hand, low density development and road based areas create long distance trips and higher share of car usage (Petersen, 2004).

Development of the transport infrastructure and services changes the accessibility pattern and affects spatial distribution of the residential areas and business activities. Thus, these decisions have a significant impact on urban form and structure. When new roads are constructed, traffic congestion temporally eliminate in a certain corridor; however, additional larger trips may cause more traffic in the long run. Figure 9 exemplifies the small settlement at a road junction where a circular road has been added. The new circular road provide a new development with changing investment priorities and initiating new trip relations. This generates more and more trips between suburban areas and city centers. As a result, geographical growth of the city occur and road construction programs will be demanded (Petersen, 2004).

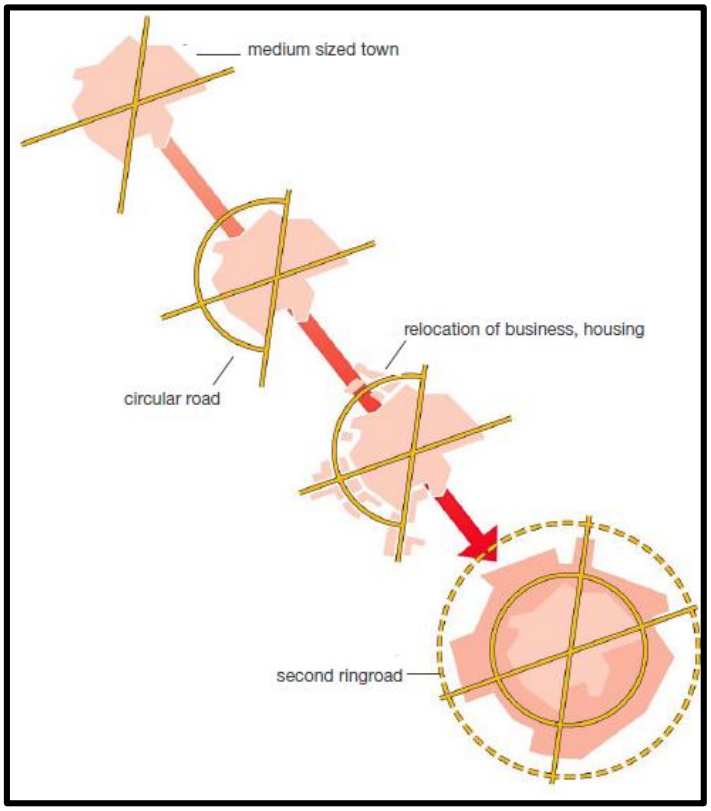

Figure 9: Transportation Network Types

Source: (Petersen, 2004)

Rodrigue (2002) gives examples from United States transport network. In some cases, although centripetal (circular-move towards a city center) road systems may cause denser development, the United States type of centrifugal (move away from city center) transportation network supports urban sprawl (Figure 10).

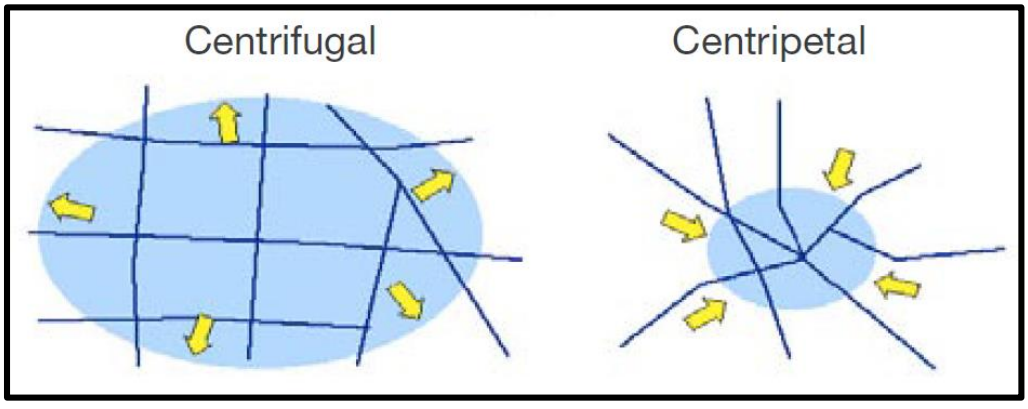

Figure 10: Spatial Effects of Various Road Network Designs

Source: (Rodrigue, 2002)

The interaction between transport infrastructure construction and urban development can be studied on many times especially for motorized countries. As it is clear from these studies, the pattern of settlements are shaped according to the transport services and the kind of the infrastructure built. While rail transportation network support the cluster development around the station, dense road network and usage of motor vehicle trigger the urban sprawl (Ranhagen and Trobeck, 1998). According to Ranhagen and Trobeck (1998), under the low car ownership condition, urban development occur along the main corridor served by buses or rail systems. At longer distance from the city center, development may concentrate like 'pearls on a string' (Figure 11).

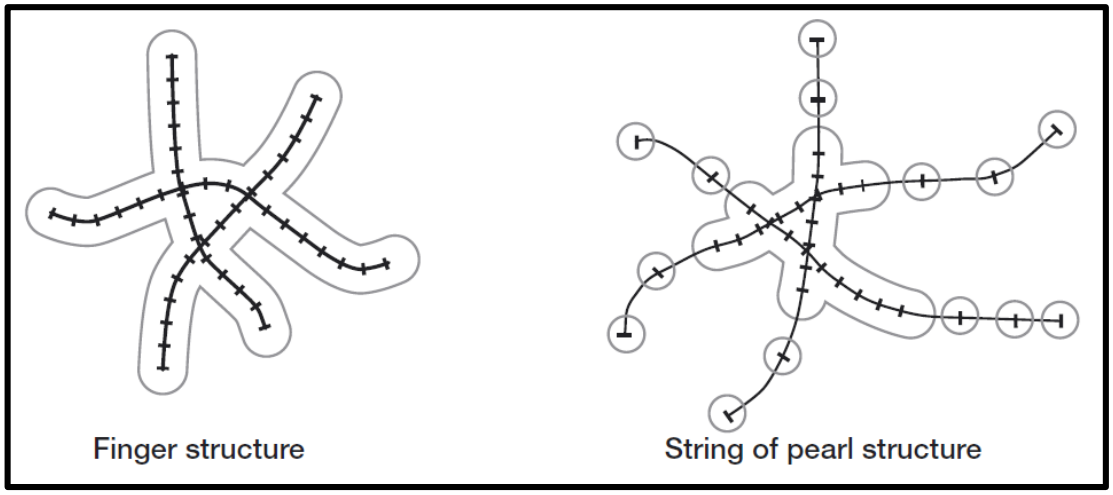

Figure 11: Land Development along Transport Infrastructure

Source: (Ranhagen and Trobeck, 1998)

As a result, interaction between transport and land use has not been effectively reflected to the classical transport planning models that aim to solve traffic problems under existing spatial configurations. For instance, classic models do not consider the market driven choice of the location. Also, transport planning strategies which reveal important relations with income, population increase, economic growth and sectoral dynamics significantly influence the land use patterns. Therefore, there should be detailed analyses made about interaction between land use pattern and transport. Both land use and transport strategies and policies should be evaluated and coordinated with each other at the same time.

2.3. The Need for Integrated Planning of Transport and Urban Development

Transport and urban development are two subjects that are within a reciprocal interaction. Distances between urban activities create the need for transportation; on the other hand, transport technologies have an effect on the urban development and distances between urban activities. It is clear that if two-way relation exists between transport and urban development, transport planning and urban planning should be handled together. Furthermore, transport can be used as an instrument in shaping urban development, and hence it can be an important planning tool for realizing urban plans. Thus, urban development planning and transport planning should be closely coordinated.

2.3.1. Different Urban and Regional Planning Levels and Their Implication on Transport Planning

With the globalization process, significant changes are observed on demographic boundaries particularly in last two decades. The most of the world's population has started to live on periphery of the metropolitan regions. Social, economic and political activities concentrate around 400 widening urbanized areas which have been known as global city-regions (Soja, 2005). Dickinson (1964) states that the modern city is no longer a compact settlement unit but a dispersed city. It is becoming the headquarters of a group of interrelated towns and satellite settlements. This close interrelationship between widely scattered places forms an integrated functional unit with sub-centers and with its core. This general spatial structure of the modern society is called as city-region. Therefore, it is crucial that linkage between transport and urban development should be started to coordinate on regional level.

Effective growth management in large urbanized areas also begins from a regional perspective. Modern metropolitan regions may cover various previously independent cities which have expanded together. They might include rapidly growing and sprawling periphery lands which produce lots of incoming traffic. Traffic patterns may be remarkably complicated with growing number of journeys between suburban centers. For all these reasons, it is important to examine metropolitan region as a whole and plan where future growth should be focused and where new public transport

supply can relieve congestion on major roads. Therefore, planning policies should be managed on national, regional and local levels and these policies usually set priorities for growth strategies (Broaddus et al., 2009).

The aim of the land use planning is to provide a spatial framework within which development takes place. Although land use issue are fundamentally perceived as a local issues, it needs to be supported and guided by national and provincial strategies and resources. For these reasons, decisions about the land use and transport must be considered at regional, municipality and district levels (Peterson, 2004).

According to the principle of subsidiarity, details of the planning must be determined upon the lowest level as possible due to the better familiarity with problems. Nevertheless, these decisions have to correspond to the national and regional decisions and priorities. In this context, vertical integration of different planning levels is indicated on Figure 12. According to the organizational perspective, the pyramid additionally demonstrate the information transfer top-down and bottom-up with the practical links between levels in the mapping procedures. The lower level plans are directed based upon the frame that are drawn by upper scale plans. On the other hand, from the lower scale plans, feedbacks are provided to the upper scale plans (Peterson, 2004).

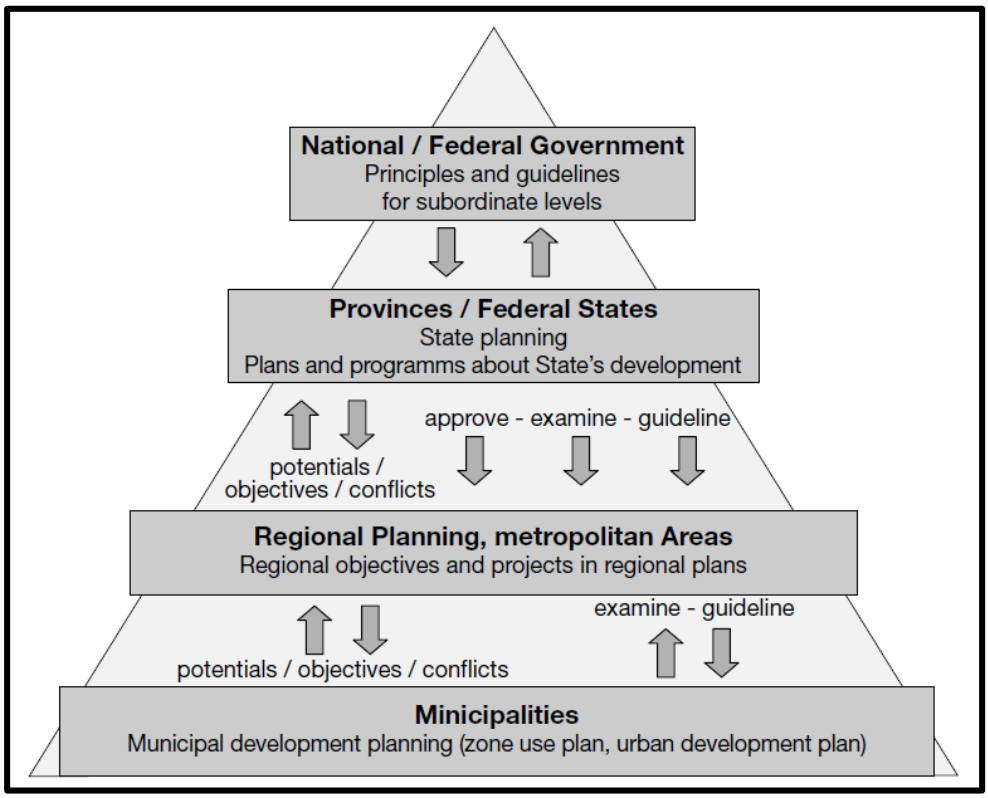

Figure 12: Vertical Integration of Different Planning Levels

Source: (Petersen, 2004)

According to the link between land use and transport, close cooperation between the responsible bodies is crucial. Development of cities might have caused the establishments of metropolitan authorities between the municipal and the provincial level. Hence, Petersen (2004) indicated that diverse legal provision can be found for these bodies, ranging from the status of informal commissions providing only a platform for exchange of views, up to complete administrative levels with a clearly defined mandate for decision making.

According to Mori (2000), cooperation between the different hierarchical levels must be provided that are based on the principle of 'counter-current'. For example, planning decisions on urban district level should be taken in with respect to the upper level (the municipality) and permission must be obtained from the upper to the lower level. The same situation prevail with the land use planning on municipal level towards the regional planning mechanism. If the municipal urban development plan correspond to the regional development schema, it means that planning decisions is guaranteed by the regional authorities. For regional planning, guidance will be given by spatial

planning from the provincial level and so on. Figure 13 indicates the principle of overlaying of different land uses in urban planning. Therefore, transport and other infrastructure decisions should be taken in accordance to all these processes to avoid frictions, bottlenecks and economic loses.

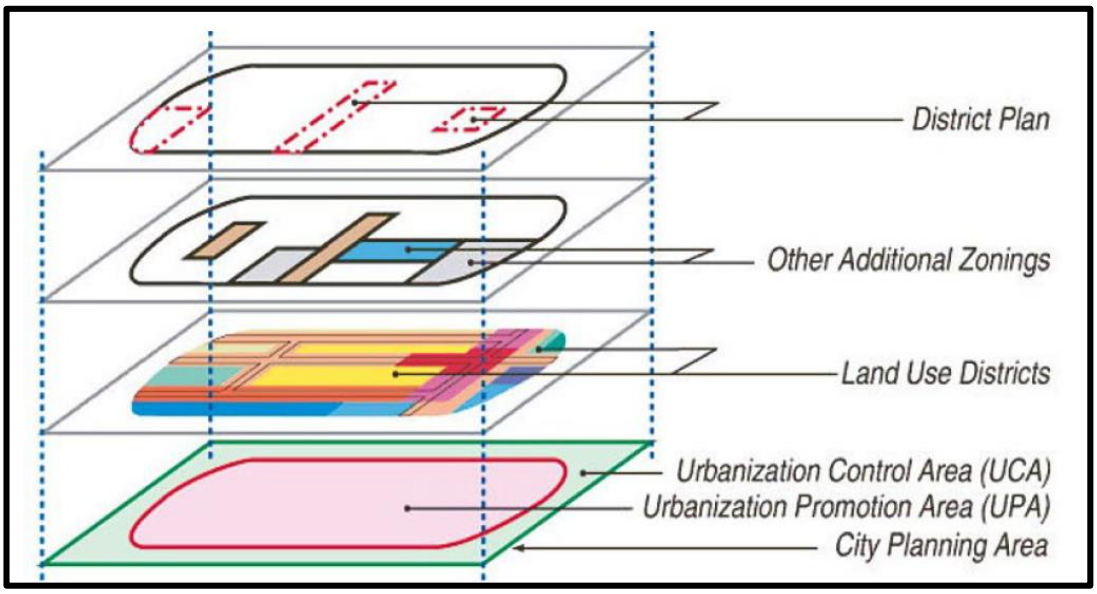

Figure 13: Concept of a Land Use Planning System: Overlay of Land Use

Source: (Mori, 2000)

As a result, transport planning decisions and land use planning principles should be coordinated in order to direct the spatial development within these types of development structure. Dispersed urban and regional development causes the investment priority for roads and weak land use interaction. For instance, European and Japanese strong planning structure relatively prevent cities and regions from disperse way of development when they are compared with the US cities. Thus, not only spatial development direct the urban growth but also infrastructure and transport investments influence it (Petersen, 2004).

2.3.2. Transport Investments as an Instrument for Realizing Urban Development Strategies

As it is mentioned in the previous historical perspective part, transport technologies and investments remarkably influence urban macro form, and hence transport can be used as a tool for realizing urban plans. Especially, public transport systems are very

important and they can be used as an instrument in order to shape urban development. This part mainly focuses on how public transport systems can be used for realizing urban development strategies.

Public transport is a form of urban transport and it is a kind of public services that offered to citizens. It is planned by the national or local institutions to meet the travel needs in urban areas and served as an urban transport services (Sutcliffe-Babalık, 2012). The interest on public transport for daily urban access has significantly increased after the oil crisis in the early 1970s and people started to prefer public transport more, instead of their private car. Many new generation public transportation systems such as heavy rail systems (metro), light rail systems (LRT) and bus rapid transit systems (BRT) have been built in the world in order to meet the demand for mobility (Erçetin, 2014). Babalık-Sutcliffe (2002) states that in the past three decades, a total of 139 new urban rail systems, metros and light rail transit (LRT) systems have been built into the worldwide. In general, these systems were planned as a tool for solving transport, land-use and environmental problems associated with the extensive use of the automobile.

Public transportation systems are effective instruments in planning and realization of urban plans. Tolley and Turton (1995) stated that *construction of railways and new roads in cities also influenced the morphology of the urban area, these routes often acting as barriers to growth and as physical boundaries to communities.* Figure 14 shows the effects of different modes of public transportation systems on urban pattern. A high-capacity public transport corridor can encourage the linear urban form and new rail lines radiating from the city center can support radial urban form or finger plan. Also, new residential and suburban areas can be developed around stations of new public transport systems (Tolley and Turton, 1995).

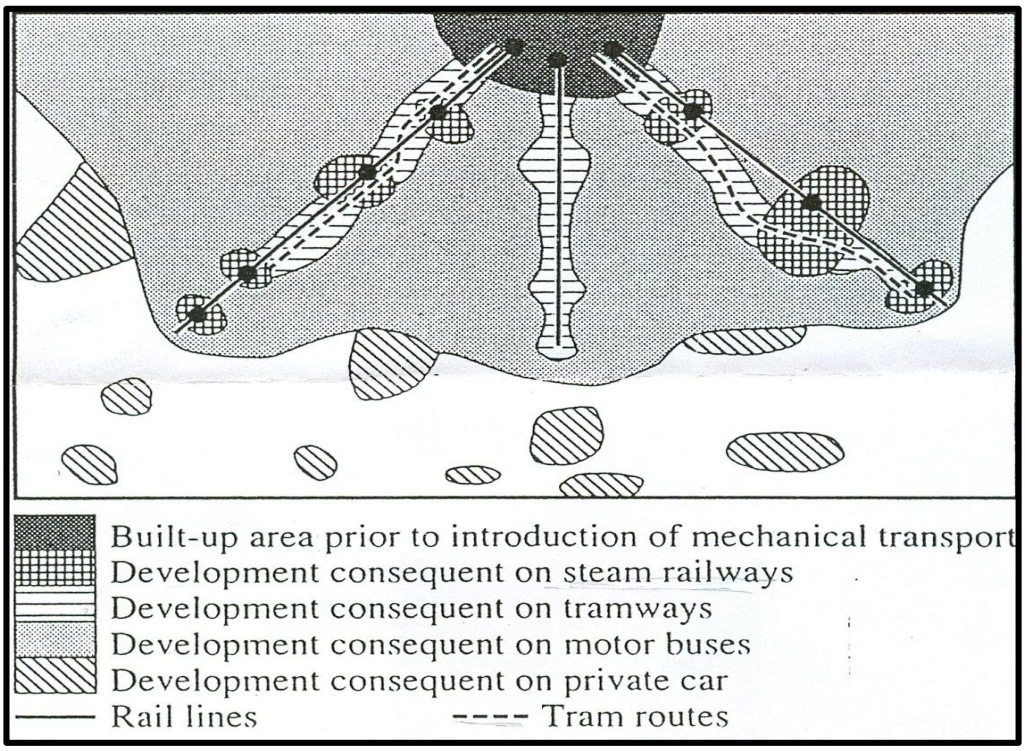

Figure 14: Effects of Different Modes of Public Transportation Systems on Urban Pattern

Source: (Tolley and Turton, 1995)

In addition, the following Figure 15 which is based on the spatial structure and transport network of Ankara is a typical urban public transport network scheme for cities. It is reveal that travel demand has continuously increasing when close to the city center. Travel demand on urban periphery is lower but public transport lines collect the passengers on the main arteries and concentration has increased on the certain corridors. Thus, the highest mode of transportation systems must be provided for the main corridors of the cities (Sutcliffe-Babalık, 2012).

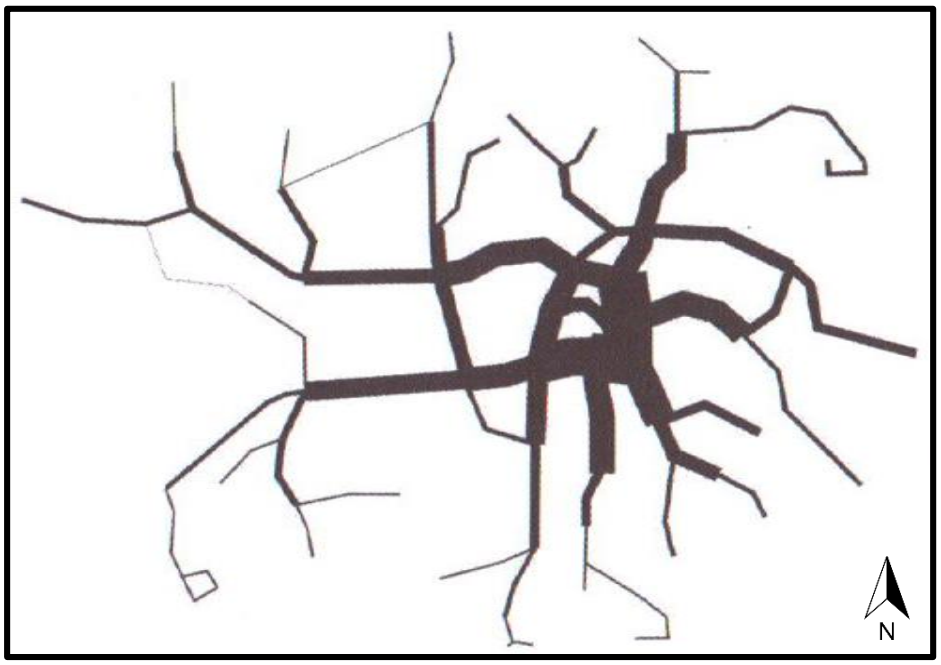

Figure 15: Transport Network Scheme of Ankara

Source: (Sutcliffe-Babalık, 2012)

2.3.2.1. Road & Hıghway Investments and Their Impact on Urban Development

In many cities, new development areas were generally effected from motor vehicle usage and new development areas were effected from road and highway investments (Kılınçaslan, 2012). Households and commercial enterprises choose to move out of rural areas where new motorway investments triggered agglomeration, and they settled along motorways because of the easily and cheaper accessible land (Petersen, 2004). Much of this suburban growth has rapidly turn to motorway corridors. Figure 16 displays the typical land use development along the Interstate-494 corridor south of Minneapolis, US, between 1953 and 1976 years (Müller, 1997).

Especially after the 1980s, shopping centers were decentralized and they established on road and highway junctions that were where easy to reach by private car. Also, in the 1990s, business facilities and offices had left from central business districts and located on outside of the city center where it was easy to reach by private car. Therefore, these developments had supported the less dense urban growth and urban sprawl (Tekeli et al., 2006).

Furthermore, Cervero (2001) point out that;

> *the problems people associate with roads - congestion, air pollution, and the like - are not the fault of road investments. These problems stem mainly from the unborne externalities from the use of roads, new and old alike. They also stem from the absence of thoughtful and integrated land use planning and growth management around new interchanges and along new corridors.*

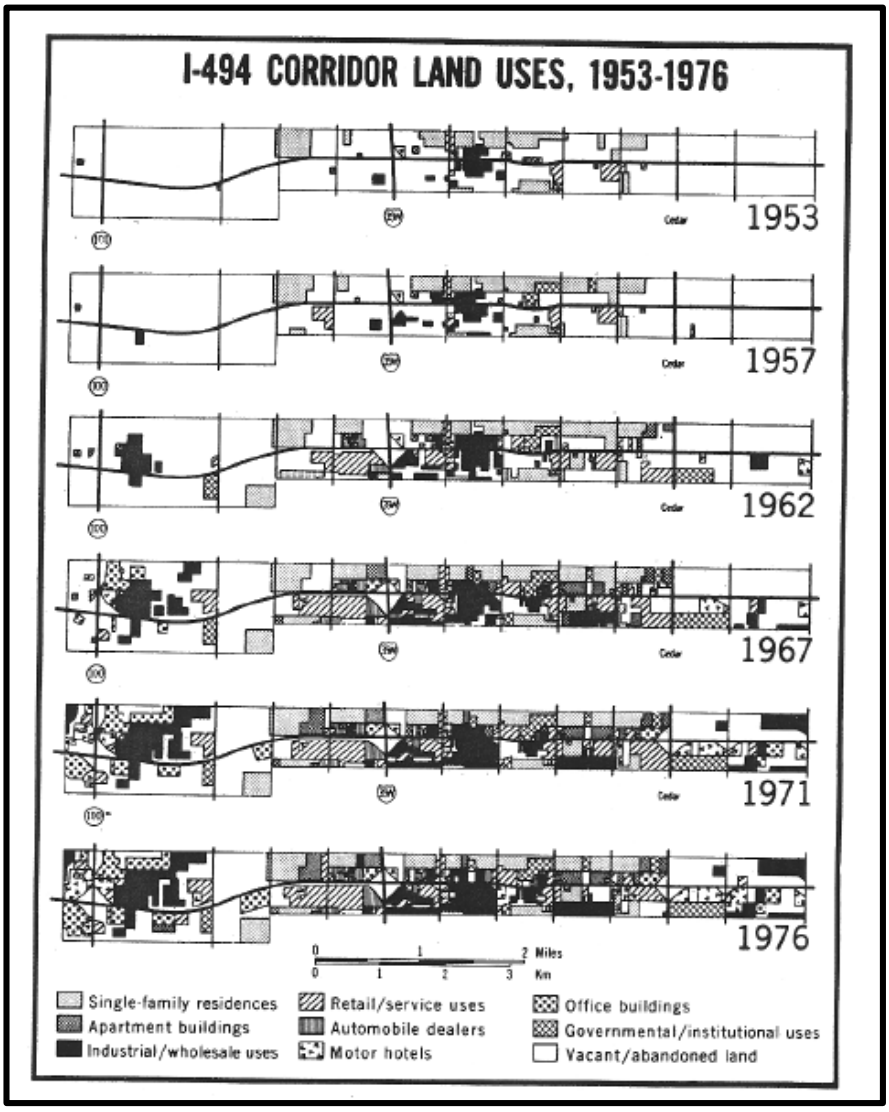

Figure 16: Land Use Change in the Interstate-494 Corridor South of Minneapolis

Source: (Müller, 1997)

2.3.2.2. Heavy Rail Investments and Their Impact on Urban Development

Because rail investments create a fixed infrastructure, they have long-lasting effects on urban form and development. According to Grava (2002), the network of the heavy rail transit take in many forms of the cities and each of them has been generated specifically for cities. Urban macro form is shaped according to the heavy rail transit network and some main structure concepts can be identified as follow.

- ***Single lines*** are generally seen as the first phase of a larger network. They generate the local public transportation spine with the feeder and distributor links. Hence, it is possible that metro system within single line can create a linear urban form.

- ***Radial network*** is the widespread type of structure and generally developed step by step in time by adding the lines oriented to the traditional CBD. All the lines come together at a single nodes which is generally on city center. For instance, radial network can generate finger planned urban macro form like Copenhagen which will be examined in detail in the next chapter.

- ***A grid system*** with multiple parallel lines crossing the each other at many points. The system provide good access to many districts and efficient transfers. Many large heavy rail networks have applied on this structure.

- ***Circle line*** structure operates well especially in high density situations. It distributes the passengers efficiently to their destinations without delaying and serves a large business core with internal linkage and interconnects long-distance terminals.

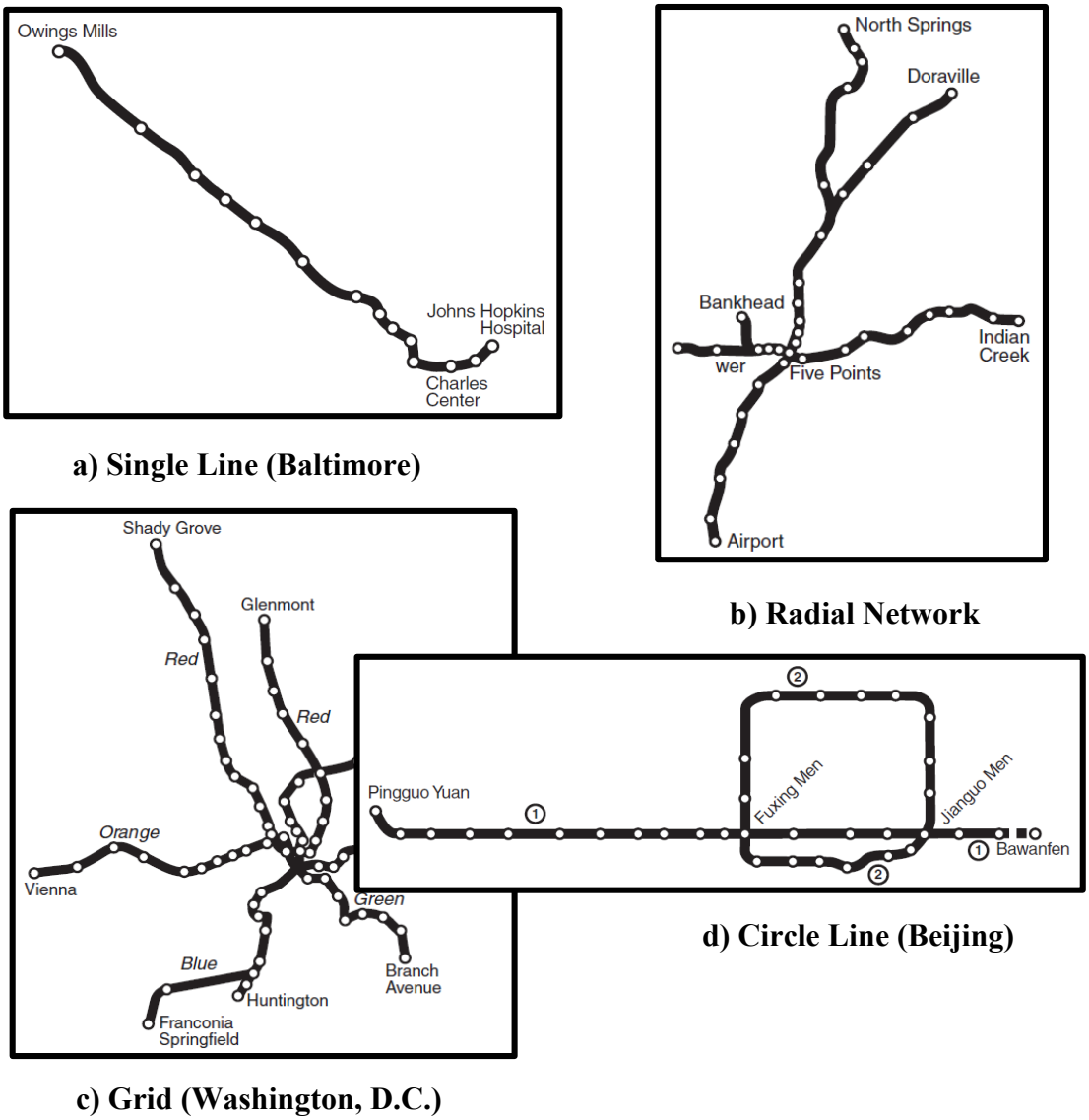

Figure 17: Some General Structural Concepts of Heavy Rail Transit Network

Source: (Grava, 2002)

Implementation of heavy rail systems requires high investment cost and extensive construction. Most cities use metro system constructions as a change for rebuilding of the corridors and plazas, offices or commercial facilities are developed on the corridors. Also, they have a strong and permanent impact on mobility of population, urban macro form and city's livability (Vuchic, 2007).

Metro systems are important in terms of the efficiency of urban patterns and they have ability to influence and shape different land-uses and activity locations. Metro stations

are the main point of the access and they make a difference in the real estate market. Therefore, development is generally attracted to the vicinity and it create high density development along the lines in order to take an advantages of the transportation service. Building such a transit systems are a commitment toward a concentrated urban environment with strong nodes and emphasized corridors (Grava, 2002).

2.3.2.3. LRT Investments and Their Impact on Urban Development

In the early 1970s, the concept of Light Rail Transit (LRT) emerged with the development of the existing tram systems in Europe. Nowadays, it is the fastest-growing rail transit mode in many countries. (Grava, 2002). LRT systems have a lower capacity than Heavy Rail Transit (Metro) systems and they are more flexible than metro systems. However, it does not mean that LRT systems are less effective on land use and urban development.

Cervero (1984) mentioned that LRT as a strategy for implementing a rapid transit system in an urban environment can have an effect on urban growth, land use, intensification and revitalization. Also, significant impacts and stimulated economic benefits occur when a system is planned with policies and complementary land-use strategies in place. Hence, LRT systems can be used as tools especially in the planning of new development areas or depression area of the cities.

For instance, in city of St. Louis (USA), LRT system that opened in 1993 is a good example for this approach. When city center of St. Louis were losing its economic functions and becoming an economically depressed area, Clayton Region was shaped as a new and powerful sub-center. Although, Clayton appeared as a primary spot for transit investment in terms of travel demand, LRT investment was made on city center. This was because planning authorities of the St. Louis estimated that if Clayton Region was connected with the rail system, the declining of the city center would accelerate and could never be prevented. By this way, as it is seen in Figure 18, red and purple rail lines were constructed and connected the workplace, university and airport to the city center. Also, existing rail infrastructure was used and construction cost was minimized. At the same time, extensive renovation and rehabilitation projects were followed in city center and economic facilities increased with the opening of the rail

systems. After 13 years, the second part of the LRT system (blue line on Figure 18) that serves to the Clayton Region started to operate in 2006. In this respect, it can be inferred that mass transit systems is not only used for meeting travel demand but also used for orienting the travel demand and it is an important tool for urban planning (Sutcliffe-Babalık, 2012).

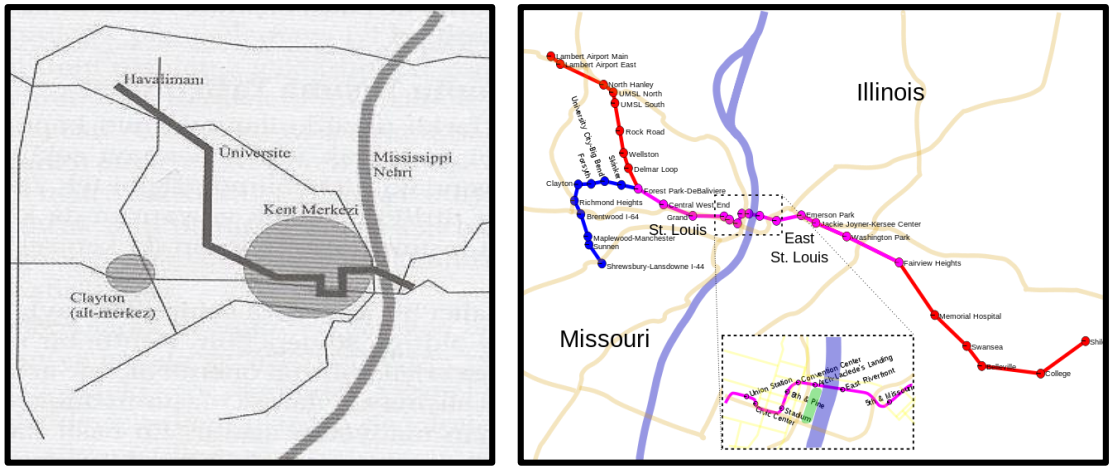

Figure 18: The First Planned Line of the LRT System (1993) and Existing Rail Lines in St. Louis

Source: (Sutcliffe-Babalık, 2012 and Wikipedia, 2015)

Therefore, the implementation of an LRT systems influence the investments in cities. These systems can affect the creation of new residential, business and commercial facilities. Cities who have successfully implemented LRT systems generate development of new residential and commercial areas and increased employment nodes. In addition, investment in LRT has the potential to revitalize declining downtown cores (Cervero, 1984).

LRT systems have the ability to develop the land and the physical suitability of the land around stations influence positive land use changes. It is important that when LRT corridors are designed, they not only minimize construction costs but also have potential for new developments. For these reasons, these situations should be taken into consideration when alignments and corridors are chosen (Vuchic, 2007).

In addition, the impact of light rail transit on accessibility is important and they can be used for increasing density on particular corridors. For example, in Canada, Calgary's

LRT system, C-Train, was implemented as a tool for encouraging intensification of densities and land use development along their chosen corridors. The C-Train has contributed significant benefits to the city's urban form, especially in the downtown, due to their commitment to the consolidation of land use, roadway and transit planning. Calgary's successful light rail system arise from their vision of an integrated policy solutions and existing economic complementary forces (Grava, 2002).

Figure 19: Calgary LRT Service along the Center Of Downtown Streets with Elevated Stations

Source: (Grava, 2002)

2.3.2.4. Bus & BRT Investments and Their Impact on Urban Development

Bus systems are flexible transportation modes that do not have fixed and permanent infrastructure. Generally, they are considered to have limited impact on urban development Black (1995). Moreover, it is often claimed that they cannot influence urban macro form and cannot be used as an instrument for realizing urban development. On the other hand, BRT systems have exclusive bus lanes that almost create a permanent infrastructure. Furthermore, construction and maintenance cost of the BRT systems are lower than the metro or light rail system investments. BRT investment systems have a growing popularity in recent years and gain more attention

in cities to develop new means of rapid transit and hence they are used as an important instrument for realizing urban plans.

According to Cervero and Kang (2011), urban properties respond positively to transportation improvements. This situation produce higher property values and if zoning allows, land-use intensification occur. In the short term, benefits of transportation infrastructure investments get capitalized in land values, while over the longer term, land uses may change. There are many examples prove that land values has increase and land use patterns has change with the increasing of accessibility especially by rail systems. Also, conventional wisdom thought that even though BRT systems improve accessibility to the same degree with the rail systems, they would not influence urban development as well as the rail systems because of their temporary infrastructure. However, Cervero and Kang (2011) emphasized that BRT systems with segregated bus lanes, enclosed stations and high-capacity buses have potential to influence property values and land uses.

The new transportation corridor generally get capitalized into land values. Residents and businesses are willing to pay a premium for being closer to transit stations because of the reductions in travel time and the improvements in quality of service (Carrigan et al., 2014). For instance, Cervero and Kang (2011) stated that new BRT services produced highly localized land value premiums in Seoul, Korea. Land markets capitalized the BRT's accessibility benefits particularly for higher-density residential uses. Residences within 300 meters of the BRT stations experienced land price premiums of 5 to 10 percent. Also, retail and other non-residential uses within 150 m of the BRT stations benefitted from premiums of 3 to 25 percent.

BRT systems have power to change land uses or density especially around the stations and along the corridors. With the existing travel demand on a corridor, BRT encourage the higher-density (Carrigan et al., 2014). According to Cervero and Kang (2011), higher-density residential land uses formed with the new BRT services in Seoul. After implementation BRT corridor, parcels within half a kilometer of a BRT stop had become more intensive land uses. Land use conversion was from single family to multi-family residential uses within 400 meters of a BRT stations.

2.3.2.5. Regional Rail Investments and Their Impact on Urban Development

There is an increasing need to provide effective regional transit systems because cities grow into metropolitan areas with the city region concept (Grava, 2002). Regional rail systems are still the most efficient way to move large volumes of people over the long distances with the high speed (Vuchic, 2007).

Regional rail systems operate for regional passenger running through the city center and they provide better coverage than commuter lines. With the growth of polycentric urban areas, the demand for high-performance transit networks are required. Although, these polycentric links generally provided by buses, some cities increase their interest for upgrading rail systems (Vuchic, 2007).

Banister (1995) stated that;

> *consistent with the location theory, regional rail systems have been a force toward decentralization of both population and employment. Inter-city comparisons with control cities without regional rail suggest these rail investments probably had some clustering effects, leading to perhaps a more polycentric metropolitan form than would have existed had would have existed had any of these rail transit systems not been built.*

2.4. Summary

In this chapter, the concept of link between transport and urban development was described in order to provide a better understanding of the reciprocal relation between these two areas. Within a historical framework, walking, transit, and automobile city concepts were examined in terms of understanding how transport technologies shaped urban development. Moreover, the need for coordinated planning of transport and urban development in contemporary cities was clarified and it was emphasized that linkage between transport and urban development should be started at the regional level. It was also highlighted that transport is as an important tool in shaping urban development and in helping realize urban development plans. In this respect,

especially, public transport systems can be used as an effective instrument. The chapter highlights the need for integrating urban development plans and transport plans, and hence the need for coordinated planning in these two areas that are in constant interaction with each other. The following chapter, which presents the world examples (Copenhagen / DENMARK, Curitiba / BRAZIL, SINGAPORE, Ahmedabad / INDIA, and Bogota / COLOMBIA), describes in further detail about how public transport systems can be used as an important instrument within integrated and coordinated planning approach.

CHAPTER 3

3. TRANSPORT AND URBAN DEVELOPMENT INTEGRATION EXAMPLES FROM DIFFERENT PARTS OF THE WORLD

In this section, transport and urban development integration issue is examined from different parts of the world. According to Suzuki et al. (2013), best examples (Copenhagen-DENMARK, Curitiba-BRAZIL, and Singapore) of transport and land use integration have a cogent land use vision that shaped regional transport investments. Transport is one of several important tools used to make urban visions a reality. Cities like Copenhagen and Singapore have benefited from strong regional visions and high capacity of transport investments produce desired urban form outcomes in these cities. In addition, Curitiba is often referred to as a good practice because of its success in integration of its BRT system and urban development (Cervero, 1998).

In addition, Ahmedabad-INDIA and Bogota-COLOMBIA recognized the importance of the integration between transport and urban development especially after 2000s and they are trying to shape urban development in accordance to the urban transport. Their experiences are crucial in terms of their opportunities and challenges arisen from the integration between transport and urban development (Suzuki et al., 2013). Furthermore, both cities have many similarities with Gaziantep case study. Ahmedabad, Bogota and Gaziantep are industrial and commercial base cities and because of their strategic location, they continue to attract significant numbers of businesses, investments and new residents. Hence, they are exposed to rapid urban expansion and aim to overcome motorization trend, traffic congestion and uncoordinated transport and urban development.

3.1. Copenhagen / DENMARK

Greater Copenhagen Region is located at the eastern part of Denmark, on the Sjaelland Island with almost 2 million population (Figure 20). The region plays an important role among the Nordic countries and it is seen as a natural gateway to the Baltic counties (Norway, Sweden and Finland) from the mainland of Europe (Chew, 2005). Copenhagen is the capital and most populated city of Denmark with a more than 540.000 city population. It is estimated that the City of Copenhagen will grow with approximately 100.000 more inhabitants by 2025 (Wikipedia, 2014).

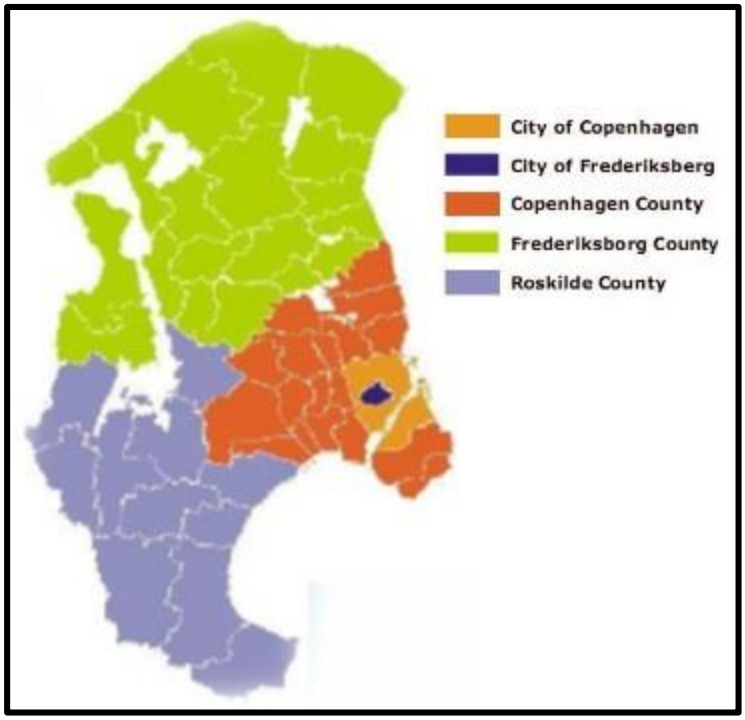

Figure 20: Map of the Greater Copenhagen Region

Source: (Chew, 2005)

In Copenhagen, the famous Finger Plan was established at 1947 (Figure 21). The plan proposed a regional form in order to control urban and suburban growth. Under the guidance of a regional planning body, urban areas were developed along the linear corridors which are linked by transport and extend like fingers from the center of the city. Thus, green areas which are located between the urban corridors are protected from urban sprawling (Cahasan and Clark, 2005).

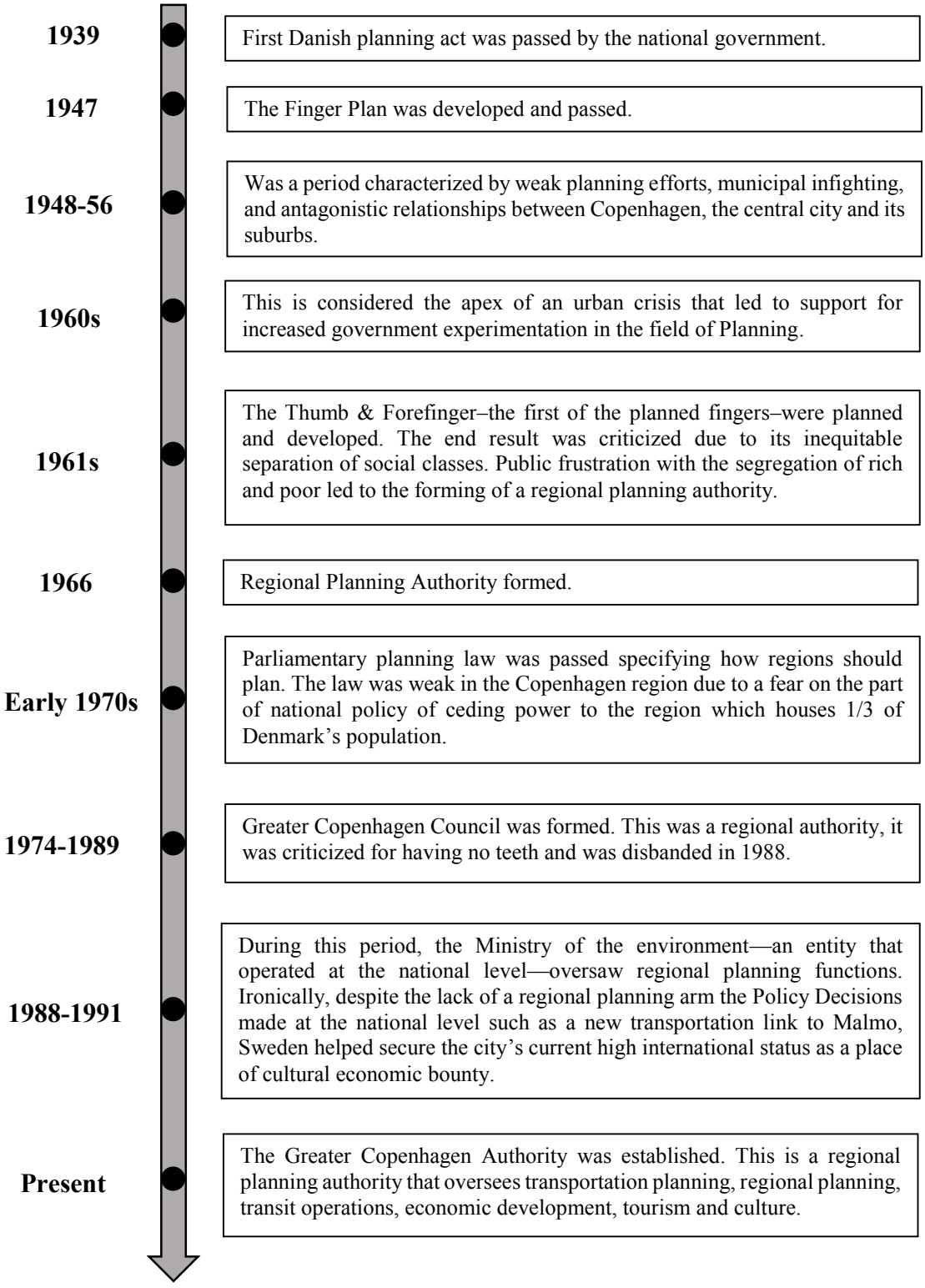

Figure 21: Planning Timeline in Copenhagen

Source: (Jorgensen, 2008)

In the early 1970s, Copenhagen city center suffered from pressure with the rapid development of the city center. The demand of sub-centers and single family housing was increasing. Therefore, a new regional plan was started to apply in 1989. It was realized that the fingers had grown out of proportions, leading to urban sprawl and traffic congestion (Cahasan and Clark, 2005).

Furthermore, it was necessary to intensify the existing built-up areas and design more densely. At the same time, urban plans stated that every sub-center should be built on a transport interchange and the workplaces, services and facilities should densely locate at these transport interchanges or terminals. This approach was named as proximity to station on new regional plan (Jorgensen, 2008).

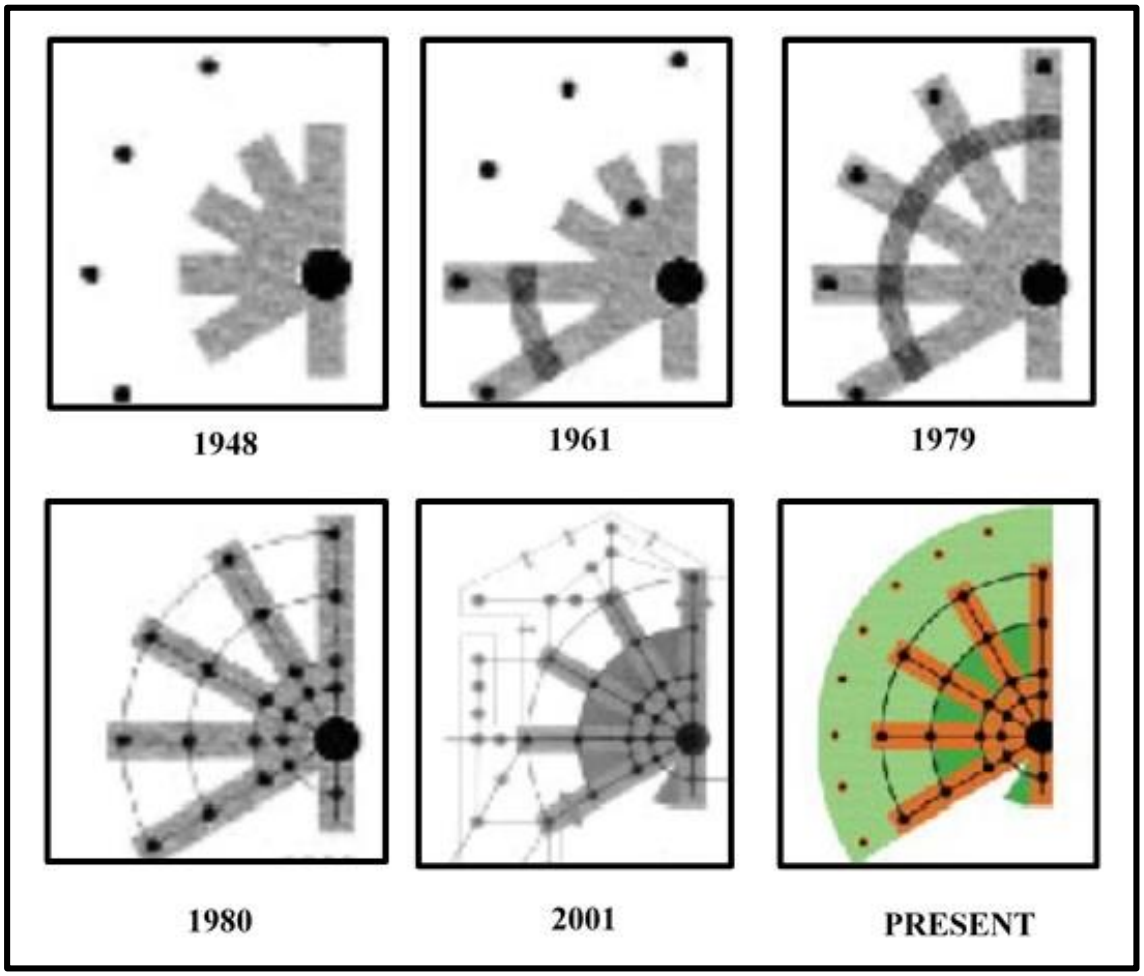

Figure 22: Evaluation of Finger Structure Development Process

Source: (Jorgensen, 2008)

Finger Plan which significantly orient development of the region still determines the framework for urban and transportation development. All the municipal planning in Copenhagen region is abided by the plan. Major towns outside of the Copenhagen city are settled along the fingers which are connected public transportation. The fingers end at five provincial towns which are 30-40 km. away from the Copenhagen city center. Various secondary centers developed along the radial railway lines (Lu, 2010).

Cervero (1998) stated that,

> *a textbook example of long-range planning visions shaping rail investments, which in turn shaped urban growth, comes from Copenhagen, with its celebrated "finger plan". Early in the planning process, planners identified corridors for channeling overspill growth from the urban centers. Rail infrastructure was built, often in advance of demand, to steer growth along desired growth axes. Greenbelt wedges set aside as agricultural preserves, open space, and natural habitats were designated and major infrastructure directed away from districts with these features. The evolution of Copenhagen from a Finger Plan, to a directed rail-investment program along defined growth axes, to a finger-like urbanization patterns is revealed by Figure 23.*

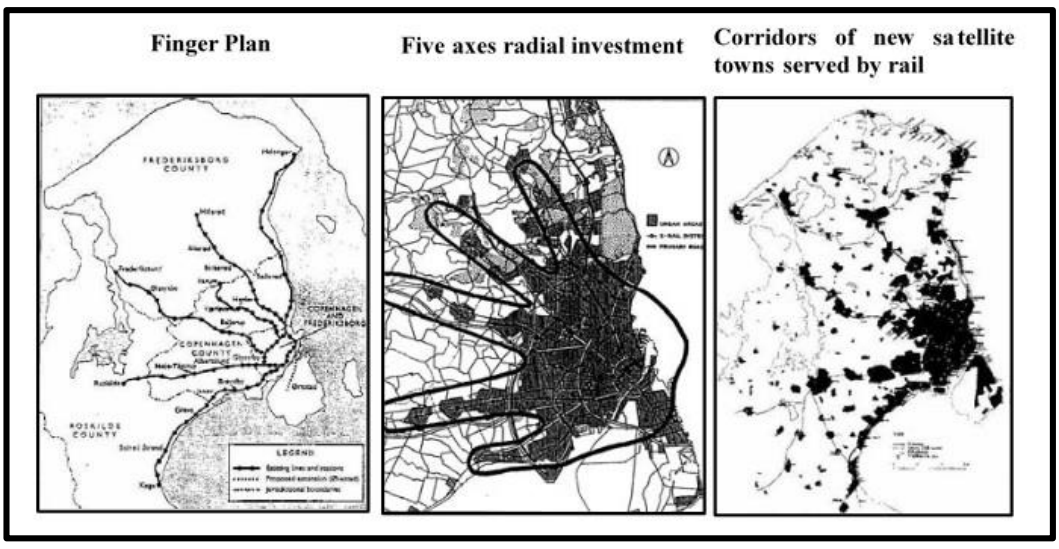

Figure 23: Evaluation of Copenhagen's 'Transit First' Plan

Source: (Cervero, 1998)

New towns which located on periphery of Copenhagen are designed bike and pedestrian friendly. They generally have 10.000-30.000 population and are laced by greenways. Half of the resident who lives in planned new towns use train for going to work and four out of five walk, bike or take a bus (Cervero, 1998). In addition, the car usage is limited by increasing parking fee and decreasing the number of parking spaces in the city center. Walking, cycling and public transport are encouraged with creating more pedestrians, cycling paths and public transport modes (Nielsen, 2002).

Jorgensen (2008) mentioned that the main principle of the Finger Plan was that the layer-upon-layer growth should stop and that most of the future city should develop in narrow town fingers along existing and future railways. Therefore, the plan creates advantages for developing public transportation. It is also helpful to the future urban plans especially those of municipalities in the region (Lu, 2010).

According to Lu (2010), the main contents of Finger Plan are;

- establish the network of radial road
- urban development should be along finger corridors and followed by the network of suburban railways
- green space should be preserved between the radial fingers.

To summarize, Copenhagen can be identified as one of the good examples in the world with its integrated planning which coordinates transportation, urban, metropolitan, and regional plans. The plan of the Copenhagen is abstracted as a conceptual scheme like five fingers of a hand which proposed development along the five corridors. Also, these corridors are supported by regional rail systems in order to help realize the Finger Plan macro form (Sutcliffe-Babalık, 2012).

3.2. Curitiba / BRAZIL

Curitiba is the capital city of the State of Parana in Southern Brazil (Figure 24). The city population was approximately 1.760.500 people in 2010, making it the eighth most populous city in the country and the largest in Brazil's South Region (Wikipedia, 2014). Curitiba population rapidly increased with the rate of approximately 4% per year during the 1960s to early 1980s. Although a city plan of Curitiba had been prepared in the middle of the 1940s, the plan could not meet the expectations because of tremendous migration and economic growth (Lindau et al., 2013).

Figure 24: Location of Curitiba

Source: (http://www.grida.no/graphicslib/detail/curitiba-location_cb48, 2014)

Curitiba prepared a Preliminary Urban Development Plan in 1964. After two years, Curitiba Master Plan was prepared for guiding city development for the next 30 years. In 1966, Institute for Research and Urban Planning of Curitiba (IPPUC) was established for monitoring master plan, conducting regional growth and was charged with ensuring integration of all elements of urban growth. In 2004, Curitiba Master

Plan was revised and it aims to maintain linear development along the corridors on metropolitan level (Lindau et al., 2013) (Figure 25).

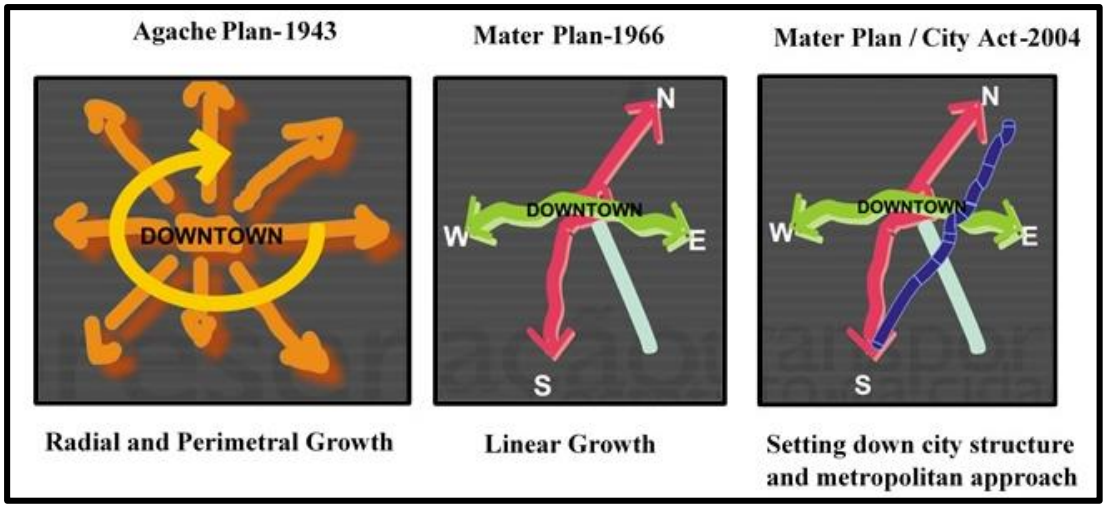

Figure 25: Curitiba Planning Process

Source: (Vallicelli and Twardowski, 2012)

According to Cervero (1998), there were three key periods in the history of Curitiba planning.

- **1943 – 1970**: Planning principles and vision was generated.
- **1972 – 1988**: Planning decisions that led to the consolidation of a city wide integrated bus transit system.
- **1988 – Today**: Metropolitan expansion and improvements in the integrated bus transit system.

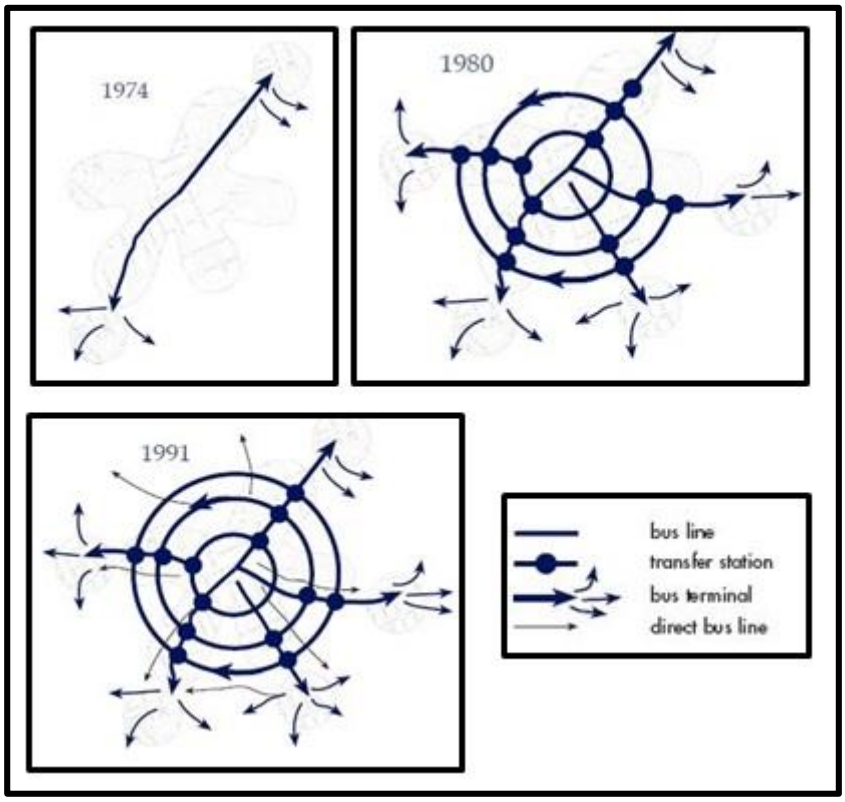

Figure 26: Evaluation of Curitiba's Integrated Transport Systems

Source: (Rabinovitch, 1993)

Actually, a LRT system was proposed to be developed when Curitiba's population was 400.000 in the 1970s. However, it was estimated that investment on LRT system was not feasible because of the high capital costs. Instead, IPPUC evaluated BRT system and nowadays, it is known as the first fully integrated and one of the most effective transport systems in the world (Cervero, 1998).

Suzuki et al. (2013) mentioned that Curitiba is one of the world's most sustainable, well-planned cities, in large part because of its success at integrating BRT investments and urban development. Plans intended to promote a linear urban growth by integrating with public transport along the structural axes. Urban growth was oriented along bus-served linear axes with transit first policy. Moreover, Curitiba government encourage all medium and large-scale urban development along the BRT corridors to provide transit-oriented development.

In Curitiba, each of the structural axes was developed as a trinary system (Figure 28). Three parallel roads are designed for coordinating land uses and building heights (density) that taper with distance from the BRT corridor (Suzuki et al., 2013). As it is seen in Figure 27, on the central road, mixed land uses (commercial, business and residential) are located and the density gradually decrease with the distance from the main axes.

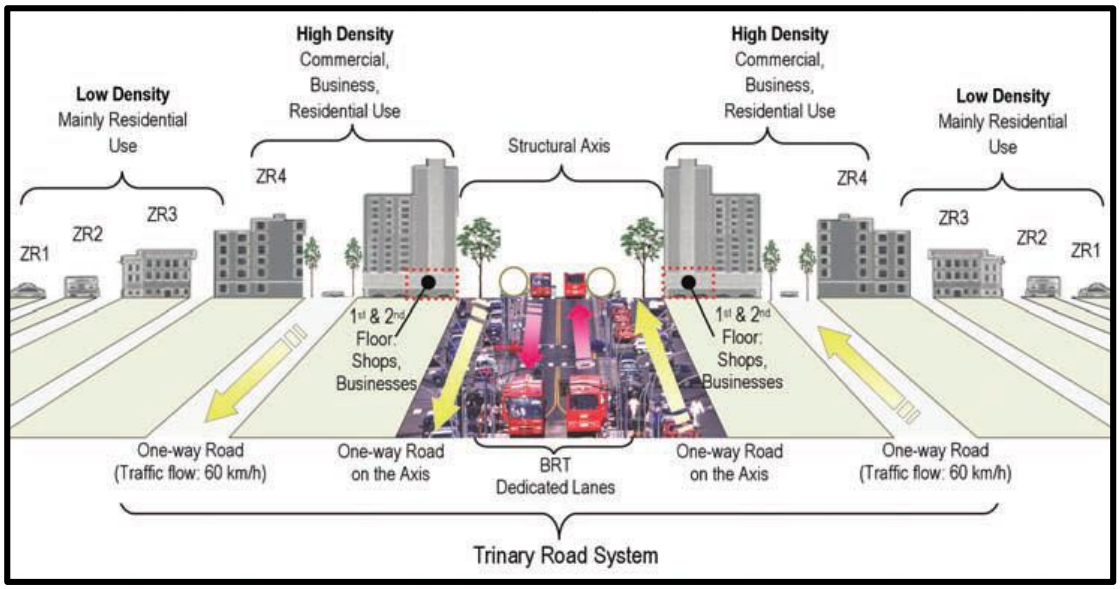

Figure 27: Curitiba Trinary Road System

Source: (Suzuki et al., 2013)

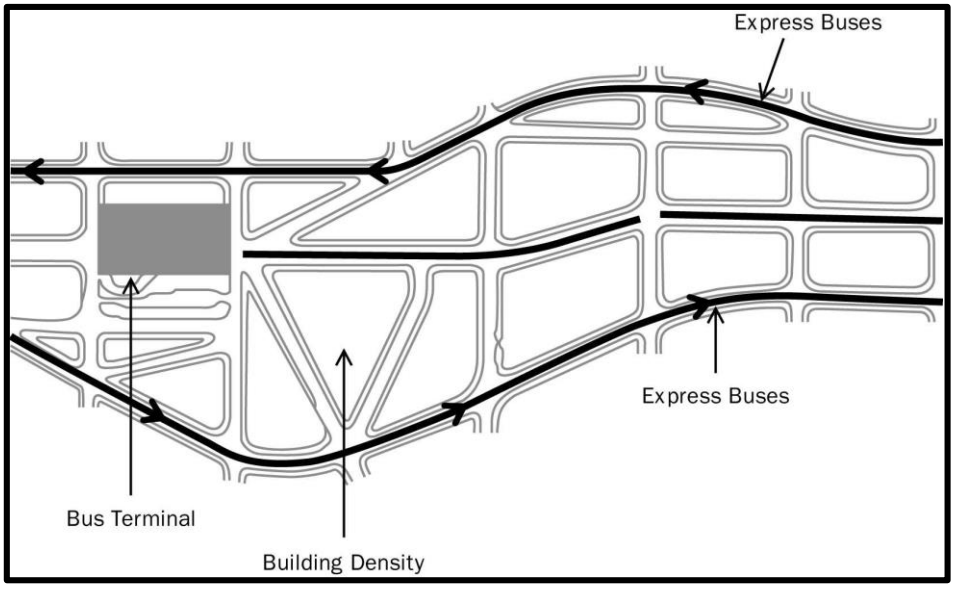

Figure 28: Curitiba Trinary Road Concept

Source: (Suzuki et al., 2013)

In addition, mixed and dense land use form along the axes provide a concentrated, high demand for transport services. Travel demand for the busway system provide buses to cross the central business district (CBD) while traffic access is limited. Also, other transport modes are integrated into the busway on interchange terminals and stops (Lindau et al., 2013).

According to Suzuki et al. (2013), Curitiba master plans impose to channel growth along designated corridors, mix land uses, intensify land development at key BRT stations and introduce high-quality urban designs. In contrast, São Paulo's pattern of growth has been largely market driven, producing a more chaotic urban form. Instead of the public transport, people are encouraged to travel by private car (Figure 29).

Linear Density in Curitiba **Unplanned Density in São Paulo**

Figure 29: Urban Form of Curitiba and São Paulo, Brazil

Source: (Suzuki et al., 2013 - Photos by Robert Cervero)

Figure 30: BRT Corridors in Curitiba

Source: (Vallicelli and Twardowski, 2012)

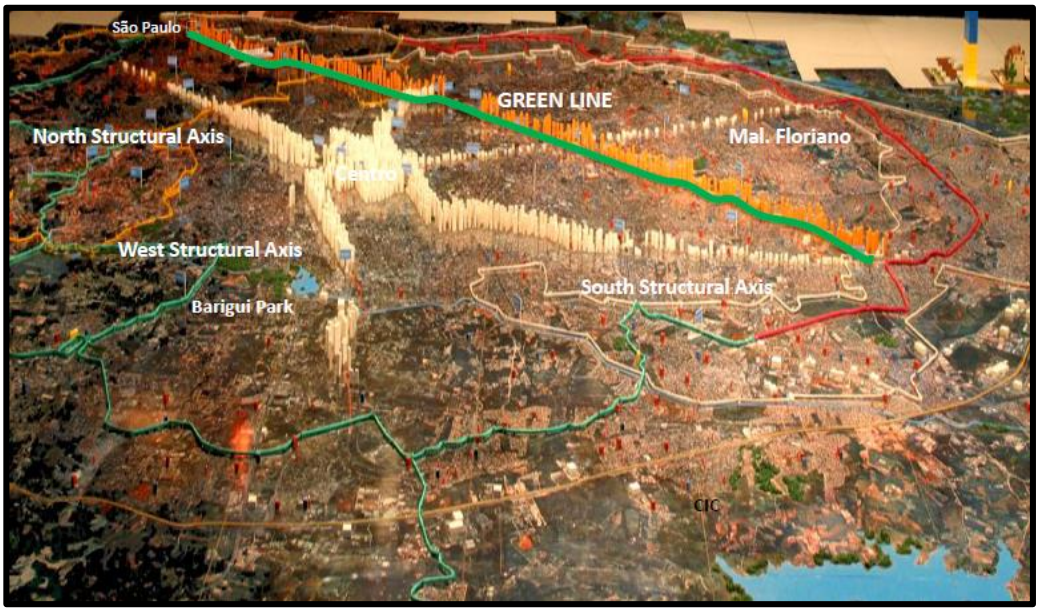

Figure 31: Transit-Oriented Spatial Development in Curitiba

Source: (Vallicelli and Twardowski, 2012)

The busway system along the five structural axes is named as an Integrated Transport Network (RIT) that provides a spine for transit-oriented development (TOD). The RIT is originally a municipal initiative that sought integration of transportation and land use in the city of Curitiba. Today, 14 of the 26 cities within metropolitan area operates RIT. Furthermore, the integrated bus system was upgraded with the introduction of the Green Line in 2009. 6th BRT corridor displays every aspect of a modern full BRT system (Lindau et al., 2013). Also, the busway system is operated with 2.000 vehicles and they carry 2.1 million passengers a day on 390 routes in Curitiba. Streams of double-articulated buses serve 16.000 passengers an hour along some corridors. This capacity is higher than some metro line capacities around the world (Suzuki et al., 2013).

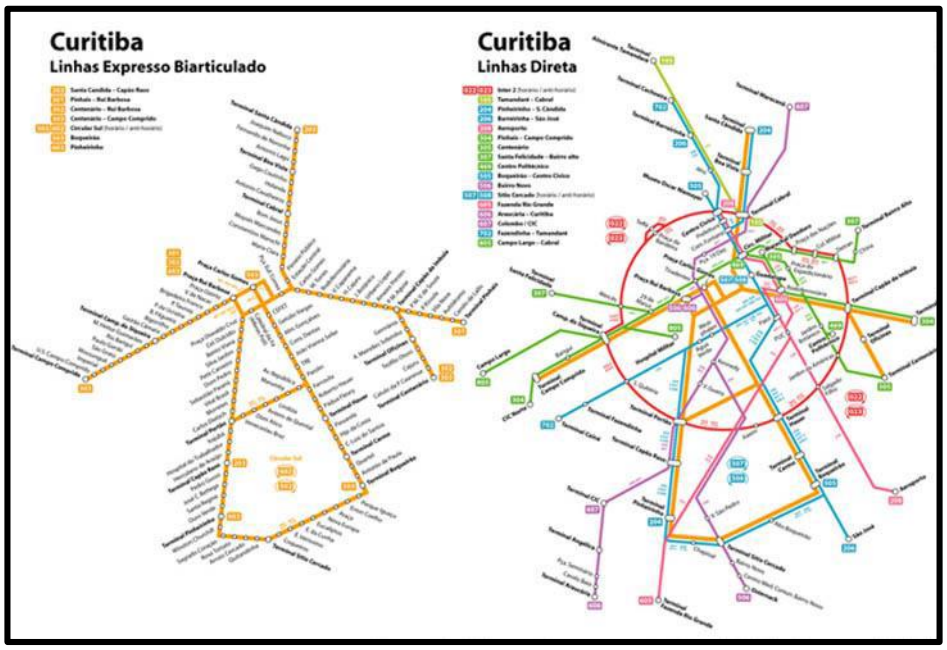

Figure 32: Schematic Presentation of Curitiba's Integrated Transit Network

Source: (IPPUC, 2009)

To sum up, Curitiba bus system was developed as an integral part of an overall master plan whose basic objectives included radial expansion of the city along five corridors (structural axes) and integrating land use and transport. The city is considered as a model for BRT development in the world and a best practice example for integrated planning of transport and urban development.

3.3. Singapore

The city-state of Singapore is globally known because of its successful integration of transport and regional development. After the World War II, Singapore was a third world country which was suffering from poverty, transformed to the dynamic, modern and industrialized city-state (Suzuki et al., 2013). Today, with the 5.1 million population, it has the world's second-busiest containerized port, a top-ranked airline, a sizeable national shipping line and effective mass rapid transit system (MRT) (Cervero, 1998).

As part of a national economic development strategy, Singapore has embraced Scandinavian planning concepts. According to these concepts, master-planned new towns are connected to the central core with the radial corridors (high-performance rail transit). Singapore structure plan, called the Constellation Plan, looks like a constellation of satellite "planets" and the central core are surrounded by these new towns. New towns are interspersed by protective greenbelts and interlaced by high-capacity, high-performance rail transit. With radial rail networks, Singapore's high-rise urban center connects to the sub-centers with the looping mix of heavy and light rail lines (Suzuki et al., 2013) (Figure 33).

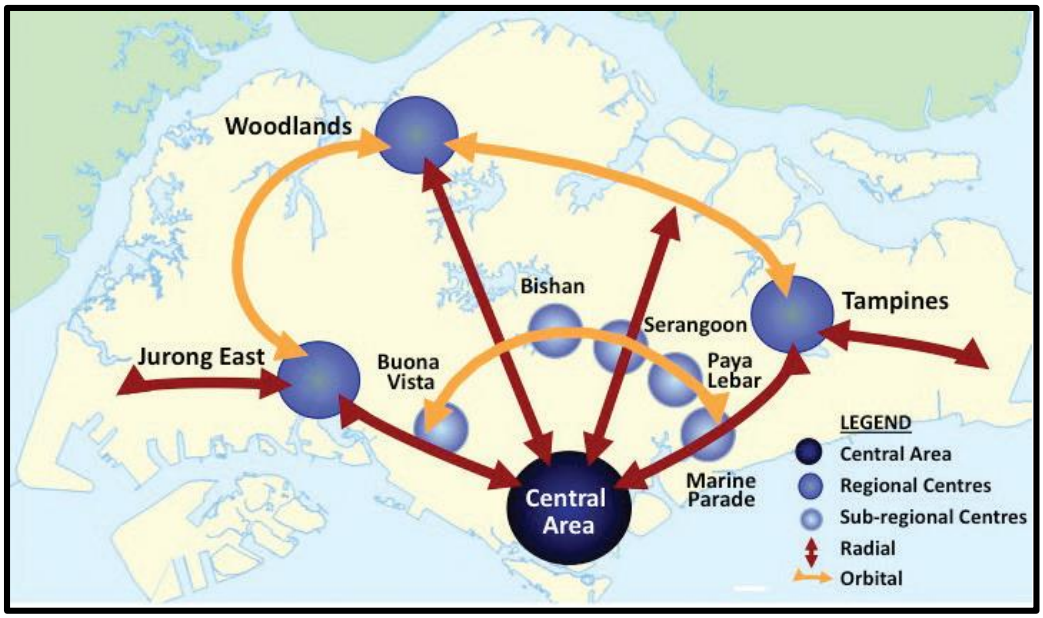

Figure 33: Singapore's "Constellation Plan" for Urban Development

Source: (Suzuki et al., 2013)

In Singapore, satellite towns which have specialized functions and interact with each other has been built as self-contained new towns. Most of these towns are mixed land use, some of them are mainly for the industrial estates or about three-quarters of residential communities. Also, radial corridors connect towns to Singapore's central business district and most new towns are centered on MRT stations with housing, retail shops, community facilities and open spaces. Thus, like Copenhagen, these rail-served settlement pattern has produced important transportation benefits (Suzuki et al., 2013).

According to (Suzuki et al., 2013), the role of rail transit has taken the large shares of motorized trips and it is expected that this situation will continue in coming years. From 1990 to 2011, the length of Singapore's rapid transit system increased from 67 kilometers to 138 kilometers (Figure 34). This has caused a doubling of the number of passengers and approximately 2 million passengers use transit system a day. Thus, Singapore's latest land transport master plan released in 2008 and adopts the 'making public transport a choice mode' strategy.

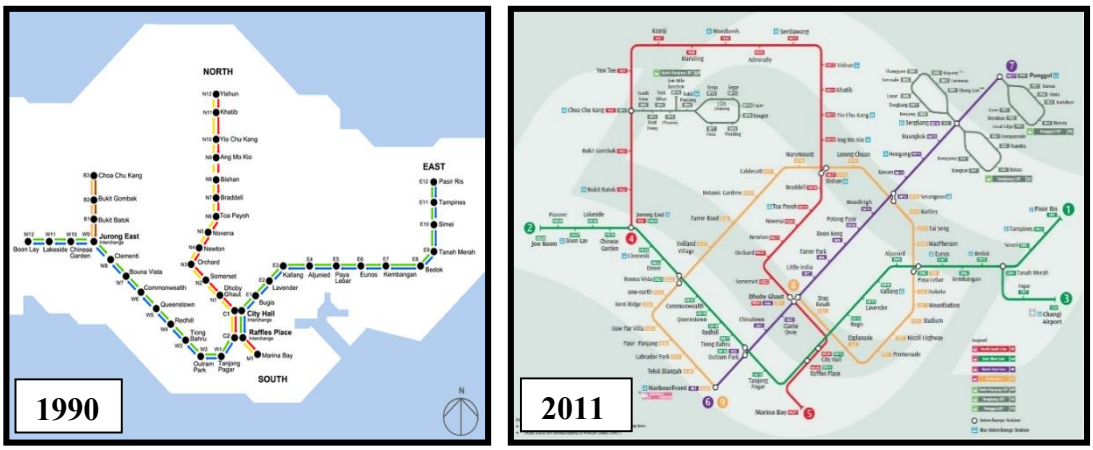

Figure 34: Enlargement of Singapore's Rapid Transit System from 1990 to 2011

Source: (Wikipedia, 2015)

Singapore's progressive 'transit first' policies complement its transit-oriented Constellation Plan. The city offers a three main fiscal program implemented to reach the 'getting the price right' policy within the urban transport sector. The first one is subscription 'fees for owning a car' and include some enforcements like import duties for automobile purchases and high registration fees. The second charge is about fuel

taxes and parking fees. Last one is forcing motorists to internalize the externalities about using their cars during peak hours (Suzuki et al., 2013).

In Singapore, connections between transport technology and settlement pattern is considered as an important issue and with the planning decisions, land use visions guided and shape the transport investments. Especially, Ring Plan's vision and multimodal settlement pattern (satellite new towns) gave rise to effective rail network that is supported by the bus system (Cervero, 1998).

Central government has allowed land development and transit services in Singapore and different planning authorities (the Urban Redevelopment Authority and the Land Transport Authority) are closely coordinated in terms of institutional and financial aspects. For example, revenues which are generated from vehicle ownership and usage charges are used for expanding transit services as well as applying transit oriented development (TOD) facilities (Suzuki et al., 2013).

Consequently, it is important that effective coordination and integration between land use and transport system in Singapore is the outcome of the deliberate and carefully thought-out government decisions. Restraining car ownership to build compact, transit oriented communities and ensuring equality of access to services (housing, education and medical care) are some of these decisions. In addition, centralized planning structure in Singapore is spatially comparable to the regional planning scale and implemented by many medium size jurisdictions around the world (Cervero, 1998).

3.4. Core Lessons on Integration between Transport Investments and Urban Development in Best Examples

According to Suzuki et al. (2013), best examples of the transport and land use integration reveal that there are seven ingredients to reshape urban macro form with using transport investment.

1. **The impacts of transit-related land use are greatest before an upswing in regional growth:** Important land-use shifts will occur if transport investment timing is right in region. Making an investment on transport

systems can convert remarkable land-use impact. Meanwhile, needed fund for making transport infrastructure can be obtained from this land development opportunities.

2. Transit systems generally reinforce and often accelerate decentralization: Transit system investment especially railway and BRT, partially stimulate suburbanization. However, mass transit-oriented growth can be more sustainable pattern when it is compared by highways.

3. Proactive planning is necessary if decentralized growth is to take the form of sub-centers: Transportation investment can cause more concentrated forms of decentralized growth.

4. Radial high-capacity transit systems such as BRT and metros help keep downtowns economically viable: Urban centers get the incremental gains in regional accessibility that's why transit systems cause employment growth in urban centers. However, the regional share of employment and trade facilities often decrease because of the decentralization effects of transit investment.

5. Under the right conditions, railways and high-capacity bus ways can spur central city redevelopment: When government agencies take some risks for redeveloping depressed areas, transportation investments like railways and high-capacity busways can encourage the private capital for investing on economically stagnant areas.

6. Other pro-development measures must accompany railway and high-capacity busway investments: In addition to financial incentives, some policies like financial and tax incentives are needed to attract land developers to the redeveloping depressed areas.

7. Network effects matter: Railway and high-capacity busway systems must provide the geographic coverage and regional accessibility. The addition of exclusive-guideway services can create spillovers and synergies, benefiting not only the newly served corridors but existing ones as well.

3.5. Ahmedabad / INDIA

Ahmedabad is the fifth most populated city in India with 5.5 million inhabitants. Additionally, it is one of the fastest-growing cities in the world and its population is supposed to reach 10 million over the next two decades, placing it among the world's megacities (Figure 35). Similar to other big cities in India, Ahmedabad is also trying to overcome some problems that are rapid urban growth, increasing motorization trend, congestion and uncoordinated transport and urban development structure (Suzuki et al., 2013).

Figure 35: Map of Ahmedabad, INDIA

Source: (Suzuki et al., 2013)

In India, the national government adopted the National Urban Transport Policy. The aim was to encourage cities to undertake public transport projects, particularly BRT. In 2005, the decision to build Janmarg in Ahmadabad the first BRT system in India, appeared in national government's investment program. At the same time, this corresponded to the local government's transportation priorities. Janmarg started to operate in 2009 and considerably improved the mobility of Ahmedabad's passengers.

Janmarg consists of three phases and Phase I (completed) have 45 km. network, Phase II (under construction) adds 58 km. and Phase III (planned) provide additional 40.2 km. (Cervero, 2013) (Figure 36).

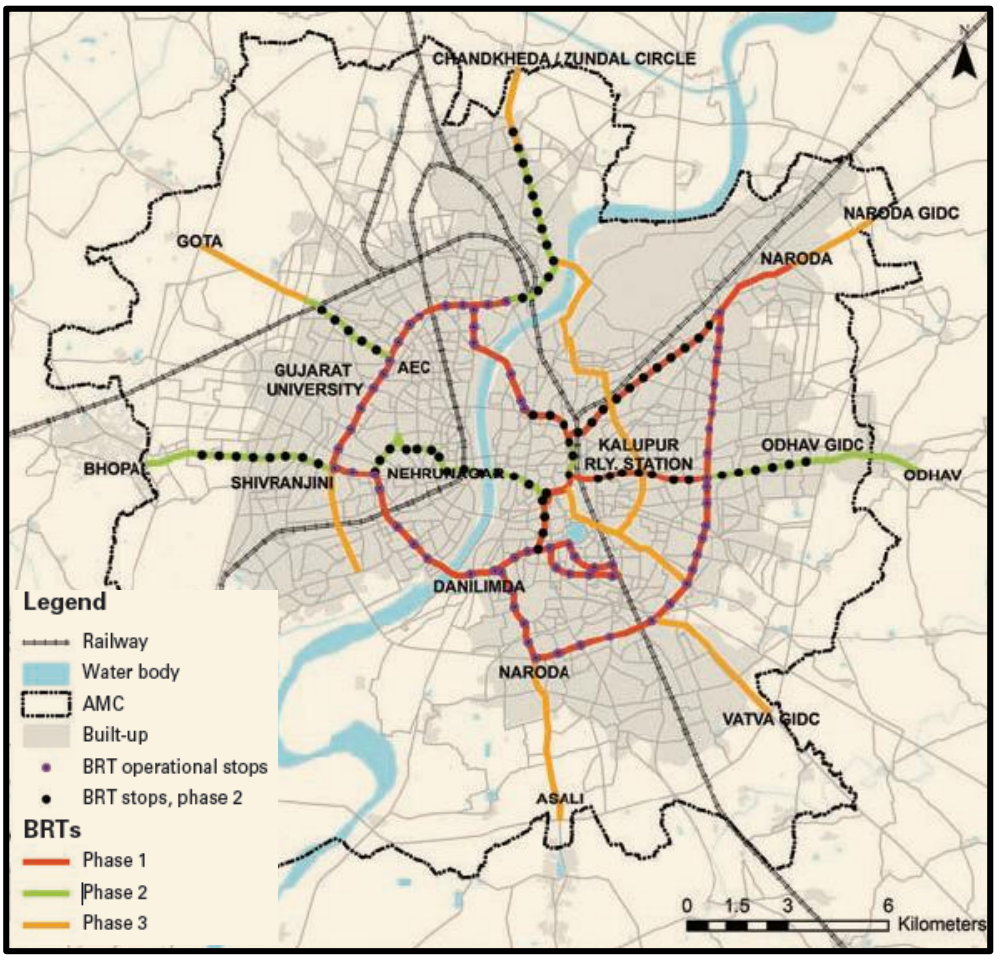

Figure 36: Ahmedabad's Janmarg BRT System

Source: (Suzuki et al., 2013)

For Janmarg, ease of access is a vital plan component. With the construction of the Phase I corridors, 20 percent of the population start to live within the walking distance. When all there phases are completed, it is expected that this proximity will be increase about 73 percent. Furthermore, routes are mostly selected to pass through the fastest-growing areas of the city. For this reason, daily ridership increased from 13.000 in 2009 to 135.000 in 2011 and during the peak hours, the interval between buses is 2,5 minutes for Phase I. In addition, the system provided opportunities to improve open space around station areas (Suzuki et al., 2013) (Figure 37).

Figure 37: The Anjal Station Area (before and after Janmarg)

Source: (Suzuki et al., 2013)

In Ahmedabad, built-up areas are currently expanding toward the urban periphery with more development along the roads networks and these roads are also planned for BRT corridors. Even though existing BRT system mainly serves built-up areas where land for new development and densification is limited, new corridors (Phase I and Phase II) are designed to serve new development areas in order to shape future urban growth (Cervero, 2013).

Ahmedabad has powerful political management with coordinated government administrations. Institutionally, Ahmedabad Municipal Corporation (AMC) collaborates closely with the Ahmedabad Urban Development Authority (AUDA) and Centre for Environmental Planning and Technology University is the part of the planning processes when it is necessary. In planning mechanism, AUDA is responsible for urban planning and development plans; thus, controls development activity and provides physical and social infrastructure in the metropolitan region. Furthermore, in urban area, AUDA delegates the similar tasks and activities to AMC in close coordination with it. Therefore, AUDA provides an efficient mechanism for coordinating regional growth and ensures consistency in urban planning practice and implementation across different administrations in the metropolitan region. This coordination was particularly noticed in the BRT planning and implementation phases (Suzuki et al., 2013).

3.6. Bogota / COLOMBIA

Bogota is the capital of Colombia with a 7.6 million population. With progressive transport investments like TransMilenio BRT system, Travel Demand Management (TDM) facilities and the transit-linked social housing projects, Bogota has gained international reputation among developing countries (Hidalgo and EMBARQ, 2010). Similar to Ahmedabad, Bogota also face with rapid growing traffic congestion, uncoordinated urban expansion and additional 2.5 million people in next four decades (Iuchi, 2012).

Figure 38: Map of Bogota, Colombia

Source: (Suzuki et al., 2013)

The idea of TransMilenio BRT system was originated from regional development plan of Bogota in 1998. This plan include long term planning decisions for improving mobility and solving traffic problems. Between 1998 and 2016, TransMilenio aims to construct 388 kilometers line in 22 corridors. Initially, Phase I and Phase II projects are the main focus and projects respectively began in 1998 and 2006. Phase I is 42 km. long and opened in 2000. It serves on two main corridors which are named as Av.

Caracas and Calle 80. Also, Phase II has the same length with Phase I; and Phase III is recently under construction with 28 km. line, making the whole system 122 km. long (Suzuki et al., 2013) (Figure 39).

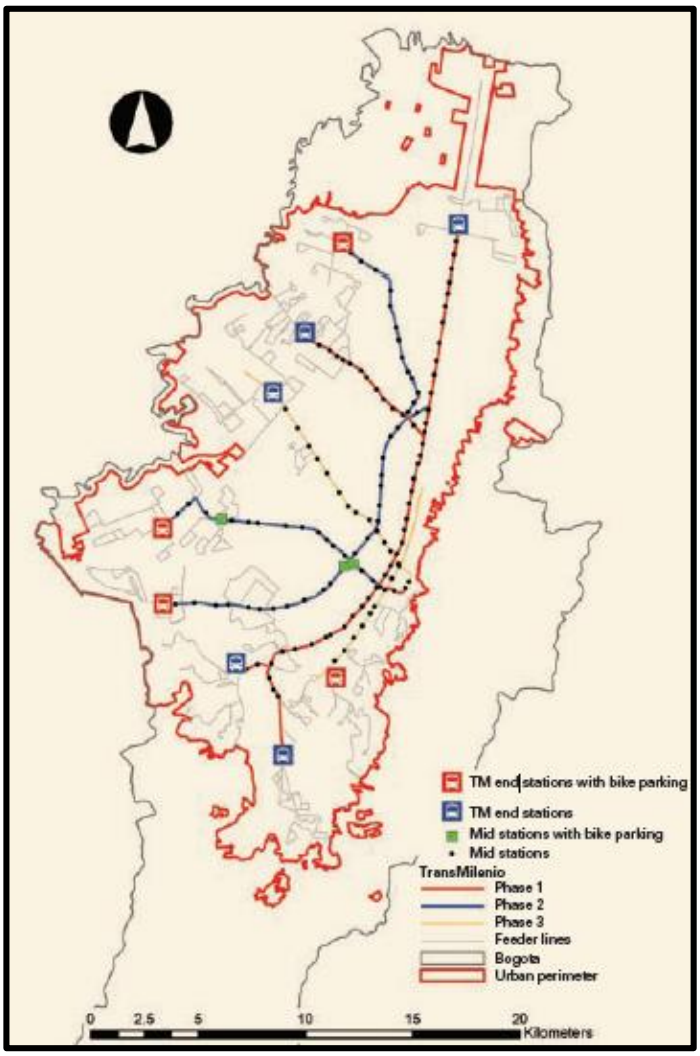

Figure 39: Bogota's TransMilenio Bus Rapid Transit System

Source: (Suzuki et al., 2013)

Moreover, TransMilenio mostly serve low-income populations, its feeder buses operate in low-income neighborhoods on the urban periphery. At the present time, 1.5 million daily passengers (74 percent of total public transit trips in Bogota) use TransMilenio and two-third of city's population locates within a kilometer of main or feeder lines. That's why planning authorities regard TransMilenio as the gold standard of BRT systems (Rodriguez and Mojica, 2008).

However, a decade after the TransMilenio construction, Bogota faced with some challenges that are generated from uncoordinated urban expansion (sprawl), traffic congestion and deteriorating TransMilenio services. System started to be insufficient for satisfying current demand. Moreover, when additional 2.5 million people that are projected in the region over the next four decades is considered, long-term decisions become critical for Bogota. For this reason, national government and local authorities started to plan new metro line (Suzuki et al., 2013).

In addition, political and economic competition among municipalities frequently interrupt the coordination of planning, investment and service provision between the local authorities. For instance, TransMilenio and other regional bus services are not integrated so low-income group who live on urban periphery but work in Bogota face with difficulties when they are commuting. That's why TransMilenio's service jurisdiction does not align with the regional context in terms of planning and policy making (Bocarejo and Tafur, 2013).

Therefore, Bogota region and the local municipalities realize the necessities of the coordination between different levels of planning mechanism in order to satisfy growing population and economic activities and many crucial attempts have been made. For this reason, in 20008, a metropolitan administrative unit was established by the City of Bogota and surrounding municipalities. The aim was to provide implementation of well-integrated plans, integral development and efficient service. Hence, both the City of Bogota and municipalities working on different activities under the Regional Territorial Occupation Model (Figure 40) and these activities include interregional projects such as the metro line and regional train and the rehabilitation of the Bogota River. Also, Territorial Ordinance Organic Law was enacted by national government in 2011 in order to promote regional coordination (Bocarejo at al., 2010).

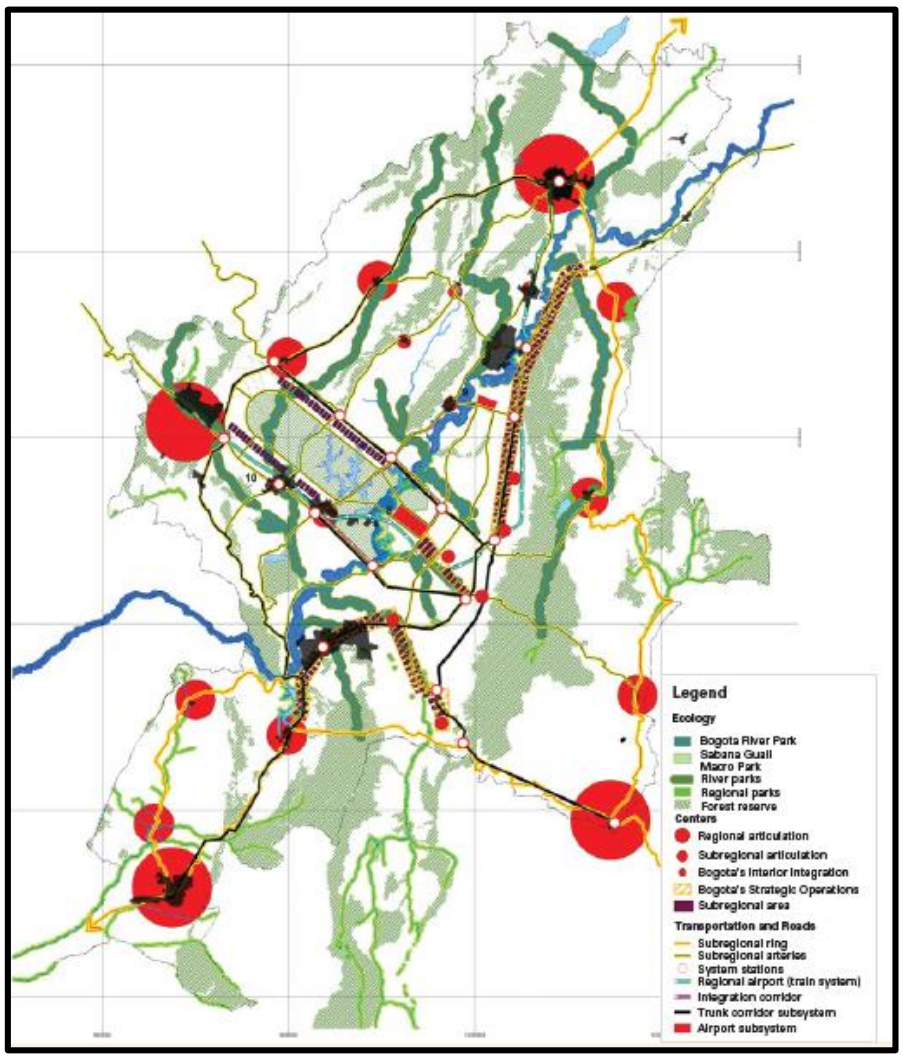

Figure 40: Bogota's Regional Territorial Occupation Model

Source: (Suzuki et al., 2013)

As a result, according to Suzuki et al. (2013), relations between regional and municipal administrations is still weak and this situation makes the regional coordination complicated and inefficient. Although, more integrated plans and projects are implemented with Regional Territorial Occupation Model, regional system continues to be difficult to navigate and planned regional transportation system has not yet achieved success. Nevertheless, the Bogota example helps to highlight the importance of coordination from regional to local level planning and it is noteworthy due to the awareness of existing governments regarding the need for better planning coordination.

3.7. Major Barriers for Transport and Land-Use Integration in Developing Countries

Many cities in the world have recognized the importance of public transport systems especially in last decades because of the traffic congestion and environmental problems. With transport investments, they intend to reverse automobile-dependent patterns of urban growth. As can be inferred from Ahmedabad and Bogota cases, integrating transport and land use can be difficult issues, particularly for cities in developing countries and they have to overcome multiple challenges. According to Suzuki et al. (2013), although both Ahmedabad and Bogota had forward-looking, long-term plans, visionary leaders and world-class bus rapid transit (BRT) systems, short-term demands for improving mobility override long-term visions for sustainable urban development. Both cities aim to improve mobility with the investments in BRT systems but it is not clear that these systems can reshape and transform urban growth.

Suzuki et al. (2013) defined eight major barriers to transport and land use integration.

1. Lack of regional coordination at the metropolitan level: The management of a metropolitan region is a complex task for government that's why it requires various governmental entities at multiple levels. Governments are responsible for coordinating and integrating regional, land-use and transportation plans. With the suburbanization and decentralization, national governments delegate some of their decisions-making powers to the local governments. However, coordination between local and national levels sometimes can be difficult, unless proper integrated planning systems exist. In addition, political and economic competition between municipalities sometimes prevent coordination of planning.

2. Sector silo behavior and practices at the city level: Departments and agencies generally have different missions, management systems, budgets and staff profiles at the metropolitan level. Hence, these differences disrupt integration between land use and transport. Transport planners have little knowledge about urban planning and urban planners have little knowledge

about transportation. Thus, making an integration and coordination of two can be difficult. Two departments have different points of view.

3. Inadequate policies and regulations for strategically creating articulated densities: Most developing countries have higher population densities than land-rich countries like Australia and United States. Instead of the increasing density in built-up areas, spreading development to new areas were generally preferred in developing countries. Although it is known that density leads to the deterioration of urban service provision, it is not necessarily true. For instance, Singapore with 7.025 people per square kilometer provide efficient and high-quality urban services and maintain good environmental conditions.

4. Restrictive national regulations and administrative constraints: National and local government regulations and administrative deficiencies negatively affect the smooth functioning of land markets. The result is the under or oversupply of land, noncontiguous spatial development and changes in land-use patterns that respond slowly to the values created by transport infrastructure. These regulations are major barriers to transit-oriented spatial development.

5. Inconsistencies in the planning instruments and deficiencies in their implementation: Urban and transport planning decisions cannot be directly reflected in practice. Short-term demands for improving mobility have negatively effects on the long-term visions and sustainable urban and transport development.

6. Inadequate policies, regulations, and supporting mechanisms for redeveloping built-up areas: In order to meet existing traffic demand and reduce congestion, priority within transport investments is given to the urbanized areas for generally in developing countries. However, retrofitting these areas is more complex and difficult because of two main reasons. Firstly, private businesses or households mostly have the property that's why government has little control over this land but transport investments can be

used as a tool by governments. Secondly, redevelopment of existing areas requires substantial costs because of the demolition of physical assets and their reconstruction.

7. Neglected urban design at the neighborhood and street level: Transport shapes urban development and land-use patterns influence travel demand. Density and mixed-land use influence travel distances on urban areas and distances between urban activities determine travel time and cost. Furthermore, safe and smooth accessibility to transit stations (foot paths and cycle paths) and facilities like benches, parks and landscaping are important for creating a good built environment.

8. Financial constraints: Large amount of capital investment is needed for integrating transport and land use. In developing countries, it is difficult to overcome this problem. Rapid urban growth put pressure on local governments to finance infrastructure investments and urban services.

3.8. Summary

The analysis of world examples provide a better understanding about the necessity of the transport and urban development integration in cities. Best examples (Copenhagen-DENMARK, Curitiba-BRAZIL, and Singapore) have benefited from strong regional visions and they ensure high capacity transport investments produce desired urban form. Hence, it is clear that integration and coordination between transport and urban development should be started from regional level. Furthermore, transport is an important tool for shaping urban development and making urban visions a reality. Ahmedabad-INDIA and Bogota-COLOMBIA examples are also important for recognizing the opportunities and challenges arisen from the integration between transport and urban development. The following chapter, which presents the Turkish context, describes in further detail about how this framework is handled in Turkey planning system.

CHAPTER 4

4. ASSESSMENT OF INTEGRATION AND COORDINATION BETWEEN TRANSPORT AND URBAN DEVELOPMENT IN TURKEY

This chapter presents the coordination and integration between transport and urban planning in Turkey from national policy and legal framework to local cases. Recent public transportation policies are explained for providing information about Turkish cities as well as understanding the planning mechanism. Also, upper scale plans like national development plans, national transportation master plans, strategy and action plan documents are examined in detail for understanding the coordination between these plans and transport investments in Turkey. Lastly, the chapter presents the difficulties and solutions for achieving integration and coordination between transport and urban plans in Turkey.

4.1. Interaction between Transport and Urban Development in Turkey

Although interaction between transport and urban development is an effective tool for achieving the desired urban development pattern, according to the report of the Council of Urbanization (2009), this interaction is not generally recognized in Turkey, and transport investments are rarely used as an instrument to help direct urban growth. Urban transport systems are based on the motorized-vehicle and urban form is shaped according to the private car usage. Therefore, spatial growth and development towards to the urban periphery are encouraged with transportation investments, such as expansion of the road network, grade-separated junctions for accelerating the traffic flow and increasing of the number of lanes. However, effects of these investments on urban spatial development are not considered while such transportation projects are implemented (Council of Urbanization, 2009). In addition, while many cities invest in

urban rail systems, the impact of these systems on urban development is not sufficiently evaluated (Council of Urbanization, 2009).

Similarly, the effects of urban planning decisions on transport systems is not sufficiently examined in Turkey (Council of Urbanization, 2009). Large public housing projects are implemented in various parts of the cities particularly in urban periphery. Thus, car-dependent urban forms are created and it is difficult to provide qualified and effective public transportation services. As well as the large public housing projects, residential projects (gated communities) for high income groups are supported with small scale plan modifications and these create low-density urban sprawl that are highly dependent on car usage. Furthermore, in many parts of the cities especially in suburban areas, development of shopping centers is on the rise and these also create car-dependent lifestyles, making the creation of effective public transportation systems impossible. Consequently, transport and traffic impacts of new urban development is not considered as an important issues both for housing projects and shopping centers in Turkey (Council of Urbanization, 2009).

In addition, modifications on urban plans disrupt the integrity of urban development and transport plans. New residential areas, business and shopping centers that are built in accordance to the plan modifications not only negatively affects the coordination in planning but also cause traffic congestion. Due to this, city authorities decide to increase the road capacity by building new roads, expanding existing ones and making grade-separated junctions. All of which encourage further car usage and help create car-dependent urban patterns. Therefore, spatial development of the cities emerge on uncontrolled and unplanned way (Council of Urbanization, 2009).

4.2. Public Transport Policies in Turkey

Public transport is one of the most important modes of transport systems to meet the transport demand in cities. For all indicators like the number of passengers per vehicle, capacity, energy consumption per passenger, cost, emissions and pollution, public transport systems surpass the private car transport. Due to the environmental, economic and social problems that are caused by excessive usage of the car, the importance of public transportation has increased especially in the last decades. All

around the world, it is understood that fast, comfortable, safe, accessible and affordable public transport systems are the most important alternative against the private car usage. For this reason, encouraging these systems appear within the main objectives of urban and transport planning (Öncü, 2007).

The increasing population of cities, mobility and traffic problems that are generated from private car usage, give rise to mass transportation investments especially in rail network. Initially, urban rail systems were developed in Istanbul, Ankara, Konya, Izmir, Bursa and Kayseri but applications were made in a different manner for each city. According to Eğercioğlu and Yalçıner (2013), cities in Turkey could not benefit effectively from these urban rail investments due to inaccurate location decision and lack of comprehensive planning. Nevertheless, there are various cities investing in these systems as seen in Figure 41.

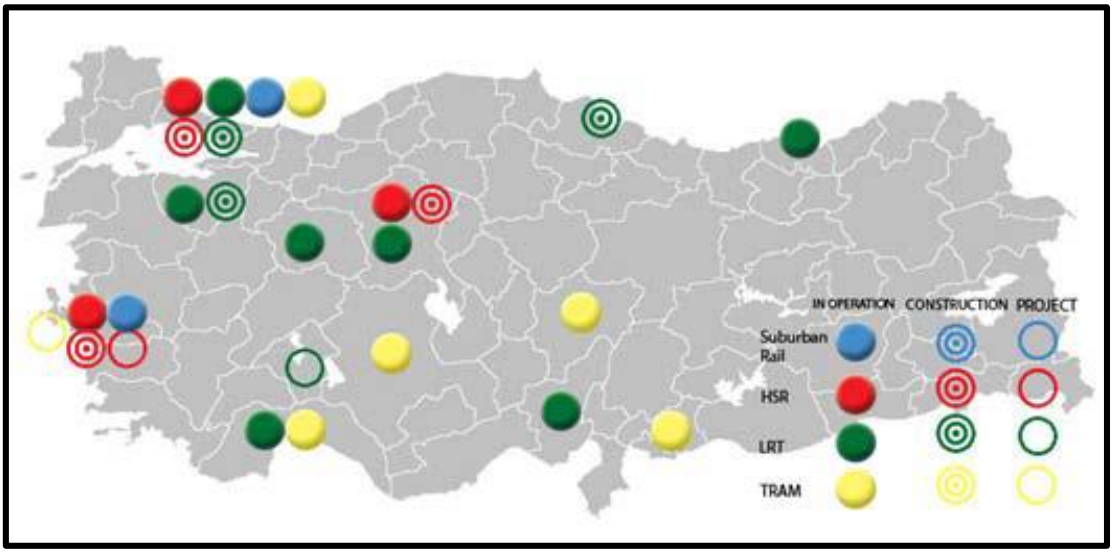

Figure 41: Stages of Rail Projects in Turkey

Source: (Eğercioğlu and Yalçıner, 2013)

This trend in urban rail system development is likely to continue in Turkey, because national development plans, transportation master plans and other strategy and action plan documents emphasize the importance of the public transport, and give priority to development of rail-based alternatives stating advantages related to energy and pollution. Although buses are the major public transportation modes in cities, there are no bus rapid transit (BRT) investments apart from the system in Istanbul, and light rail

systems and metros are often considered as the only options for improving public transit systems in Turkish metropolitan cities (Council of Urbanization, 2009). Considering that these are fixed investments with major land use impact potential, it is crucial that their planning is well integrated with urban, metropolitan and regional plans.

The report of the Council of Urbanization (2009) also stresses that in metropolitan cities, opportunities that are offered by the existing railway infrastructure are not sufficiently utilized although these could serve as commuter and regional rail system or become a line for new urban rail systems. Although many cities (Istanbul, Ankara, Izmir, Adana, Kayseri, Eskişehir, Gaziantep, Diyarbakır, Konya, Mersin, Bursa, and Manisa) have intercity railway routes passing within their urban areas and through their city centers existing railway infrastructures are not used for transportation systems. Recently, the city of Izmir made use of this infrastructure by modernizing the railway service and transforming it into a regional rail system that strongly supports the regional spatial growth of Izmir. This stands as an example of the role that the rail infrastructure can play in reinforcing urban and regional plans.

To sum up, the main problem in terms of public transportation in Turkey is that integration between different systems and upper scale plans are not rarely considered. There are some good examples of integrated planning, which will be described later in the chapter. However, generally the transport investments are not planned with an understanding of their role in urban development. Nevertheless, the policy documents and legislations in the country emphasize the need for integrated planning. Therefore, in the following sections, the issue of integrated planning is analyzed by reviewing national policy documents and laws and legislations in the country.

4.3. Policy and Legal Documents in Turkey

In this part, upper scale plans like national development plans, national transportation master plans, strategy and action plan documents are examined in detail for understanding the coordination between these plans and transport investments in Turkey.

4.3.1. National Development Plans

Development plans aim to maintain sustainable economic development at national scale and they are prepared under the leadership of the central government. In this respect, development plans introduce a set of relations between different sectors one of which is the transport sector and produce some policies about it.

In Turkey, development plans were produced for a 5 year period (except 9th Development Plan) until the mid-2000s, and since then they have been prepared for 7-year periods. The preparation of the plans were carried out by the former State Planning Organization until 2011, which is now incorporated into the newly established Ministry of Development. With these plans, annual investment programs are defined and investment programs are made for the plan period. Also, the allocation of resources is determined in each sectors and subsectors. After that, investments are directed according to these policies (Sutcliffe-Babalık, 2007). During the preparation of each plan, expert committees are set up for each sector and sub-sectors. Under the transport sector, it has always been common to have expert committees on road, rail, air, and sea transport and while and urban transport committee was not set up for the plans in the 1960s and early 1970s, this changed in 1978 with the 4th Development Plan, which featured policies for urban transport for the first time. Plan proposals for the urban transport sector from the 4th Plan onwards are summarized in Table 1.

Table 1: National Development Plan's Strategies and Policies about Integration and Coordination between Urban and Transportation Plans

4th Development Plan	*Zoning plans will be prepared together with transportation plans and traffic plans. Authorities and responsibilities of organizations will be determined for urban transport.*
5th Development Plan	*In cities, transportation plans will be handled in an integrated way with zoning plans, and coordination between the organizations which responsible for existing transport infrastructure planning, its implementation, transportation management and its supervision will be provided.*
6th Development Plan	*Urban transport investments will be integrated with land use plans and long-term plans which based on public transport will be adapted.*
7th Development Plan	*Transport demands will be resolved in accordance to the master plan decisions and the importance of the urban transportation plans and their implementation will be increased.* *Urban transport master plan studies should be accelerated and they should be prepared according to the zoning plans. Also, priority will be given to the public transport systems.* *Urban transport investments should be integrated with land use plans and public transport systems should be based on long term urban plans.*
8th Development Plan	*The pack of integrated urban land use and transportation plans and insufficient technical criteria and standards hinder enhancement of the level of the services.* *Realization of an urban transport structure compatible with the planned development of the city shall be ensured.*
9th Development Plan	*Urban transportation planning, which provides equal opportunities for all segments of the society, provides safe and continuous pedestrian movement, protects public interest, minimizes foreign dependency by utilizing domestic resources, and is participatory, sensitive to the environment and productive*

Table 1 (continued)

9th Development Plan	*in economical terms, will be made. Evaluation of land utilization decisions together with impacts on transportation on all scales and preparation of urban transportation plans required by each scale will be ensured.*
10th Development Plan	*Based on urban transport plans developed consistently with spatial planning and development targets, in urban transport, issues such as strengthening intermodal integration and harmonization, development and transformation of infrastructure giving priority mainly to pedestrians and public transport, establishing efficient intercity and intra-city links, generalizing environment-friendly, intelligent, efficient and cost-effective practices, and establishment of infrastructure to meet the increasing vehicle ownership are still of importance.* *…through policies coherent with land use decisions, establishing a highly accessible and fuel-efficient, comfortable, secure, environment friendly, cost-beneficial and sustainable transport infrastructure reducing traffic.*

Source: (4th - 10th Turkey National Development Plans)

Until the 4th Five Year Development Plan, transportation problems in cities was perceived as an extension of the national transportation problems and solutions has been recommended by looking at these problems. From the 4th Development Plan onwards, however, the plans include a section on urban transport, and as presented above, they all emphasize the need for integration between spatial plans and transportation plans. Nevertheless, authorities and responsibilities could not be clearly determined and assigned and so coordination was not achieved in practice. The implementation of these policies has been limited (Özalp, 2007). Nevertheless, some cases as described below show that there has been awareness in the country for integrated planning of transport and urban development, although the integration and coordination could not always be sustained.

4.3.2. National Transportation Master Plans

Transportation master plans were prepared in order to ensure the implementation of the policies and strategies of National Development Plans. In Turkey, two studies were prepared until now. The first one is the Transportation Master Plan (1983 – 1993) and the second one is Transportation Master Plan Strategy (2005 – 2015) (Özalp, 2007).

4.3.2.1. National Transportation Master Plan (1983 – 1993)

Coordination and integration between spatial and transportation plans were strongly highlighted. It was also emphasized that the responsible institutions need to work together and the plan stated that public transportation systems (especially light rail systems and BRT systems) should be developed in cities.

Although transportation Master Plan (1983 – 1993) was the first transportation plan on national level, it was not applied. In terms of urban transport, political preferences override and temporary solutions were applied in cities. Hence, relationship between spatial and transportation plans were not established.

4.3.2.2. National Transportation Master Plan Strategy (2005 – 2015)

Urban transportation issues were discussed with a critical perspective in this document. It was emphasized that transportation planning has been ignored and transportation and spatial plans have not been integrated. Furthermore, the master plan suggested that transportation plans should be periodically updating because of the losing their validity (Özalp, 2007).

It was also stated that long-distance travel requirements have occurred in cities due to the lacking of integration and coordination between transportation and spatial plans. Thus, policies in Transportation Mater Plan Strategy (2005 – 2015) were specified as follows:

Transport infrastructures should be carried out in accordance with the transportation plan which integrated with spatial plans (transport-land use planning). Also, integration between different transport modes should be provided and up to a certain population (i.e. 200.000), making transport master plans should be obligated in cities in order to direct transport investments and implementations.

Further policies and strategies were determined within Transportation Master Plan Strategy (2005 – 2015). Transportation plans which are carried out in integration with spatial plans have been turned into a necessity for cities with exceeding 200.000. It was also stated that transportation investments should be carried out in accordance to the transportation plans that are integrated with the spatial plans in cities.

Although Transportation Master Plan Strategy (2005 – 2015) is a national level plan, various urban transportation strategies and policies are mentioned. Especially, integration issue is emphasized and the problems in practice are criticized. However, the plan does not have enforcement power as it is only a strategy document. Therefore, it was not applicable in practice (Özalp, 2007).

4.3.3. Council of Urbanization (2009)

Council of Urbanization (2009) was organized by Ministry Of Public Works and Settlement in Ankara. The aim of the council was to evaluate urban development within the framework of the principle of sustainability and create strategies and actions for achieving livable cities. Ten important subjects were determined for the Council of Urbanization (2009) and Infrastructure and Transportation Commission was one of them. Several institutions, organizations and private sector delegates participated and contributed to the studies on this commission (Council of Urbanization Final Declaration, 2009).

Figure 42: Poster of the Council of Urbanization (2009)

Source: (Ministry Of Public Works and Settlement, 2009)

Initially, Infrastructure and Transportation Commission identified many problem areas and the *lacking of integration between urban planning and urban transport planning* is was of them. The commission described this problem as follows:

> *Although transport and urban development are two areas that have a mutual and intensive interaction, it is seen that this interaction is not sufficiently taken into account in Turkish cities. The effect of urban plans is not considered when transport investments are made. Also, the effects of proposal developments in urban planning to transport system is not sufficiently investigated. However, it is possible to shape transport plans and investments with the urban plans and use transport as a tool for the realizing urban plans.*
>
> *Lack of the coordination and integration between urban plans and transport plans is a major obstacle against sustainable development. One of the issues that affecting the lack of coordination in planning is also modification of the plans that not consider whole urban plans.*

Therefore, commission identified some strategies to overcome this problem. *Ensuring the coordination between transport and urban* planning was identified as one of the strategies described as follows.

> *Integration between urban and transport plans is crucial to achieve the goal of contemporary, liveable, and sustainable urbanization.*
>
> *Integration between urban and transport plans also entail the preparation and approval of transport plans and it provide that transport investment is made within planned and coordinated way.*

4.3.4. Integrated Urban Development Strategy and Action Plan (2010-2023) - KENTGES

Integrated Urban Development Strategy and Action Plan, the short name of which is the Urban Development Strategy (KENTGES), is considered as a strategy document at the national level. The plan was prepared by the Ministry Of Public Works And Settlement (after 2011 named as the Ministry of Environment and Urbanization) for the target year of 2023 target and approved in 2010. Council of Urbanization (2009) is an important source for KENTGES. It includes areas, themes and dimensions of settlements and urbanization as well as settlements and spatial planning.

In this context, objectives, strategies and actions are identified and integration between urban development plans and transportation plans are highlighted in the following manner. In addition, responsible and related institutions, realization period of strategies and necessary actions are defined.

> ***Objective:*** *Establishing Sustainable Urban Transportation System*
>
> ***Strategy:*** *In the process of spatial planning, policies, programs and plans will be developed in integration with the planning of comprehensive transport systems.*

Action: *Legislative arrangements will be made to ensure harmonization and integration between urban transportation plans and city plans.*

In the process of urban planning, further legal arrangements including urban transport, policy, strategy, priority, principle and standards will be made as those that are necessary for the planning and approval of transportation plans that will be integrated with the spatial plans.

Table 2: Details about the KENTGES Action

Responsible Institution	***Related Institutions***	***Realization Period***	***Action Type***
Ministry Of Public Works And Settlement	*Ministry of Interior, Ministry of Transport, Municipalities, Special Provincial Administrations*	*2010 - 2014*	*Legislative Arrangement*

Source: (KENTGES, 2010)

4.3.5. Turkey Transportation and Communication Strategy - 2023

The strategy document was prepared by the Ministry of Transport, Maritime Affairs and Communications in 2011 with the 2023 target year in order to identify urban transport strategy, goals and recommendations (Cirit, 2014). The strategy document does not directly address to the integration between urban and transportation plans but the aim of the document for urban transportation strategy is defined as follows.

Setting up a system which is safe, easiest to use and to access, based on public transport, fast, comfortable, has the highest contribution to economic and social development, environmentally friendly and has the least cost, will affect urban development positively and will contribute to contemporary urban life.

Figure 43: Poster of the Turkey Transportation and Communication Strategy - 2023

Source: (Ministry of Transport, Maritime Affairs and Communications, 2011)

4.3.6. 11th Transportation Maritime Affairs and Communications Forum (2013)

The 11th Transportation, Maritime Affairs and Communications Forum (2013) was organized on 5-7 September in Istanbul. The theme of the forum was *"Efficient Transport and Fast Communication for All"* and it specified Turkey's goals and policies on transportation, maritime and communications for 2023 and 2035. Six main working groups have been established within the 11th Transportation, Maritime Affairs and Communications Forum. Urban Transportation Working Group dealt with the integration of spatial planning and transportation planning subject (11th Transportation, Maritime Affairs and Communications Forum (2013) - Final Declaration Report, 2013).

Figure 44: Posters of the 11th Transportation, Maritime Affairs and Communications Forum and Urban Transportation Working Group

Source: (Ministry of Transport, Maritime Affairs and Communications, 2013)

Firstly, problem definition about the integration of transportation and urban plans has been made and then objectives, strategies and solutions have been produced within the Urban Transportation Working Group. These studies are summarized below.

It was stated that transportation systems and investments were generally shaped according to motor vehicles especially with the car usage in Turkey. Some implementations like expansion of the road network, acceleration of the traffic flow grade-separated junction projects and increasing the number of lanes were generally applied. Hence, urban sprawl at the periphery is supported and this spatial growth impacted transport (11th Transportation, Maritime Affairs and Communications Forum (2013) - Urban Transportation Working Group Report, 2013).

The document also highlighted that the failure to integrate transportation plans and urban plans, disruption of the unity of the plans with plan amendments that modify land use decisions and increase the density are create significant problems in the cities of Turkey. Urban development and transportation are two areas that interacted with each other. Urban development pattern and urban form are the main determining

factors of the accessibility, mobility level and demand for transport. Urban transport is the result of interaction between different types of land use in the city. Also, site selection of different land uses, distance from each other and relation with CBD determine the travel distance, selection of transport modes and travel demand (11th Transportation, Maritime Affairs and Communications Forum (2013) - Urban Transportation Working Group Report, 2013).

The document states that as well as the effects of spatial development on transport, the transport systems have significant impacts on spatial development and urban form. High-capacity public transport systems, especially rail systems due to their permanent infrastructure affect the spatial development of the city. Thus, urban growth mainly occur along these systems and linear and radial urban forms may be created (11th Transportation, Maritime Affairs and Communications Forum (2013) - Urban Transportation Working Group Report, 2013).

Problems

According to the Urban Transportation Working Group, although transportation and spatial planning are directly related to each other, the main reasons for the lack of integration between them in Turkey are as follows:

- Legal obligations and necessities of making transport plans are not defined as they are in the case of spatial plans. Legal links between the plans are also undefined.
- Technical and legal processes of transportation decisions which come from the spatial plans are not defined.
- There is no cross-checking procedures for the changing status of the plans, such as plan amendments.
- Institutions and organizations which are responsible for coordination between transportation and spatial plans are not explicitly defined.
- Instead of the ideal solutions, transportation master plans produce solutions that allow the spatial plans due to the lack of coordination between the

transportation master plans and spatial plans. Thus, transportation master plans cannot reach their objectives.

Objectives and Strategies

According to the Urban Transportation Working Group Report (2013), the main objective should be creating a sustainable urban transport system. To achieve this, legal obligation about integration between transportation and spatial plans should prepared. Also, legal regulations should include urban transport policies, strategies, priorities and methods.

Solutions

- Nowadays, significant amount of budgets are spent to solve the problems arising from transport in our cities and several infrastructure investments are made. Transportation should not be considered as only the technical infrastructure; it should be handled with social, economic and spatial dimensions.
- In order to solve the problems associated with transportation and achieve a more sustainable urban transport system, the city plans should be prepared in integration with the transportation plans. Also, spatial planning approaches that reduce the demand for transport should be adopted.
- Types of transportation planning (parallel with the different planning levels) must be defined. Methods for preparing plans, preparation and approval process should be identified and regulations should be prepared.
- Transportation Master Plans must be controlled by an Urban Transportation Administration that will be formed. In this context, restructuring and legislation is required.
- The unit which prepares the Transportation Master Plan should be established on city level and permanent staff should be employed.
- It should be necessary to consult the transport unit when spatial plans are prepared or revised.

- Transportation master plans should be prepared when spatial plans are prepared each time.
- All kinds of modification and revision of the spatial plans should be evaluated with transportation master plans. If necessary, transportation master plans should be revised.
- Municipality parliament and UKOME (Municipality's transport coordination center) decision must be sought about revision of transportation master plans. Also, the opinion of Ministry of Transport, Maritime Affairs and Communications should be required.

To summarize, many national policy documents in Turkey underline the importance of the coordination and integration between transportation and urban planning. However, these strategies and policies has not been successfully implemented in practice. The absence of comprehensive legal regulations and enforcement for integrated planning is the most important reasons for gap between these policy documents and practice (IDEP, 2010). Having said that, there are a number of laws and by-laws in Turkey that underline the need for integrated in planning in urban and transport. These are reviewed briefly in the following section.

4.3.7. Laws, By-Laws and Regulations Regarding Regional, Urban and Transport Planning

A review of the legal framework in Turkey shows that some legislations include a statement about the need for integrated planning or urban and transport plans, while some of them, such as the legislation for Regional Development Agencies, does not contain any references to this issue. These are described briefly below and summarized in Table 3.

Table 3: Legal Framework of the Integrated Planning

Regulations and Legislation	**Emphasize the Need for Integrated Planning**
Legislation of Regional Development Agencies	Does not include any statements regarding transport planning and the need for integration between spatial plans and transportation plans.
By-Laws for Preparing Spatial Plans	*Urban transportation plans, which take into account the city's spatial, social and economic development trends and sustainable development principles, ……, can be prepared in coordination with upper and lower scale urban plans, when necessary.*
By-Law on Principles for Promotion of Energy Efficiency in Transport	*Urban transportation plans should be prepared in coordination with the upper and sub-scale plans.*
Law of Metropolitan Municipality	*Metropolitan municipality have to prepare transportation master plan, design urban transport and public transport services and coordinate of them* (Does not include any statements regarding transport planning and the need for integration between spatial plans and transportation plans).
Law of Municipality	*Municipalities should establish any kind of public transport system including rail transport* (Does not include any statements regarding the need for integration between spatial plans and transportation plans).
Development Law	Does not include any statements regarding the need for integration between spatial plans and transportation plans.

The legislation of the Regional Development Agency does not include any references to integrated planning of regional plans and transport plans. Among the tasks of the agencies, the document lists such responsibilities as supporting local authorities in their planning activities, and supporting and sponsoring projects that can ensure the

implementation and realization of regional plans. Although very general, these could include preparation of transport plans; however, no specific reference is made. Generally one of the major themes of the regional plans is often regional transport links; so a more specific reference could be expected; however, it may also be argued that such regional links have national importance and may be handled by the Ministry of Transport, Maritime and Communication and its related Departments. On the other hand, it is also inevitable that regional plans' transport strategies would have implications for urban transport development. While transport planning must clearly be integrated into regional plans and their main development corridor strategies, perhaps including a phrase for transport planning is not seen necessary for this legislation since preparation of detailed transport master plans is not defined as a task of these agencies.

The Law for Metropolitan Municipalities, on the other hand, defines the preparation of urban transport master plans as one of the tasks and responsibilities of metropolitan municipalities. However, the need for coordinating transport plans with urban and regional plans is not stated. According to this law, metropolitan municipalities have to prepare transportation master plans, design urban transport and public transport services and coordinate of these transport services.

The law of Municipalities (other than metropolitan municipalities) also defines some transport planning and investments tasks, but again there are no references to handling them in integration with urban and regional plans.

The By-Law for Spatial Plan Preparation defines urban transportation plans as a separate plan item, and defines the content of these plans. The article of urban transport plans finishes with a statement that suggests that *when necessary, these plans can be prepared in coordination with upper and lower scale urban plans.* This statement does not really ensure coordination, but leave it optional.

The By-Law on Principles for Promotion of Energy Efficiency in Transport, on the other hand, clearly states that urban transport plans should be prepared in integration with urban plans. However, the legislation uses many terms, such as transport master plans, sustainable transport plans, and this is generally criticized as creating confusion

(see the Council of Urbanization Reports for example). In addition, it states that all cities with a population higher than 100.000 must prepare urban transport master plans, which contradicts with metropolitan cities law. Due to these problems, the by-law is in a process of being reviewed and updated.

In this respect, in-depth interviews were carried out with the focus group is shown on Appendix B. Information about the integrated and coordinated planning approach for Turkey was obtained from academicians and transport planners within semi-structured interviews that focus on the difficulties and solutions for providing integration and coordination between transport and urban plans in Turkey. The interview questions were formulated as follows and their explanatory sub-topics are also revealed on Appendix A.

> *Many national policy documents in Turkey (National Development Plans, National Transportation Master Plans, Council of Urbanization (2009) etc.) underline the importance of the coordination and integration between transportation and urban planning. However, these strategies and policies has not been successfully implemented in practice.*
>
> ***1.*** *In Turkey, what are the difficulties in providing coordination and integration between spatial plans and transport plans in practice?*
>
> ***2.*** *How coordination and integration between urban and transportation plans can be achieved in Turkey? Which practices and arrangements should be made?*

When interviewees stated the integrated and coordinated planning approach is crucial in many respects, it was explicit that this planning approach has neglected in Turkey until now. According to the responses in the interviews, "*lacking of legal regulations for encouraging integrated planning approach"* was observed as the most important barrier in Turkey in order to provide coordination and integration between spatial plans and transport plans in practice. Furthermore, it was stated in the interviews that "*legal regulations should be made in order to provide integration between transport and*

urban plans" and "*Urban Transport Law should be created*" were recognized as significant arrangements by interviewees for applying integrated and coordinated planning framework in Turkey.

To summarize, the legislative framework has some references to coordinated planning but many gaps as well. The laws that assign tasks and responsibilities to municipalities do not stress the need for integration between transport and urban/regional plans. There is no legislation that requires transport plans to be integrated into regional plans in particular. The By-Law on Spatial Plan Preparation suggests that transport plans and urban plans can be carried out in coordination when necessary, which again does not help ensure a coordinated approach. It should also be noted that Turkey does not have an Urban Transport Law; and hence there are no legal documents defining how urban transport plans should be made.

It can be concluded that while national policy documents often emphasize the need for an integrated and coordinated planning of urban and regional plans and urban transport plans, the legal framework does not provide obligations for such a planning approach.

4.4. Summary

This chapter presented the analysis of the coordination and integration between transport and urban planning in Turkey in order to provide information about Turkish cities as well as understanding the planning mechanism. It is clear that many national policy documents in Turkey emphasize the importance of the coordination and integration between transportation and urban planning; however, there are many criticisms that these strategies and policies have not been successfully implemented in practice. There are a number of laws and by-laws in Turkey that define regional planning, urban planning and transport planning; however, very few underline the need for integrated planning in urban and transport. As such, the legal framework does not provide obligations for integrated and coordinated planning approach. The following chapter, which presents the Gaziantep case, describes in further detail about how this framework is handled in Gaziantep.

CHAPTER 5

5. ASSESSMENT OF GAZIANTEP CASE FROM AN INTEGRATED PLANNING FRAMEWORK

In this chapter, Gaziantep case study is evaluated within integrated planning framework. Initially, general information that has importance in terms of urban development is examined. Furthermore, development pattern is studied with historical perspective for identifying the level of the coordination between urban development and transportation investments from past to present. Subsequently, regional and spatial plans are examined in order to understand what implications these plans have for the transport infrastructure and investments in the city; and how transport investments can be used as instruments to realize these plans. Then transport plans and investments in Gaziantep are analyzed with a view to identifying whether transportation investments in Gaziantep are shaped in accordance to regional and urban plans, and whether there has been an integrated planning approach with coordination between transport and urban planning.

5.1. General Information about Gaziantep

Gaziantep is the 8th largest city in Turkey with 1.889.466 inhabitants and the biggest city in south-eastern part of country. The city covers around 1% of the total area of Turkey with 6.803 km² territorial area. While 89% of Gaziantep's population lives in urban areas, 11% lives in rural areas (TURKSTAT, 2014). Gaziantep's population was rapidly increasing especially after the 1980s due to the migration from surrounding cities and rural areas to Gaziantep for its growing industrial and business activities. In addition, population still continues to increase in 2015 due to Syrian refugees. TURKSTAT has predicted that the population of Gaziantep will reach to 2.257.278 in 2023 (Table 4). Furthermore, Gaziantep is in the second place (after Istanbul) in Turkey according to population growth rate in the last two decades (Table 5).

Table 4: Gaziantep's Population through Years

Year	2000	2010	2012	2014	2018	2023
Population	1.385.249	1.700.763	1.799.558	1.889.466	1.900.432	2.257.278

Source: (Turkish Statistical Institute (TURKSTAT), 2014)

Table 5: Gaziantep's Annual Growth Rate of Population (‰)

Year	2007-2008	2009-2010	2011-2012	2013-2014
Growth Rate	32,9	28,1	25,9	24,1

Source: (Turkish Statistical Institute (TURKSTAT), 2014)

Population of Gaziantep generally concentrated on central districts that are named Şahinbey and Şehitkamil, which together hosted the 1.556.381 people in 2014. In year 2013, population density which is expressed as a number of people per square kilometer was 101 people in Turkey. In this respect, Gaziantep (270 people per km^2) is on the 4^{th} rank in terms of population density in Turkey after Istanbul (2.767 people per km^2), Kocaeli (477 people per km^2) and Izmir (342 people per km^2) (TURKSTAT, 2014) (Table 6).

Table 6: Gaziantep's Annual Population Density (people per km^2)

Year	2007	2008	2009	2010	2011	2012	2013	2024
Population	229	236	243	249	257	264	270	277

Source: (Turkish Statistical Institute (TURKSTAT), 2014)

Gaziantep has a special location that serves as Turkey's gateway to the Middle East. The city is located in the conjunction area of the Mediterranean and Southeastern Region of Turkey and bordered by Syria to the south (Gaziantep Chamber of Industry, 2014). The city is also located at the center of historic crossroads and connects east to south and north to east along the traditional Silk Road (Yılmaz, 2014) (Figure 45). Because of this special location, Gaziantep has been a traditional market center in its region from past to present.

Figure 45: Location of the Gaziantep

Source: (https://commons.wikimedia.org/wiki/File:Gaziantep_in_Turkey.svg, 2015)

Gaziantep is a center that many civilizations lived and Doliche ancient site, which is located approximately 10 km south of the castle of Gaziantep, is known as the first settlement around the historic city center of Gaziantep at BC 1.700 (Belge, 2012). The city has hosted many different cultures and the following ages and civilizations have prevailed throughout history: Paleolithic, Neolithic, Chalcolithic Copper Age, Bronze Age, Hittite, Median, Assyrian, Persian, Hellenistic (Alexander the Great), Roman, Byzantine, Abbasid, Seljuk and Ottoman (Yılmaz, 2014). According to Alpargu (1999), Latakia and Aleppo were trade centers during the Ottoman Empire Period, and Gaziantep had close relation with Aleppo and traders had to pass through Gaziantep to reach Aleppo. In the 15th century, the city was labelled as a 'Small Buhara' being a center of commerce and culture in its region (Göyünç, 1999). In the 19th century, the control of the region passed into the hands of Turks. During the national independence war, Gaziantep received the title of 'Gazi' because of its success in defense against the occupying forces (Yılmaz, 2014).

Nowadays, Gaziantep has become the center of textile industry and it takes an important role in the Turkish economy with its industrial and commercial infrastructure. With five organized industrial zones, Gaziantep's volume of foreign trade reached approximately 13 million dollars in 2013 (Figure 46). In 2013, exports almost increased by 10% compared with the year 2012 and the city accounted for 68% of total export of the Southeast Anatolia Region. In addition, Gaziantep currently

trades with 173 different countries around the world and has the 6th highest amount of exports among Turkish cities (Gaziantep Chamber of Industry, 2014) (Table 7).

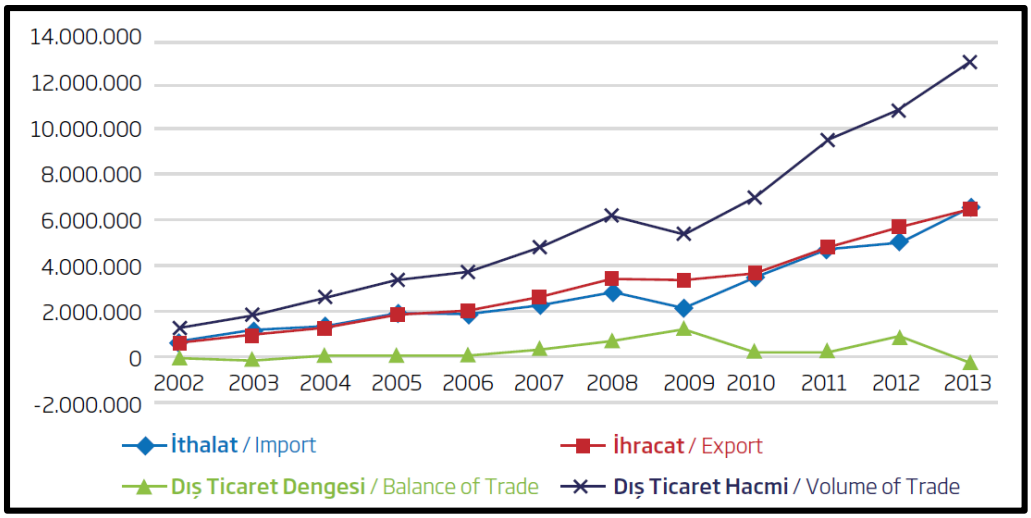

Figure 46: Gaziantep Foreign Trade Overview (1.000 USD)

Source: (Gaziantep Chamber of Industry, 2014)

Table 7: Top 10 Exporter Provinces in Turkey (Million Dollar)

Rank	Province	Export in 2013
1	Istanbul	63.800
2	Bursa	12.855
3	Kocaeli	12.725
4	Izmir	8.916
5	Ankara	7.270
6	**Gaziantep**	**6.472**
7	Manisa	4.033
8	Denizli	3.083
9	Sakarya	2.240
10	Hatay	2.083

Source: (Gaziantep Chamber of Industry, 2014)

Although Gaziantep takes place forefront at national level in the context of economic indicators, according to the Socio-Economic Index (SEGE) determined by Ministry of

Development in 2011, the city is ranked at the 30th position within 81 provinces (Table 8). Gaziantep is generally located at the end of the list in terms of many indicators such as accessibility, quality of life, accessibility of education and health services and innovation capacity etc. As a result of that the city is in third level developed provinces category in Turkey (Figure 47).

Table 8: Socio-Economic Development Index Ranking of Turkish Provinces

SEGE-2011 Rank	Provinces	SEGE-2011 Index Value
1	Istanbul	4,5154
2	Ankara	2,8384
3	Izmir	1,9715
…		
28	Karabük	0,2916
29	Zonguldak	0,2758
30	**Gaziantep**	**0,2678**
31	Trabzon	0,2218
32	Karaman	0,1864
…		
79	Ağrı	-1,6366
80	Hakkari	-1,6961
81	Muş	-1,7329

Source: (Ministry of Development – 2011 Socio-Economic Development Index, 2013)

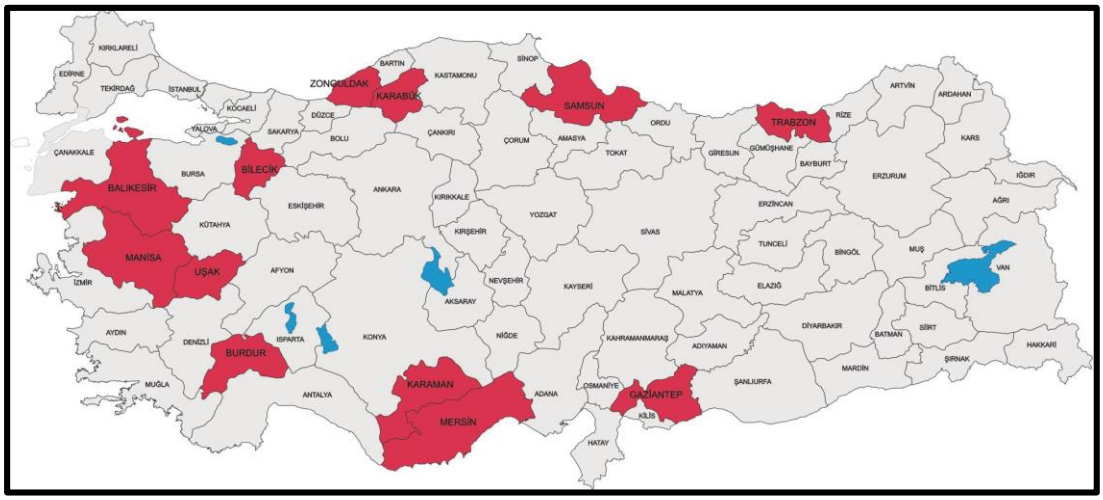

Figure 47: Third Level Developed Provinces in Turkey

Source: (Ministry of Development – 2011 Socio-Economic Development Index, 2013)

According to Gross Domestic Product (GDP) by Provinces data released by TURKSTAT in 2001, Gaziantep's GDP was 2.093 million dollar which is 1,4% of the country's total GDP (TURKSTAT, 2002). Moreover, Gaziantep is an entrance gate for GAP Region and has a critical role for the development of the region (Yılmaz, 2014). In parallel with the economic and industrial development of the city, Gaziantep also has an important role in tourism sector with its historical and cultural values. The city attracts tourists with its restaurants, museums and traditional artisanal craft stores (ECA, 2011).

Throughout the history, Gaziantep has been located on important trade routes near the Silk Road and it connects Anatolia with the fertile lands of Mesopotamia. Gaziantep's transportation system connected with the surrounding cities and particularly with Middle East plays a significant role in the development of the city. Furthermore, Gaziantep is a regional growth center and has three important highway connections. First one is O-54 Motorway which connects the city with Adana and Şanlıurfa. Second is D-400 known as the Silk Road. Thirdly, in the north-south direction, D-850 links Syria to Turkey (Yılmaz, 2014) (Figure 48). Especially with the South-eastern Anatolia Project (GAP), the connections between the cities in GAP Region were assumed to be more powerful for development of the region by national government. At the beginning of the 1990s, highway investments started to accelerate and highway

length in Gaziantep reached to 145 kilometers by the year 2013 (KGM, 2014) (Table 9).

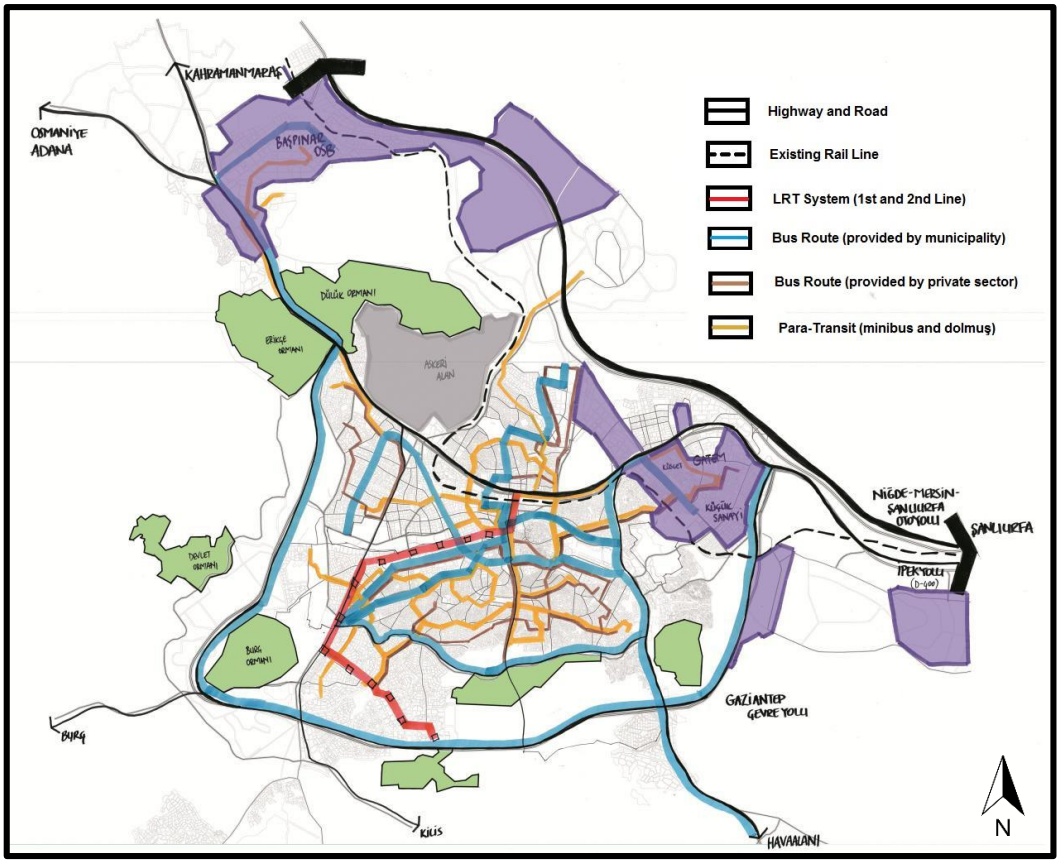

Figure 48: Gaziantep Transportation Systems

Source: (CRP 401-402 Planning Studio Analyses, 2012)

Table 9: Gaziantep's Highway Investment through Years (km)

Year	1995	1999	2003	2007	2009	2013
Population	19	63	63	115	135	145

Source: (KGM, 2014)

The transport network that is mainly based on motorway and rapidly growing population cause increasing usage of motor vehicles in Gaziantep. Between 2001 and 2010, as Gaziantep's population grew by 62%, the number of motor vehicles (mainly cars and motor cycles) had more than doubled (ECA, 2011) (Figure 49). According to the TURKSTAT Motor Vehicle Statistic of January 2015, Gaziantep had 429.914

motor vehicles meant that 228 motor vehicles for every 1.000 inhabitants. This ratio is higher than most cities with the similar income and population size. Moreover, annual growth rate of private car ownership grew much faster (more than twice) than GDP per capita in Gaziantep during 2001-2010 (World Bank, 2015) (Figure 50).

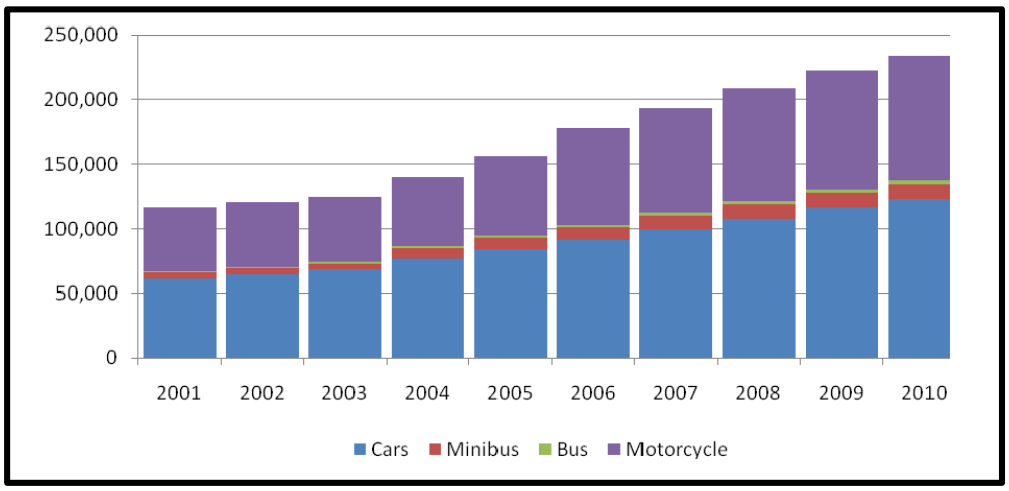

Figure 49: Growth of Motor Vehicle for Passenger Movement in Gaziantep

Source: (ECA, 2011)

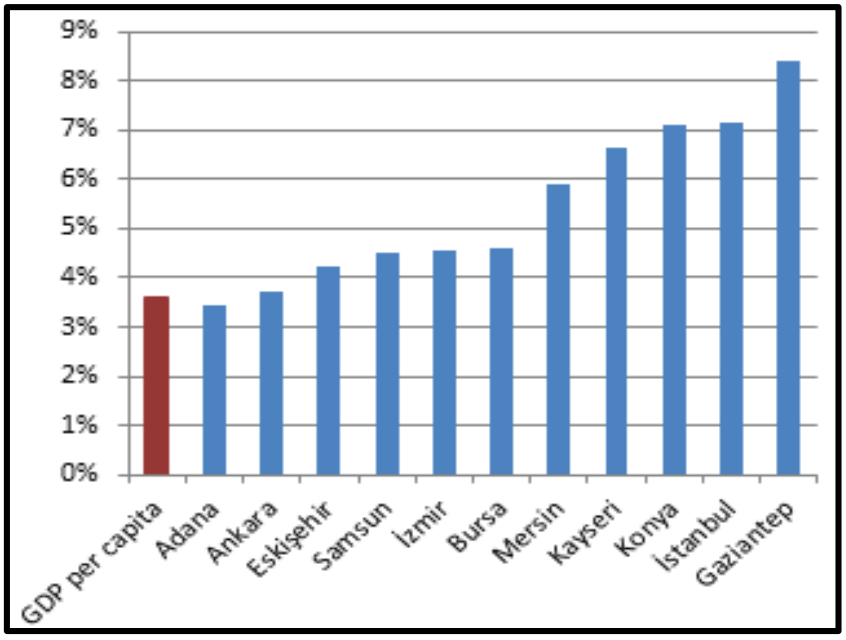

Figure 50: Annual Growth Rate of Car Ownership Compared to GDP Per Capita Growth Turkish Cities

Source: (World Bank, 2015)

In addition, the population (15 to 75 years old) is making an average of 1.2 trips per day in Gaziantep (corresponding to a daily mobility of about 950.000 trips per day) and this mobility is less than other cities that have same size with Gaziantep (Climate Action Plan of Gaziantep, 2011). The distance of these trips are mostly short, allowing a high share of walking for 54% of trips and the remaining 46% is made by vehicles. However, walking rate tends to decrease because the existing sub-centers are not sufficient to provide services that are needed. Moreover, trips made by vehicles are generally based on motorized public transport systems (minibus, service and bus – share 75% of total vehicle trips) and more than 20% share of the total vehicle trips are made by private cars (Tercan, 2011) (Table 10). Therefore, it is inferred that the majority of the passengers in Gaziantep mainly tend to use mass transport systems. On the other hand, privately operated vehicles like minibuses (%27), personnel and student services (%29) and buses (%12) are generally preferred because of the inefficiency of the municipality owned mass transportation systems. Public transport provided by private enterprises are also inefficient since most of them are based on time profit and do not serve the public needs.

Table 10: Trips by Transportation Modes in Gaziantep

Transportation Mode*	Daily Total Trip (%)	Daily Vehicular Trip (%)
Pedestrian	54,08	-
Para-transit Transport (minibus)	12,57	27,36
Bus (privately owned public bus+municipality owned bus)	8,23	17,92
Personnel and Student Service	13,51	29,42
Private Car	9,49	20,66
Bicycle	0,28	0,62
Motorcycle	1,05	2,30
Others	0,79	1,72
Total	100	100

Source: (Tercan, 2011)

**LRT system that started to operate in 2010, is not included within transportation modes.*

5.2. Urban and Regional Planning History in Gaziantep and Implications for Urban Transport

Gaziantep is one of the oldest settlements in Anatolia and its population growth began to increase with the migration from rural to urban especially in the 1950s. According to Turkish Statistical Institute, while Gaziantep had a population of nearly 120.000 in 1970s, it grew to over 1,88 million in 2014. By examining historical development and planning studies of Gaziantep, it is seen that there are four major master plans throughout city's history. The first plan was made by Prof. Hermann Jansen in 1938. After 12 years, second plan of Gaziantep was drawn by two architects; Kemal Ahmet Aru and Kemali Söylemezoğlu in 1950 and this plan prevailed more than two decades. However, in the beginning of the 1970s, the second plan started to be inadequate in the face of urban growth. Thus, in 1974, city planner Zühtü Can won the project competition organized by Iller Bank and made the third plan of the city. Fourth master plan with additional fields was also made by Oğuz Aldan in 1990. Furthermore, many additional master plans apart from mentioned four plans had been applied to the city to meet the demand of increasing urban population. These are piecemeal plans however. Currently, a new comprehensive master plan study is being carried out; however, it is not finalized and announced to public yet.

5.2.1. Herman Jansen's Plan (1938)

Hermann Jansen made the first plan of Gaziantep in 1938. During the implementation period of the plan, the population of the city was roughly 50.000. The target year of the plan was 1950 and Jansen estimated that population would be between 150.000 and 200.000 in this year. However, population just reached up to 70.000 in 1950 (CRP 401-402 Planning Studio Analyses, 2012). Jansen's plan aimed to respond to growing population within the existing urban area. As it is seen on walking city section, which was reviewed in the second chapter, Jansen tried to prevent urban expansion that could exceed beyond the limits of walking distances. Although estimation of population did not occur and planned macro form was not strictly applied, Jansen's plan designed Gaziantep as a compact and walkable city in these years (Yılmaz, 2014).

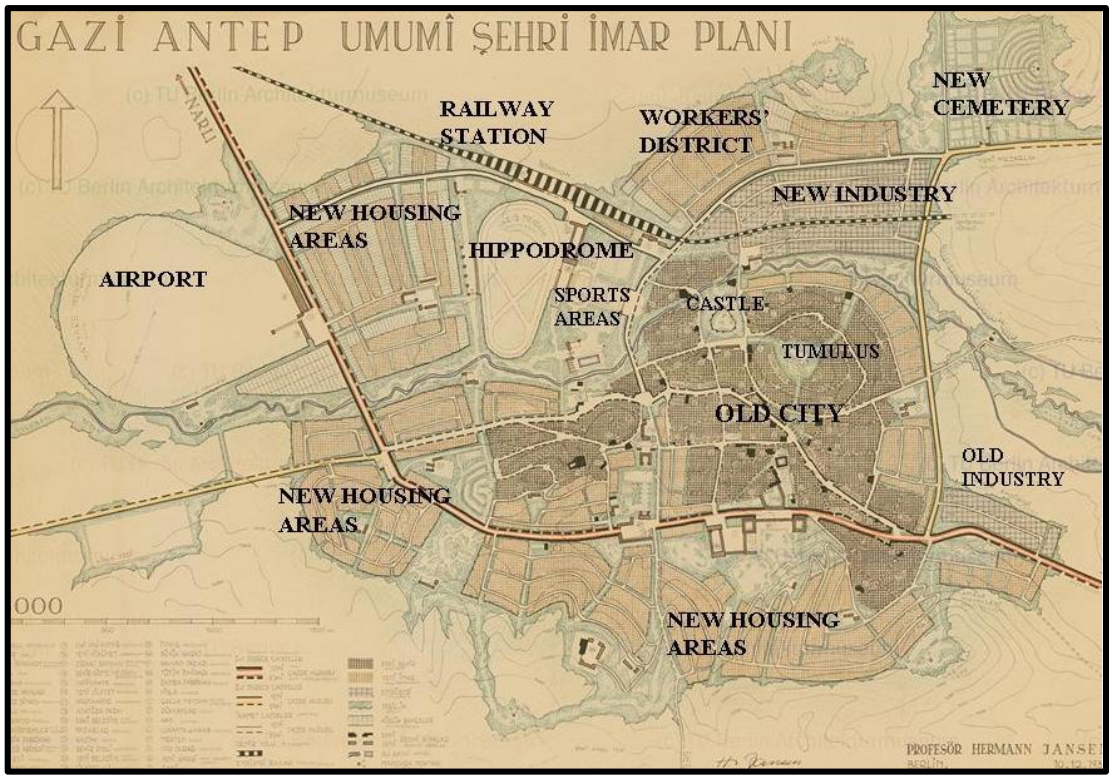

Figure 51: Gaziantep Master Plan in 1938 – Made by Prof. Herman Jansen

Source: (Metropolitan Municipality of Gaziantep)

According to Herman Jansen's plan, the boundary of Gaziantep was determined by the railway route (Aleppo Road), sports district (including hippodrome) and Alleben Stream which is passing along the north of the old city. Gaziantep economy was based

on weaving industry and trading. Industrial areas and worker's district were located close to each other at the northern part of the city. Furthermore, high rise blocks were not offered in Jansen's plan and new residential areas with three-storey houses with gardens were reserved on the southern and western part of the old city. Administrative units were also located between Aleppo Road and Alleben Stream (Karakaya, 2012) (Figure 51).

According to Karakaya (2012), Jansen's Gaziantep Plan had more specification compared to Herman Jansen's other plans such as those for Adana and Mersin. It defined many areas for socialization and recreation facilities and also included two significant purposes. The first one was establishing a railway line to the northern part of the old city. The second purpose was building an east-to-west arterial road passing through the south of the old city to link Aleppo. In addition, the plan offered several important transport corridors. As a result, Atatürk Boulevard and İsmet İnönü Street, which are accepted as the main transport axis of the city today, were opened. Jansen also tried to connect the old city with the proposed residential areas by means of pedestrian routes (CRP 401-402 Planning Studio Analyses, 2012). Hence, it is clear that transportation emerged as an important factor affecting urban development, and being affected by urban development decisions in this period.

Although estimation of population did not turn out to be correct, Jansen's plan designed Gaziantep as a compact and walkable city in these years (Yılmaz, 2014). The plan tried to create high quality urban areas with contemporary urban standards. It included conservative, environment friendly and functional design principles that were evident in the zoning pattern, establishment of neighborhood units for different social groups, large recreational areas, preservation of historic city center and green traffic free areas connecting the city center with nature (CRP 401-402 Planning Studio Analyses, 2012).

5.2.2. Kemal Ahmet Aru and Kemali Söylemezoğlu's Plan (1950)

The second plan of Gaziantep was made by Kemal Aru and Kemali Söylemezoğlu in 1950 when the population of Gaziantep was 70.000. The plan generally emphasized traditional urban pattern of the city and road system (IKA, 2013). In the 1950s, population was rapidly increasing and urbanization accelerated with migration movements. Therefore, master plan responded to the demand for new housing and working areas and suitable roads for a growing number of motor vehicles in the traditional center (Yılmaz, 2014).

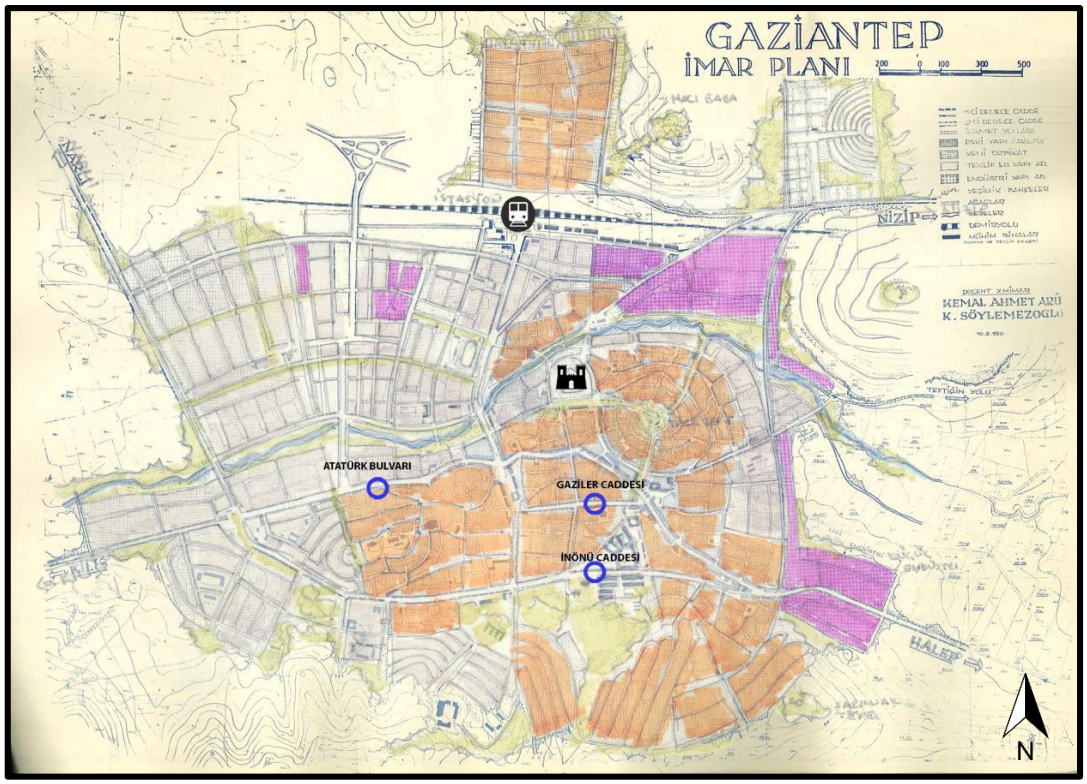

Figure 52: Gaziantep Master Plan in 1950 – Made by Kemal Ahmet Aru and Kemali Söylemezoğlu

Source: (Metropolitan Municipality of Gaziantep)

With the second plan, previous plan's proposals for development corridors and green areas surrounding the Alleben Stream were preserved. Working areas were also located on the northeast of Nizip Road and south-east of Aleppo Road (Figure 52). At the same time, the growth direction of the city shifted towards Atatürk Boulevard,

İnönü Street and Akkoyunlu Street. Gaziler Street was renewed and construction of new roads accelerated in order to optimize roads for motorized transportation (Ay, 2001). Therefore, motorized transportation started to shape urban macro form and linear development started to occur along the renewed and new roads. Accordingly, distances between land uses were increasing in this period.

In the 1960s, while people with low-income who migrated to Gaziantep settled at Karşıyaka and Düztepe districts, high-income groups settled in Kavaklık district. Expansion of the city occurred through the southwest direction at that time. Thus, the city had still developed through the axis determined by Jansen's plan and development patterns of city revealed a linear form on the southeast and southwest direction.

5.2.3. Zühtü Can's Plan (1974)

The third development plan of Gaziantep was prepared by Zühtü Can in 1974 to meet the needs of the city. City's development until the 1990s was led by the decisions of this plan. The third plan, with a target year of 1995, was prepared for 8.010 hectares area. Although the population of the city was predicted to reach nearly 1 million in 1995, population remained quite behind the estimation (Ay, 2001).

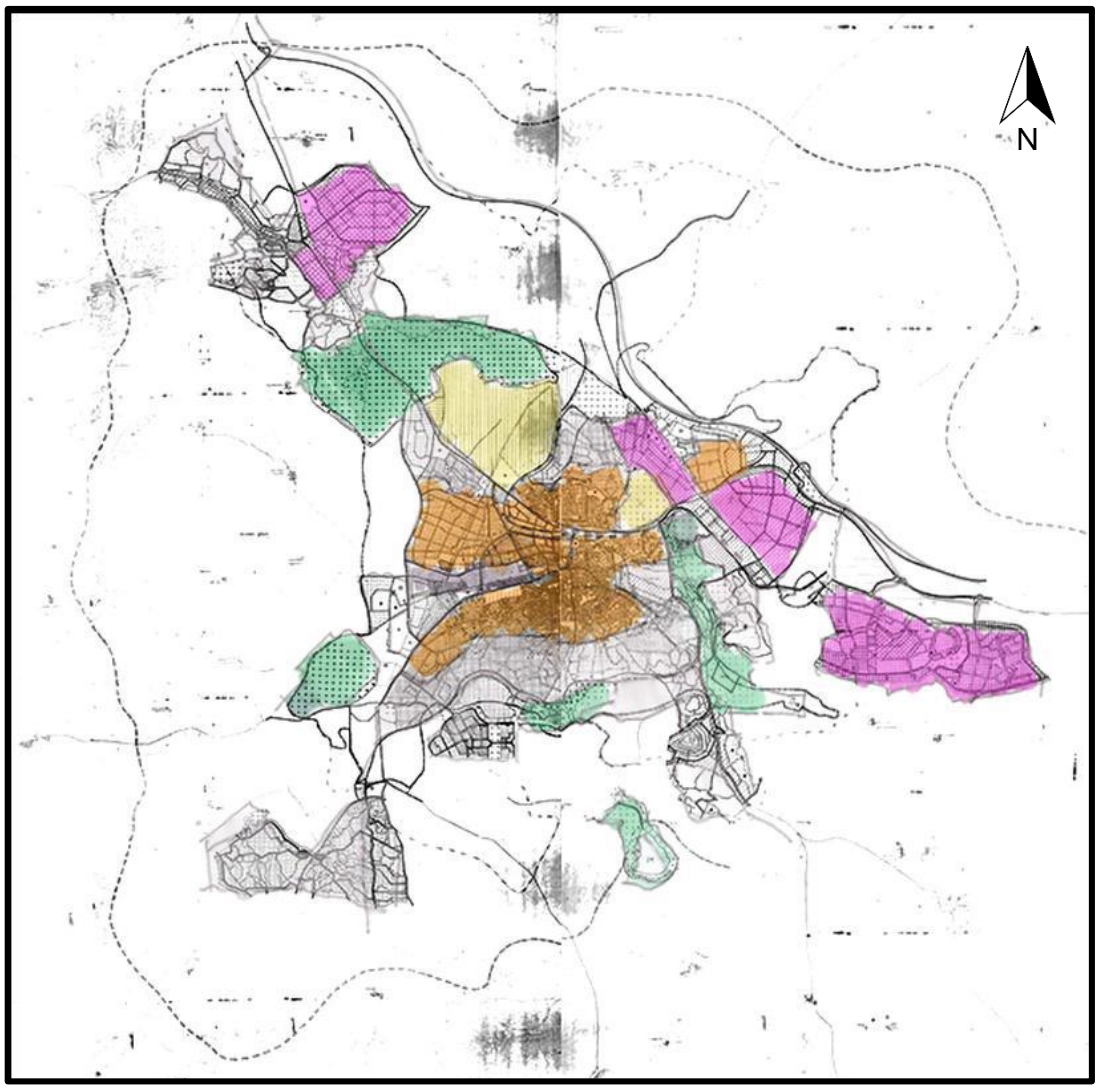

Figure 53: Gaziantep Third Master Plan - Made by Zühtü Can in 1974

Source: (Metropolitan Municipality of Gaziantep)

According to this plan, which is shown in Figure 53, new industrial zones were proposed in the north as well as the east of the city. With these proposals, the spatial growth of the city was proposed to be much larger than previous plans. Residential area proposals in conjunction with these industrial zones seem to be limited although substantial development took place as describe below.

According to Ay (2001), urban population rapidly increased and 40 new neighborhoods were developed in Gaziantep between 1960 and 1975. Most of them were out of planned areas and built far from the city center. The unplanned parts of the city were established within additional plans (31.394 hectares adjacent area) which had been designed without considering of the whole city plan. Also, small industrial sites that were developed around Nizip Street, Araban Road and Silk Road caused uncontrolled expansion of the city into rural areas. Therefore, expansion of the unhealthy and unplanned city parts speeded up and the distances between the urban activities continued to increase and the radius of settlement area almost reached 11 km. in 1980s (Yılmaz, 2014).

5.2.4. Oğuz Aldan's Plan (1990)

The fourth master plan of Gaziantep prepared by Oğuz Aldan was officially launched in 1990 due to the city's needs and problems that generated from squatter housing and local plans (CRP 401-402 Planning Studio Analyses, 2012). The target year was 2005 and population of the city was predicted to reach 1.800.000. The plan also assumed that planned areas would increase from 8.000 hectares to 21.000 hectares (Ay, 2001).

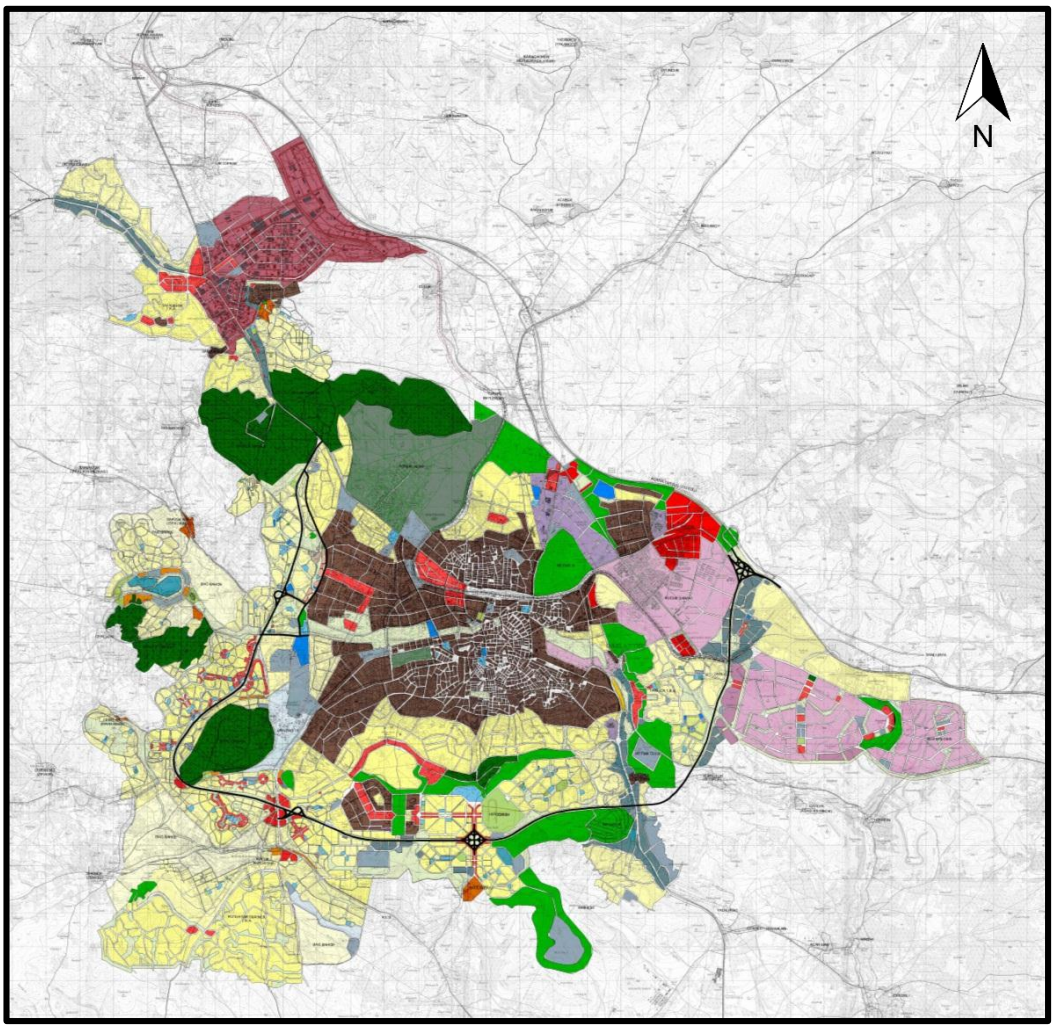

Figure 54: Gaziantep Fourth Master Plan - Made by Oğuz Aldan in 1990

Source: (Metropolitan Municipality of Gaziantep)

To meet housing needs of the increasing population, new development areas (İbrahimli and Kızılhisar) were primarily planned on the north and south part of the city and planned housing area was increased from 4.500 hectare to 7.400. Industrial area also increased from 1.800 hectare to 2.250 while industry sector had still been the dominant

sector in this planning era (Ay, 2001). Furthermore, rapid growth of the peripheral areas of the city generated the formation of new commercial areas such as GATEM (Gaziantep Trade and Industry Center), a new commercial and industrial center with 4.500 workplaces planned in the northeast part of the city (Yılmaz, 2014).

According to Oğuz Aldan's plan, population of Gaziantep was estimated to be 1.800.000 by the year 2005 and opening of new areas for settlements were proposed. However, population remained far behind this projection and uncontrolled expansion of the city occurred in this period (Yılmaz, 2014). In addition, Oğuz Aldan's plan allocated areas in Gaziantep as institutional, residential and industrial zones instead of mixed land use (Ay, 2001). Hence, this segregation between different land uses created more travel demand and more distance for daily trips in Gaziantep.

5.2.5. Additional Master Plans (1980-2005)

Especially after the 1980s, rapid changes occurred in Gaziantep urban area with the impacts of the neoliberal policies. Urban sprawl is one of these changes in Turkey and this growth pattern includes low-dense, scattered and sprawling development that generally occurred in peripheral, previously rural areas (Kaçar, 2008). As a result of this growth pattern, Gaziantep has experienced many additional plans apart from the four major master plans (Figure 55, Table 11). These additional plans caused extensive usage of areas for development of the city. Although government policies aimed to meet increasing population demand, this fragmented approach resulted in changing the shape of the urban macro form and distances between urban activities have rapidly increased with urban sprawl in Gaziantep (Yılmaz, 2014).

Table 11: Additional Master Plans in Gaziantep

Year	Name	Aim
1980	Göllüce Mass Housing Area	Planned for Afghan immigrants who ran away from the war but local people have settled in that area instead of them.
1990	Bağlarbaşı Mass Housing Area	Planned for the immigrants who came from the south-eastern Anatolia and the eastern Anatolia because of terror and security issues in the 1990s.
1993	Serice Mass Housing Area	These housing areas were opened in the south and southwest side of the city for satisfying housing need.
1998	Taşlica and Safaşehir Mass Housing Area	The plan was prepared to redevelop the existing squatter housing areas.
2002	Additional Master Plan	The plan includes the west side of the city planned for people with the high income.
2003	Ring Road Additional and Revised Master Plan	The plan offers 10.000 m^2 area to be nationalized due to the difference between two road route decisions.
2004	Additional Master Plan	The plan includes areas close to the highway and it aims to connect the industrial areas to the city center.
2005	Additional Master Plan	The plan aims to contribute to the city's prestige and Bozdağ village was zoned for the urban rent.

Source: (CRP 401-402 Planning Studio Analyses, 2012)

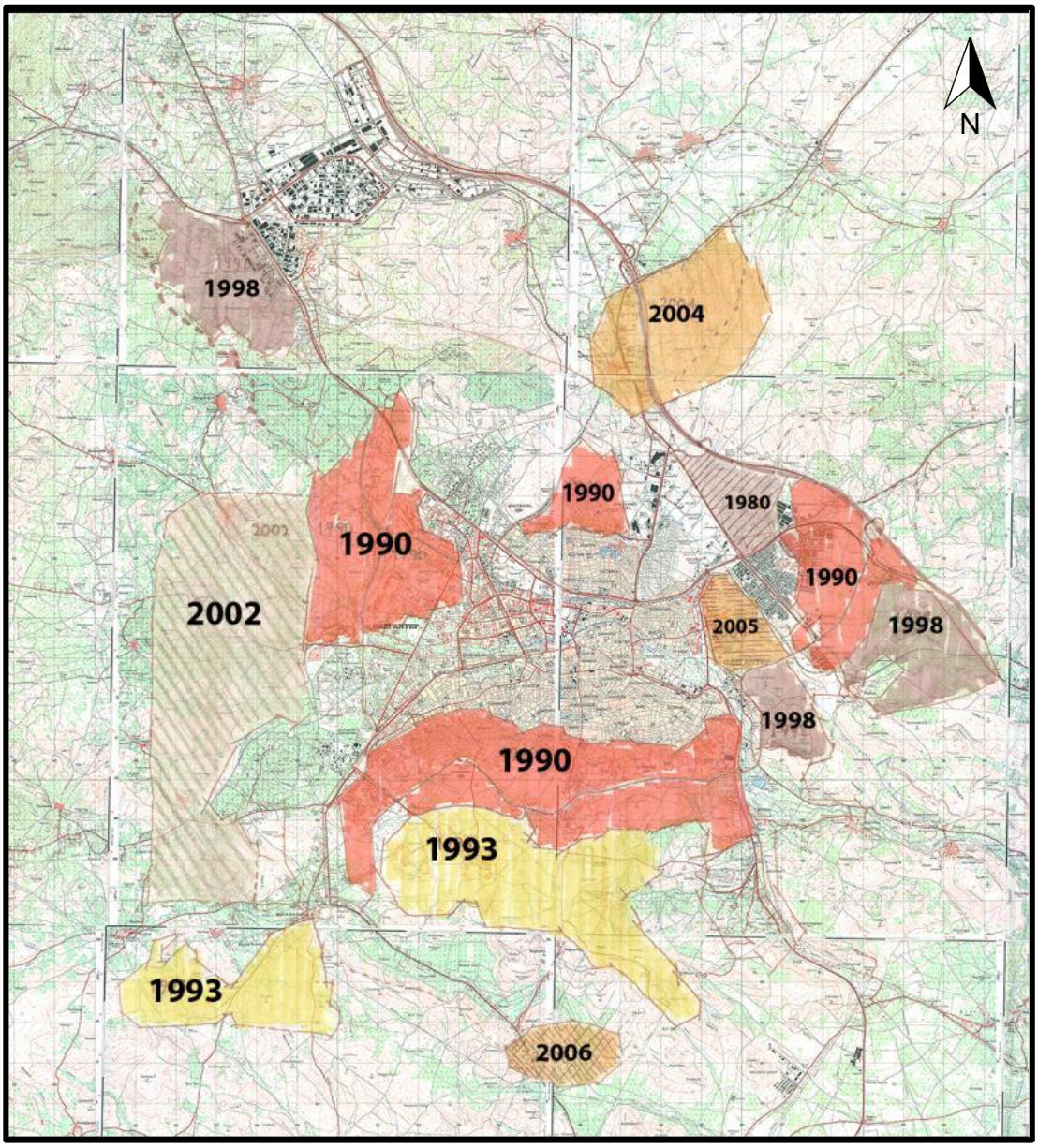

Figure 55: Additional Master Plans in Gaziantep

Source: (Metropolitan Municipality of Gaziantep)

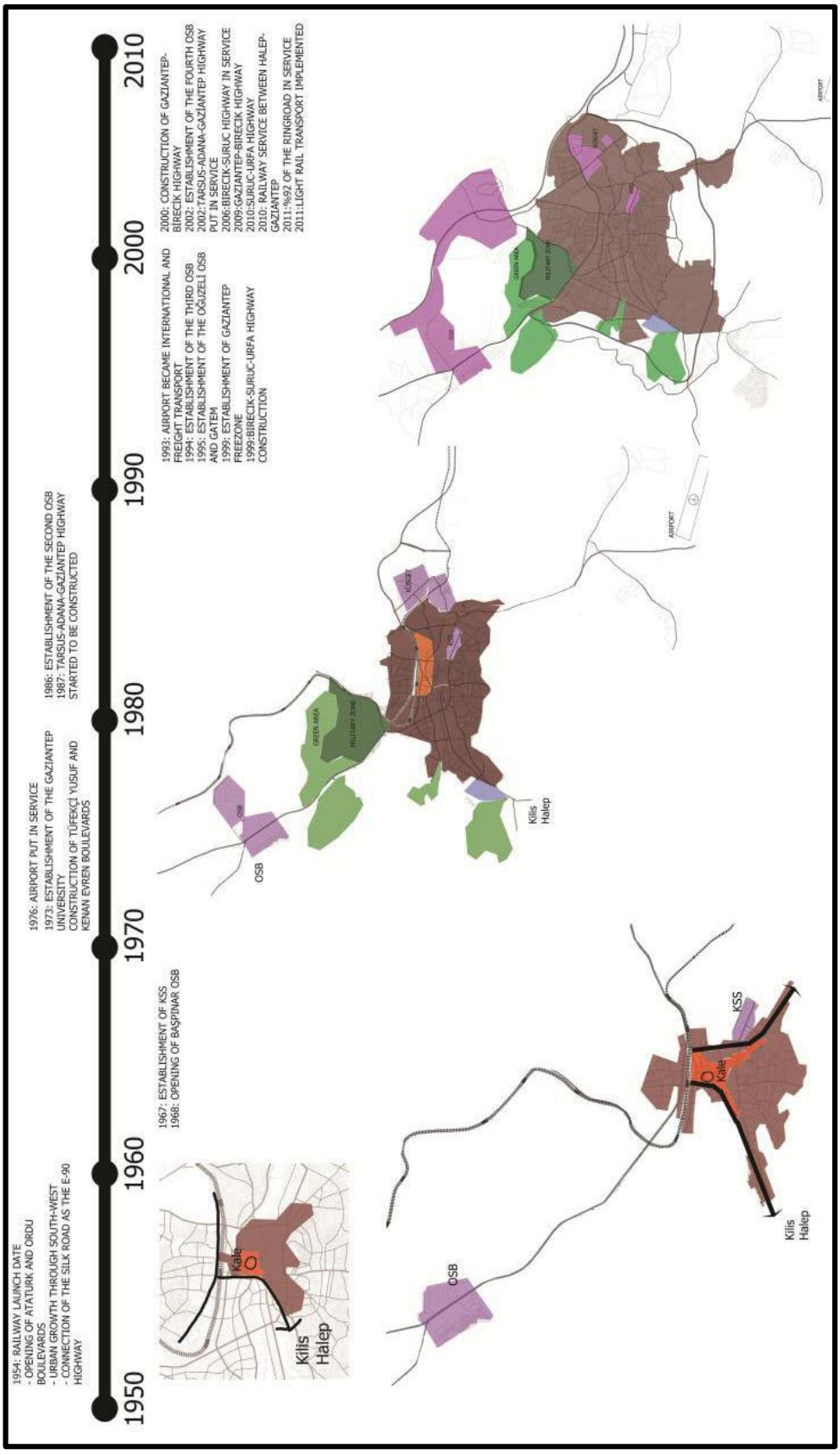

Figure 56: Urban Macro form Developments Concerning Transportation

Source: (CRP 401-402 Planning Studio Analyses, 2012)

In brief, the timeline indicated on Figure 56 summarizes the spatial and transport based development of Gaziantep. Before the 1950s, the city was formed as a compact structure within walking distance. After that transport investments and important land use decisions significantly influenced urban development. In the 1950s, renewed and new roads for motorized transport started to shape urban macro form, especially Kilis and Aleppo axes, leading to linear development along southeast and southwest directions. Although the railway was established in 1954, its impact on urban development was mostly perceived in the 1960s and organized industrial districts were located according to the railway infrastructure. Between 1970 and 1990, establishment of university and organized industrial districts were important investments that oriented urban macro form. Also, construction of airport was an attractive investment for urban development. Lastly, highway constructions between Gaziantep-Şanlıurfa and Adana-Gaziantep intensely oriented urban development between 1990 and 2010 and many other investments such as free zone, organized industrial districts etc. were placed in accordance with these highways.

5.2.6. Regional Plans Comprising Gaziantep and Its Region

In the Turkish planning system, the regional planning perspective holds a significant role. Regional plans are designed in order to predict and control socio-economic development trends, sector targets, distribution of land use and infrastructure. However, these plans has mainly been limited in impact due to their limited implementation because of the lacking of the legislation (Keleş, 2006).

Regional plans are strategy, coordination and guidance documents to be the basis of regional programs and projects. Regional Development Agencies, which were established in 26 regional centers after 2006 in Turkey, are responsible for preparing regional development plans under the scope of the Ministry of Development (Figure 57). In this regard, the Silk Road Development Agency prepared 2010-2013 and 2014-2023 TRC1 (Gaziantep, Adıyaman and Kilis) Regional Plans.

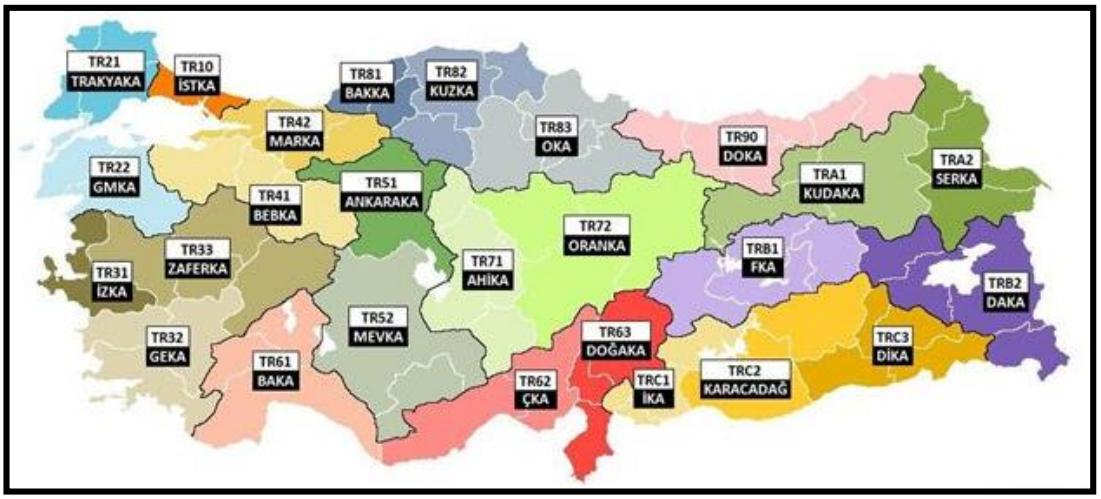

Figure 57: NUTS2 Regions and Development Agencies in Turkey

Source: (http://wowturkey.com/forum/viewtopic.php?t=114820)

5.2.6.1. TRC1 Regional Plan (2010-2013)

TRC1 Regional Development Plan (2010-2013) which includes macro level strategies to improve the region, defines the potentials and opportunities of the relatively advantageous sectors. The plan aims to eliminate the barriers and risks that prevent the regional economic development. In this context, Silk Road Development Agency defined TRC1 Region's vision and objectives as follows in order to accomplish regional development:

> *To be pioneer of sustainable development by improving the competitiveness of industry and agricultural diversity, become a logistic center in the Middle East by its trade experience from the past, create tourism diversification through its cultural heritage and increase the production and employment by bringing together the region's productive factors and dynamics.*

- *To become a logistic center in Middle East*
- *To transform the agricultural enterprises more efficient and competitive*
- *To become a destination center in tourism*
- *To promote industrial competitiveness*

The first objective of the vision is directly related with the urban and regional transport. Close relations between TRC1 Region and Middle East countries in logistic sector and proximity to the port of Mersin and Iskenderun are emphasized. However, it is highlighted that these links are especially provided by highways instead of railway. Four strategies are defined under the objective of *becoming a logistic center in Middle East* and they are generally based on utilizing logistics potential for region and designing employment policies in transportation sector. Moreover, the third objective, *becoming a destination center in tourism*, can be associated with transport. According to Turkey Tourism Strategy-2023, seven tourism corridors are identified and Tarsus-Hatay-Gaziantep-Şanlıurfa-Mardin tourism corridor is defined as a 'Belief Tourism Corridor' in Turkey. Although some objectives and strategies have implications for the transport sector, the plan does not contain any spatial analyses or strategy that can provide concrete proposals for transport infrastructure and investments in Gaziantep or TRC1 Region.

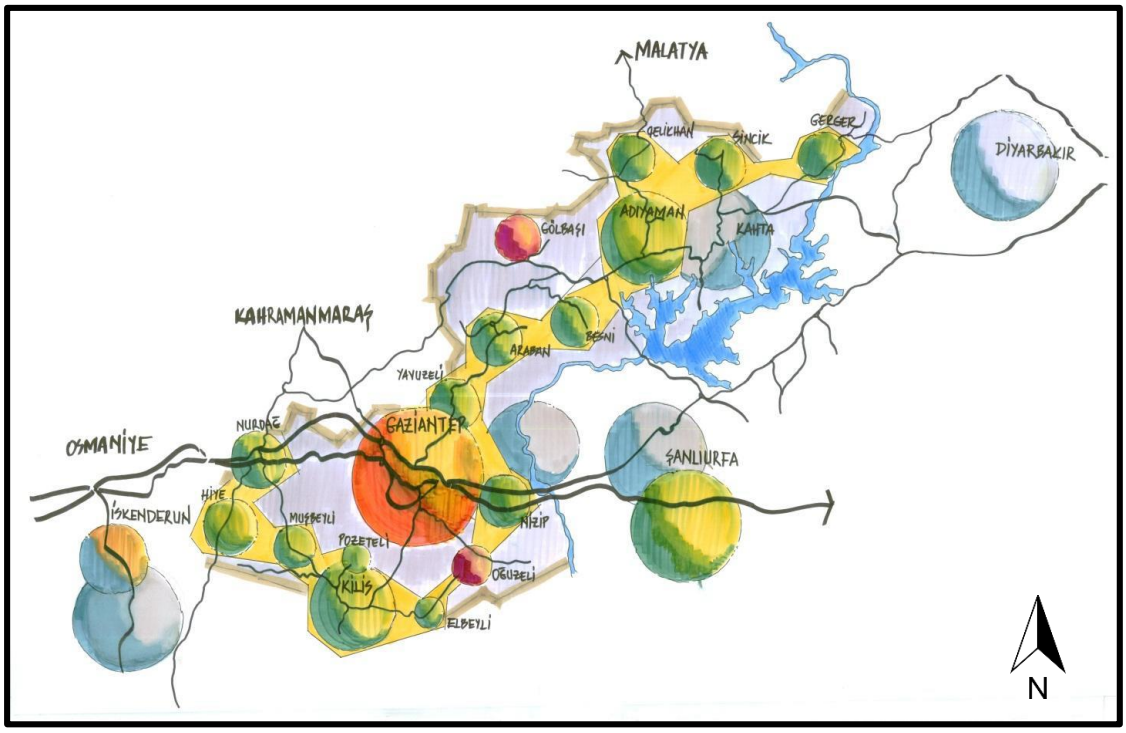

Figure 58: Conceptual Scheme of TRC1 Regional Plan (2010-2013)

Source: (CRP 401-402 Planning Studio Analyses, 2012)

TRC1 Regional Plan (2010-2013) handled transport issues in three aspects: highway, railway and light rail system, and air transport. Initially, existing length of highways

and increasing number of motor vehicle statistics are evaluated for TRC1 provinces. However, the relation between highway investments and increasing car ownership is disregarded and it is not emphasized that road investment actually trigger car ownership trend especially in Gaziantep. Although the region has railway infrastructure, it is not sufficient for realizing the logistic and trade based vision. For this reason, it is suggested that rail investments should be accelerated for logistic and trade based economic structure; however, this is a general strategy that does not comprise specific spatial proposals, such as priority corridor to develop. For urban transport, regional plan stated that the light rail system would be opened in Gaziantep in 2010. It would be beneficial in terms of public transport, and the LRT system would be an alternative to road based transport. Nevertheless, LRT investment is not evaluated within the scope of the urban development, i.e. as a possible tool for shaping urban development.

In addition, the plan stated that Gaziantep had a compact form and developed along the urban corridors before the 1950s, but that the city has rapidly sprawled and integration problem between different urban areas started to occur after the 1950s. Also, the route of the ring road which was designed with Gaziantep Master Plan in the 1990s was changed by the General Directorate of Highways and road was constructed with a different route. The implemented project resulted in a ring road at the south of the city whereas this was not the location planned. Furthermore, the southern areas were already under pressure from urban development and sprawled, and hence this implementation had triggered further sprawl and uncontrolled growth in the south. New housing developments took place towards the ring road and located in western, southern and south-east part of the city. Thus, the regional plan stated that upper scale plans need to consider integration of the new urban developments with the city. However, as stated above, the plan does not include any spatial analyses, objectives or strategies for the integration issue. Actually, it does not recognize itself as an upper scale plan that provide integration between different scale urban plans.

Figure 59: Mass Housing Development Pattern around Ring Road in Gaziantep

Source: (Ersoy et al., 2007)

5.2.6.2. TRC1 (Gaziantep-Adıyaman-Kilis) Regional Plan (2014-2023)

TRC1 Regional Plan (2014-2023) was also prepared by the Silk Road Development Agency. Similar to the first regional plan, it includes macro level strategies to improve the region and aims to minimize intra and interregional development disparities. The plan generally focuses on logistic and industry sector. The vision and four main development axes have been expressed as follows:

> "*Silk Road; High Quality of Life, Strong Human Capital, Competitive and Innovative, Center of Attraction in the Middle East*"

- *Improving the quality of life*
- *Enhancing human and social capital*
- *Ensuring sustainable rural development*
- *Increasing the competitiveness and innovation capacity*

In this respect, the plan identifies 22 objectives and 255 strategies in order to ensure the realization of the vision. The first development axes, *improving the quality of life*, includes six main objectives. With the context of the *reducing environmental pollution* objective, *decreasing motor vehicle ownership and designing bicycle routes in municipal plans in order to increase the usage of green transportation modes* strategy is emphasized but the strategy does not include any suggestions about public transportation systems. Moreover, *ensuring sustainable urbanization* objective mentions that transportation infrastructure should be developed and accessibility to all urban services should facilitate. However, this objective does not propose any strategy for integration between transport and urban development issue. In addition,

eliminating infrastructure deficiencies objective includes five strategies about urban and regional transport but they also do not refer to any specific areas with a spatial analyses that can be interpreted as a concrete proposal in shaping transport network and infrastructure (Table 12).

Table 12: Strategies of the Objective for Eliminating Infrastructure Deficiencies

1.3.5	Quality and diversity of public transportation systems will be improved in order to access urban and rural services and transportation infrastructure services will be developed by considering the needs of disadvantaged groups who live inside the region.
1.3.6	Urban transportation plans will be revised in order to solve urban transportation and traffic problems; in addition to this, the quality of local roads will be improved.
1.3.7	Divided highways and motorways construction will be accelerated by improving existing road infrastructure and the standards of other roads will be upgraded.
1.3.8	Metro and tram investments will be carried out in urban areas in order to improve air quality and to promote the sustainable usage of transportation systems.
1.3.10	High-speed railway investments will be made to fasten and strengthen the transportation connection of the region to its surrounding regions.

Source: IKA, 2014

Alpaydın (2015), who is the head the of the Planning, Programming and Coordination Unit in the Silk Road Development Agency, emphasized that;

> *regional plans are important for elimination of inter-regional and intra-regional disparities and vision and strategies of the region are included in these plans. Therefore, they generally include sectoral and economic analysis. In this respect, two regional development plans were prepared covering the 2010-2014 and 2014-2023 periods by the Silk Road Development Agency so far. Both plans contains some strategies regarding the transportation sector, but spatial analysis*

and recommendations for transport corridors are not included. Even if these spatial recommendations have been given, they would not be taken into account because of the absence of legal sanctions on urban plans.

In addition, TRC1 Regional Plan (2014-2023) indicated that light rail system in Gaziantep is planned in three stages and the first line started to operate in 2010 for minimizing traffic congestion. Also, the plan stated that Metropolitan Municipality of Gaziantep aims to connect working areas and worker's residential districts with the GAZİRAY Project and existing railway infrastructure will be used as a commuter rail system. Hence, LRT lines and GAZİRAY Project route are shown in the plan, as seen in Figure 60. However, the plan just refers to the existing rail plans the municipality; in other words, the figure is not a proposal of the regional plan.

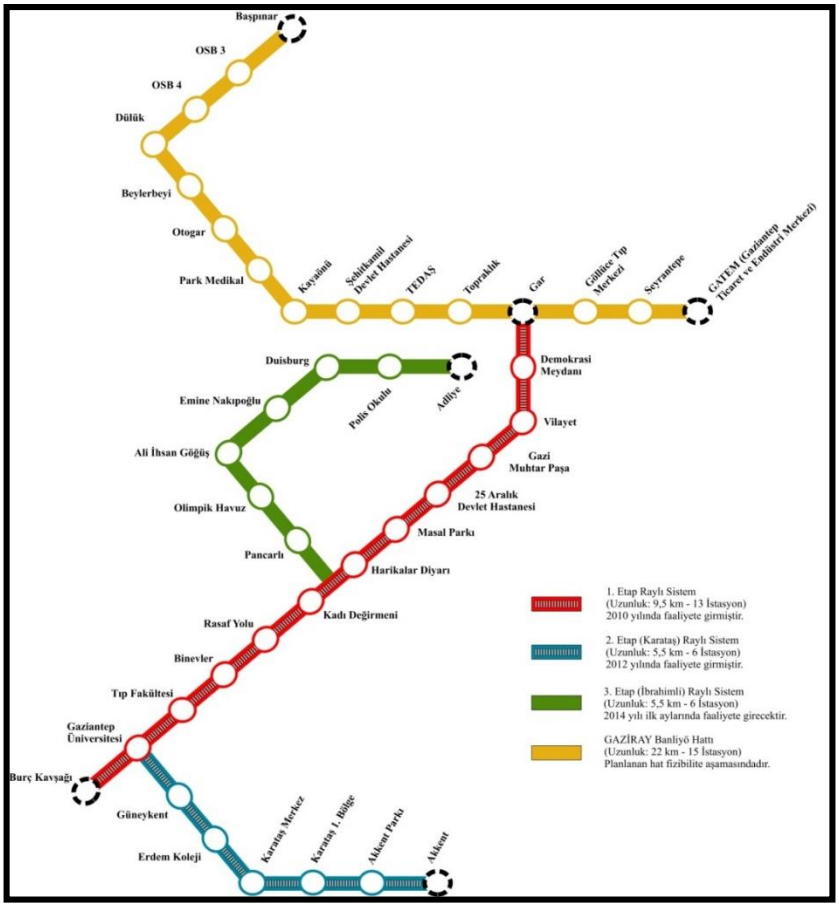

Figure 60: LRT and Planned GAZİRAY Lines

Source: IKA, 2014

To sum up, the regional plan strategies have some implications for transport in very general terms. These cannot be translated into specific and spatial strategies that can shape the transport network and investments however. Ideally, development plans must recognize the wider policy context and set out a strategic spatial framework. Strategies, policies and specific objectives of the plan should take an integrated approach to land use and transportation. Strategic transport nodes and corridors should be identified and protected. For instance, Copenhagen transport corridors, which were supported by rail system investments, were initially proposed in 1947 and it was the regional development plans that introduced the Finger Plan macro form together with the rail corridors strategy to support this macro form. However, both 2010-2014 and 2014-2023 TRC1 Regional Development Plans do not include any spatial definition or analysis and they could not address integration between land use and transport. Strategic transport nodes and corridors also could not be identified.

5.2.7. Gaziantep Territorial Development Plan

The tender of the Gaziantep Territorial Development Plan was made in 2006 but the plan was approved in 2011 by Metropolitan Municipality of Gaziantep. The plan scale is 1/100.000 and target year is 2030. Although territorial development plan was approved in 2011, it was started to be renewed and updated in 2014 and nowadays, it is still in preparation stage.

Within the scope of the territorial development plan, seven key objectives have been identified and the following one is related to integrated planning approach. In addition, principles of the territorial plan includes integrated planning approach and defines this principles as listed below. However, transport plans and investments were not mentioned within the integrated planning.

> *To ensure the preparation of zoning and implementation plans and sub-scaled territorial development plan to be held for sub-regions and settlements to be determined, in an integrated approach, has been identified as the main objective of this study.*

To support the preparation of the plans to be prepared in sub-scale with an integrated approach and prevent the fragmented development.

The Territorial Development Plan proposes additional working areas such as industrial zones, technopark and fair area especially in the north part of the city and they are generally concentrated along the Mersin-Gaziantep-Şanlıurfa Highway. New settlement areas that are larger than existing residential areas are proposed particularly in the south and west part of the city. Therefore, travel time and distance between working and residential areas increase for daily trips in Gaziantep. Also, recently proposed residential areas caused an urban sprawl in that they locate beyond the highways and urban periphery.

In addition, transport has not been taken into account when new areas are opened for settlements and the plan does not define any growth direction along the transit routes. For this reason, the city continues to develop within oil stain urban pattern. Territorial Development Plan only offers new railway line to the Syria which is expanded from the existing line. In addition, LRT lines are shown as those identified within the Transport Master Plan (2006).

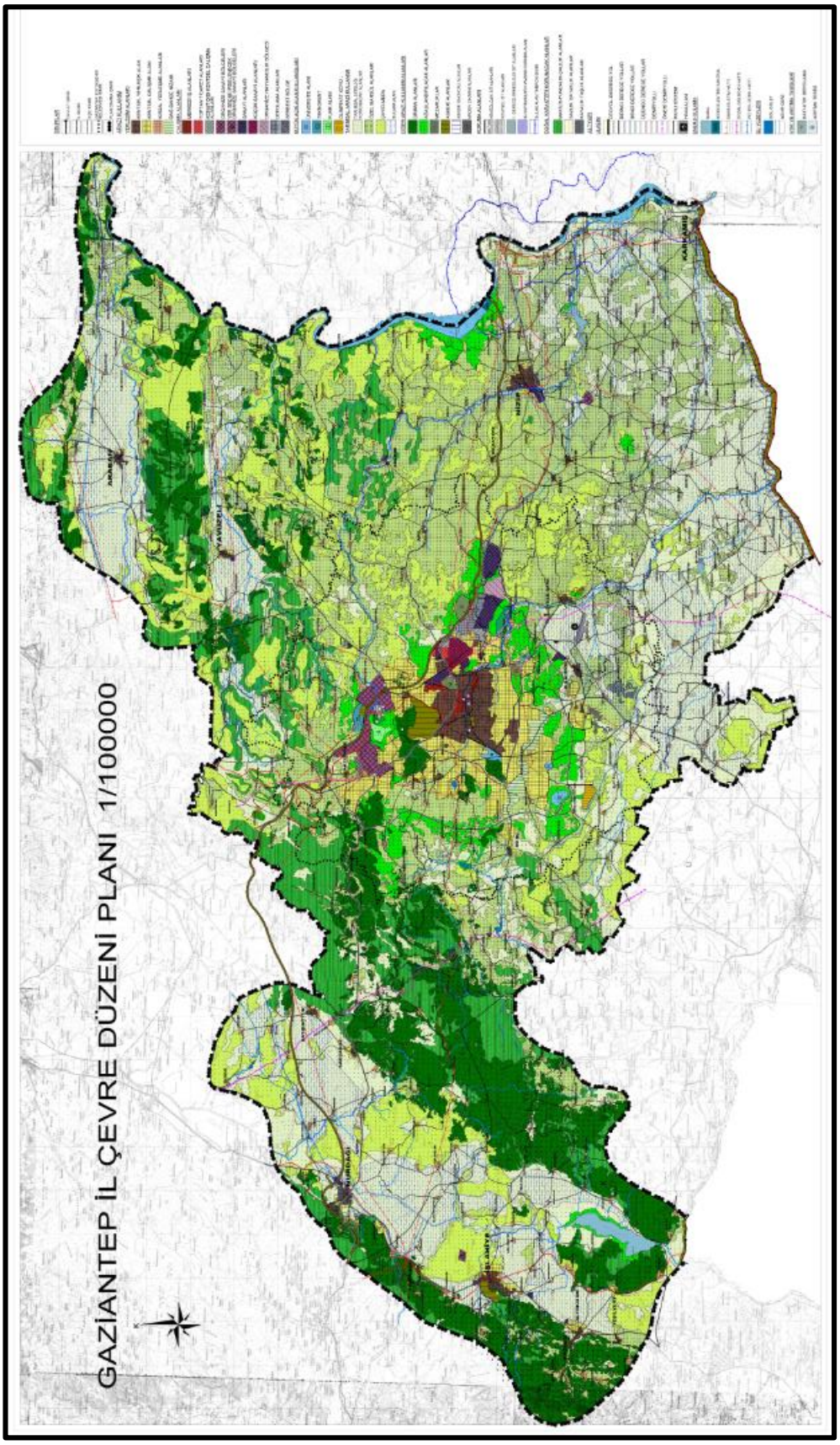

Figure 61: Gaziantep Territorial Plan

Source: Metropolitan Municipality of Gaziantep

5.2.8. Summary: Implications of Urban and Regional Plans for Transport

Urban and regional plans in Gaziantep are summarized in Table 13 in order to understand what implications these plans have for the transport infrastructure and investments in the city, and how transport investments can be used as a tool for realizing these plans. In the next part, transport in Gaziantep will be examined for providing a perspective to extent transport and regional/urban plans are compatible and coordinated with each other.

Table 13: Urban and Regional Plans for Transport in Gaziantep

Year	Urban and Regional Plans	Implications of the Plans
1938	Herman Jansen's Plan	• Compact and high-density structure within walking distance (walkable city)
1950	Kemal Ahmet Aru and Kemali Söylemezoğlu's Plan	• Motorized transport started to shape urban macro form • Linear development along the transport corridors
1974	Zühtü Can's Plan	• Uncontrolled expansion of the city into rural areas, increasing the distances between the urban activities
1990	Oğuz Aldan's Plan	• Rapid growth of the peripheral areas of the city (especially with new industrial zones) • More travel demand and more distance for daily trips
1980-2005	Additional Master Plans	• Fragmented approach that resulted in changing the shape of the urban macro form and in sprawl • Increasing distances between different land uses

Table 13 (continued)

2010-2013	TRC1 Regional Plan	• Does not contain any spatial analyses or strategy that can provide concrete proposals for transport infrastructure and investments • Criticism of ring road on the south but no other spatial transport proposal
2014-2023	TRC1 Regional Plan	• Does not refer to any specific areas with a spatial analyses that can be interpreted as a concrete proposal in shaping transport network and infrastructure
2011	Gaziantep Territorial Development Plan	• Integrated planning approach and principle included but transport plans and investments were not mentioned

Source: (Adopted from Urban and Regional Plans in Gaziantep)

In addition, Çaldıran (2015), who is the city planner in Gaziantep Metropolitan Municipality Zoning and Urban Development Department, mentioned that,

> *after the local elections of 2014, the municipality has adopted that it is important to make all plans within an integrated and coordinated way. Hence, at present, Territorial Development Plan, Metropolitan Plan and Transportation Master Plan are being updated. All these ongoing projects are being updated in an integrated approach.*

5.3. Urban Transport Planning History

Two urban transport planning studies have been carried out for Gaziantep until now. The first one, Gaziantep Urban Transportation Study (1999), was prepared for the whole city by the Ministry of Transport, Maritime and Communication. The second one is the Gaziantep Transportation Master Plan (2006) and it was prepared by the municipality. In addition, new Transport Master Plan was tendered by Metropolitan Municipality of Gaziantep in 2014 and the plan is still being prepared with the 2030 target the year.

5.3.1. Gaziantep Urban Transportation Study (1999)

'Gaziantep Urban Transportation Study, Railway Feasibility Research and Project Idea' study was carried out by the Ministry of Transport, Maritime and Communications in order to investigate the feasibility of alternative transportation systems for the city. The project was tendered in 1996 and a joint initiative, TÜSTAS Sınai Tesisler A.Ş. and Schlegel-Dr.Ing. Spiekermann Gmbh. & Co. Consulting Engineers, prepared the study in three stages: transport study, rail system project idea and feasibility of the project (Özalp, 2007).

Initially, demographic and socio-economic data were collected for understanding the current situation of Gaziantep and interviews were made by related institutions and civil society organizations. Master plans and land use structure were analyzed in detail and new information about travel behavior was collected with the interviews. In this context, number of vehicles and passengers on the critical points of the city, the occupancy rate of vehicles, aim of the trips and peak-hours journeys were examined and many household and traffic surveys were conducted in order to make an effective transport planning (Özalp, 2007).

The study was made for the next two decades and 2016 was chosen as the target year. In order to solve transportation problems that are expected in 2016, a BRT corridor and rail system alternatives were primarily evaluated. Eventually, an integrated rail system, which comprised two lines and was connected with bus and other transport systems, was proposed (Özalp, 2007). Although this study considers that integration

between master plans and transportation systems is an important issue for Gaziantep, the project was not implemented and postponed by local authorities.

5.3.2. Gaziantep Transportation Master Plan (2006)

Gaziantep Transportation Master Plan which was made for the Metropolitan Municipality Gaziantep by Yüksel Proje A.Ş. – Ulaşım Art Ltd. partnership, aims to produce rational solutions to transport problems in Gaziantep. The study consists of following three phases (Özalp, 2007).

- Preparing transport and traffic rehabilitation projects for short term relief of transport problems in the city
- Preparing transport master plan in order to reduce the transportation problems in the long term and to control development of the city
- Preparing an implementation project for the proposed urban rail network

Initially, city's physical, demographic, social and economic characteristics were tried to define and related information regarding urban transport was analyzed. Also, urban development and land use patterns that generated existing urban transport demand were examined in detail within upper scale and municipal plans. Eventually, a rail system in two different routes, express bus routes and bus rapid transit on a route were proposed after the evaluation of the many different alternatives in the context of the Gaziantep Transportation Master Plan. Furthermore, volume of the trips on main transportation corridors were calculated for 2025 and Industrial Zones Line (orange line) was determined as the most intensive line (Figure 62). However, in implementation, priority was given to the Karataş-Univesity-Gar Square route and the reasons will be discussed in the next section.

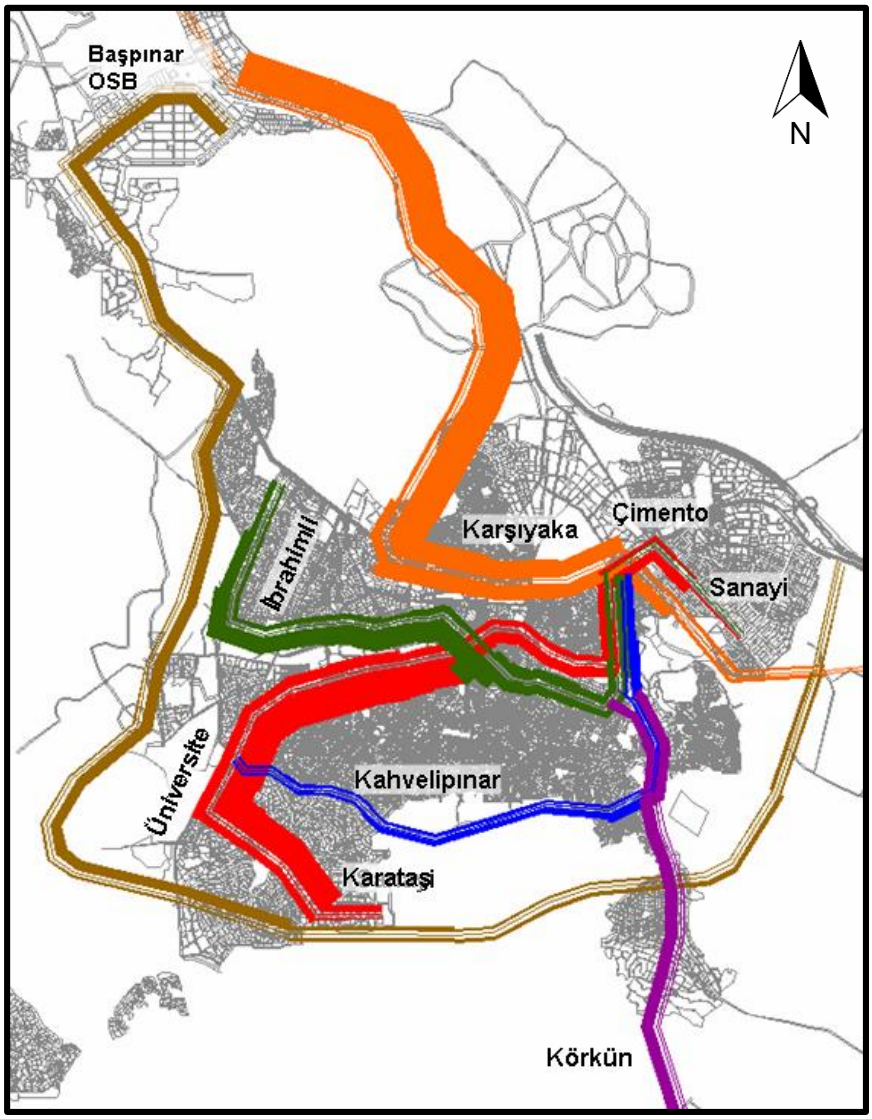

Figure 62: Traffic Volume on the Main Transportation Corridors in Gaziantep

Source: Metropolitan Municipality of Gaziantep

In addition, the issue of integration between transport and spatial plan was included among the aims of the Transportation Master Plan and it was expressed as follows:

> *determining the appropriate projects required in the transport system is aimed in order to meet the travel demand expected to arise as a result of the urban development decision projected in development plans in operation and the city's 2025 targeted master zoning plan which is being prepared.*

Moreover, Transportation Master Plan referred to the 2025-Gaziantep Metropolitan Plan which was being prepared in the same period. Transportation plan emphasized the need to create new transportation corridors and stressed that they should be considered while Gaziantep Metropolitan Plan is prepared. Therefore, Gaziantep Transportation Master Plan (2006) addressed the Gaziantep Metropolitan Plan (2025) and tried to provide integration with spatial plans. In fact, transportation and urban and plans should be integrated and coordinated with each other; however, it seems that the Transportation Master Plan (2006) created inputs for metropolitan plan since transport and urban plans were independently performed at different times.

5.4. Transport Projects and Investments in Gaziantep

In this section, transport investments in Gaziantep are examined with a view to identifying whether transportation investments in the city are shaped in accordance to regional and urban plans.

5.4.1. Ring Road Investment

The route of the ring road which was proposed with Additional Master Plan in 1992 was changed by the General Directorate of Highways and the road was constructed with a different route. The implemented project resulted in a ring road at the south of the city whereas this was not the location planned (Figure 63). Moreover, the southern areas were already under pressure from urban development and had sprawled, and hence this implementation had triggered further sprawl and uncontrolled growth in the south.

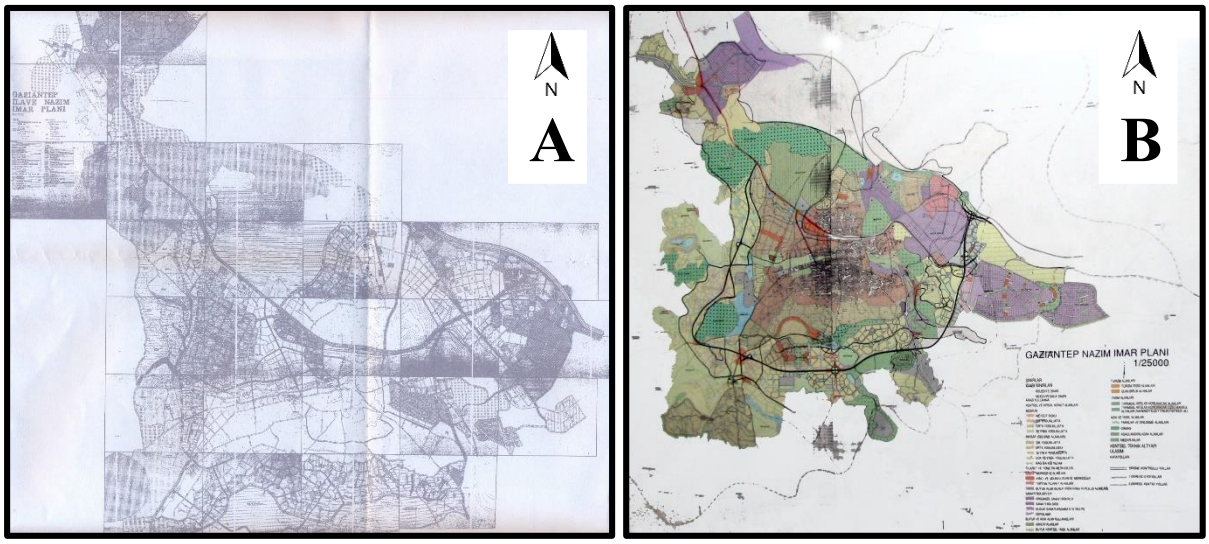

Figure 63: Gaziantep 1992 Master Plan

A - Master Plan (approved in 1992)

B - Master Plan (1992) with the Ring Road Plan Modification

Source: (Ersoy et al., 2007)

5.4.2. Light Rail Transit (LRT) Investments

During the planning process of the LRT system, Transport Master Plan (2006) proposed that rapid public transport would be started from the southern residential areas to reach the city center via university and to link the city center to the industrial areas (Figure 64). However, this planned route that mainly served to working areas, city center and residential districts could not been applied as it was planned in Transport Master Plan.

Interviews with experts at the Department of Transportation Planning and Rail Systems in Gaziantep Metropolitan Municipality reveal that;

> *the most important reason of changing the public transport routes is that the municipality cannot find any financial support. Also, the absence of a legal obligation and sanction of the Transportation Master Plan eased the replacement of these routes by local governments.*

Gaziantep Metropolitan Municipality preferred the LRT system, and instead of the planned route, municipality changed the route, and divided LRT line into three parts. Consequently, the first LRT line with 9,5 km. length and 13 stops started to operate in 2010 serving along the Burç Crossroad–University–Gar Square. Also, in 2012, the second line with 5,5 km. length and 6 stops started to serve between Akkent District and university. Lastly, third line with 5,5 km. length started to work between Ibrahimli District that accommodates high income residential areas and Gar Square in 2014 (Figure 60, Figure 65).

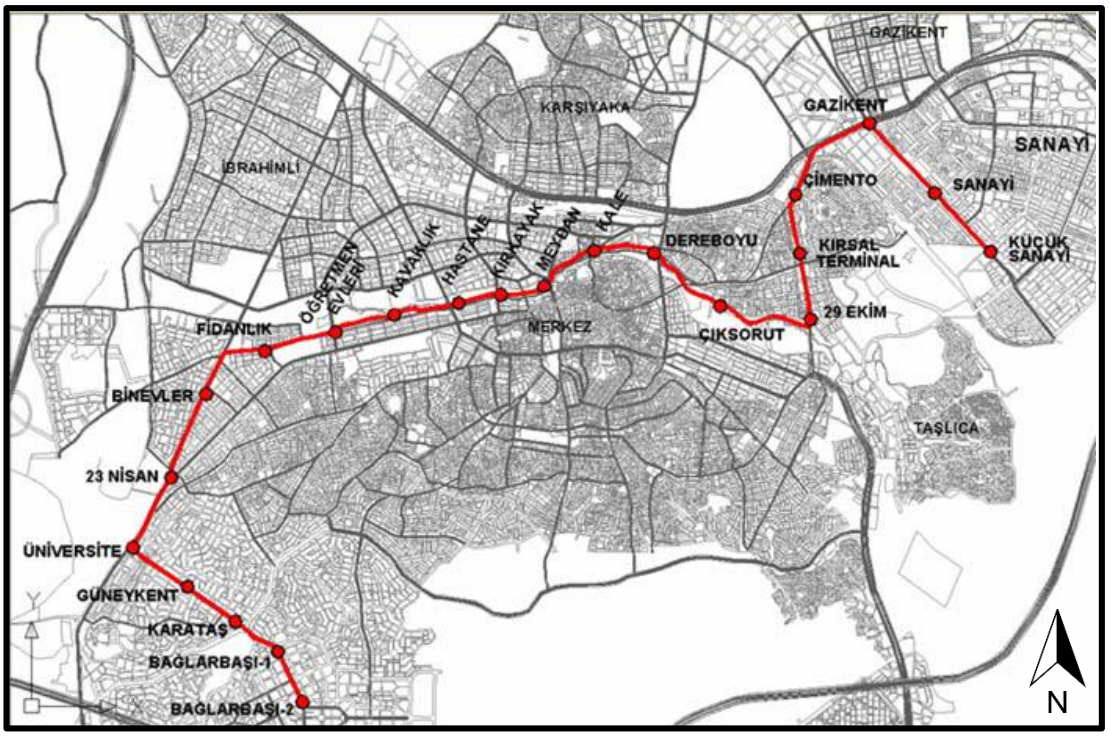

Figure 64: Proposed Rapid Public Transport Corridor in Transportation Master Plan (2006)

Source: Metropolitan Municipality of Gaziantep

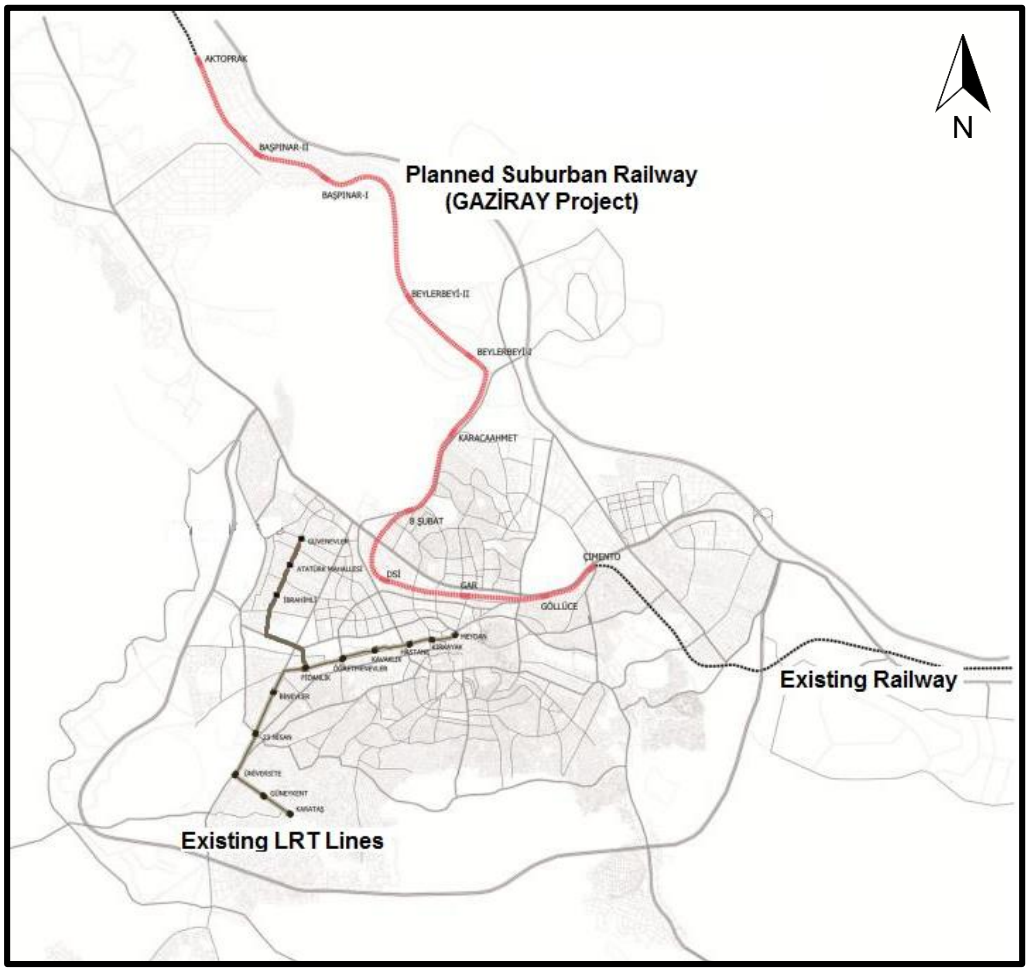

Figure 65: LRT and Planned Suburban Railway Lines

Source: (Metropolitan Municipality of Gaziantep)

Tercan (2011) who was the head of the Environmental Protection and Control Department in Gaziantep Metropolitan Municipality stated in a news item that;

> *the transportation master plan results show that the city needs to construct a public transport system like rail system or BRT to decrease the congestion in the city. The decision makers of the city wanted to have a railway system – a light rail system – to increase the city's popularity.*

In addition, Tercan (2011) explained that the proposed rapid public transport route could not be applied because of the financial reasons and she mentioned that;

the Government Planning Organization which has the authority and responsibility to give decisions concerning the railway systems in the cities, has some pre-requirements to build such systems – requirements that were not justified by the Gaziantep Transportation Master Plan. And adding to it, the municipality couldn't find the necessary finance for a light rail system. Despite all the opposing ideas, the municipality started to construct the infrastructure for a tramway line in 2009 with some important modifications on the first planned line by way of inviting tenders.

Figure 66: LRT System in Gaziantep

Source: (Personal archive)

5.4.3. Commuter Rail Project (GAZİRAY Project)

After the construction of the LRT lines, the local government has been aware of the fact that the connection of the two main industrial areas with the city center and low income residential areas is extremely important for Gaziantep. Hence, suburban railway named as GAZIRAY Project will be established in the next few years. It is planned to use current TCDD rail line and to meet existing demand of daily trips to working areas (Figure 67). Although priority was given to the LRT line, GAZİRAY Project can be useful for minimizing travel time and distance in city. In addition, this line was proposed in the Transport Master Plan (2006) and it also had the highest volume of the trips among the main transportation corridors for 2025 that were calculated in the transport master plan (Figure 62).

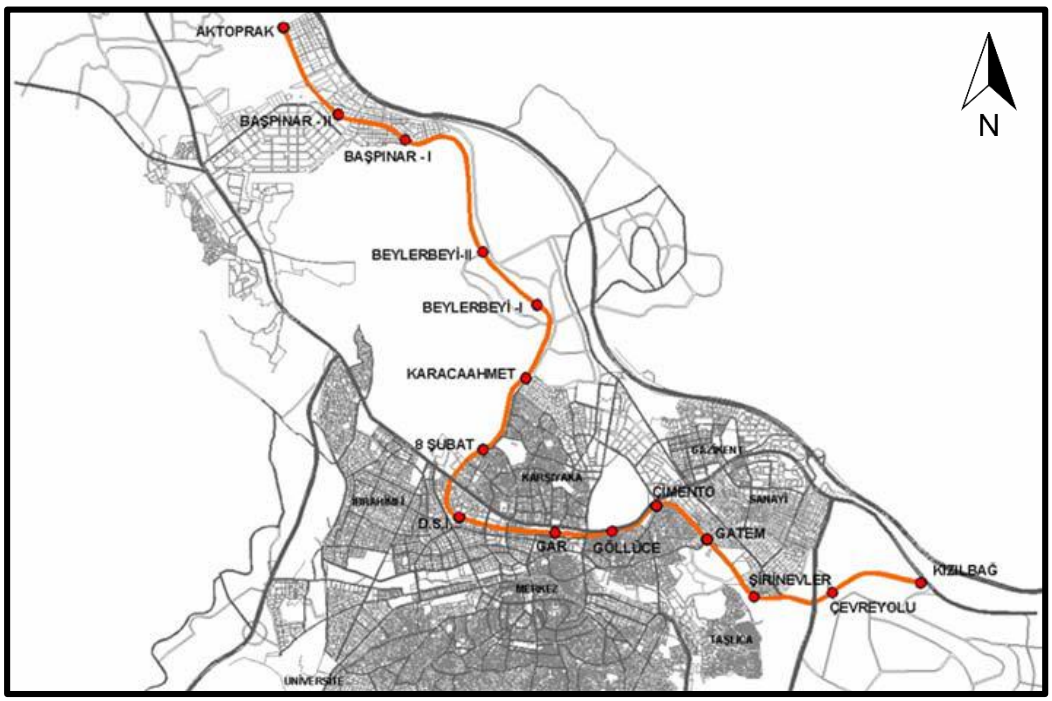

Figure 67: Proposed TCDD Rail System Line in Transport Master Plan (2006)

Source: Metropolitan Municipality of Gaziantep

5.5. Results of the Analysis

Before the 1950s, Gaziantep was designed as a compact and walking city. However, with the road based transport investments, citizens have been settling around the edge of the city. The territorial area of Gaziantep expanded towards urban periphery instead of concentration of the population on existing areas. For this reason, population density significantly differs in many parts of the city. By examining the population density shown on Figure 68, it is seen that population concentrates on the inner part of the city but density gradually decreases towards the outskirts. Although some areas close to the city center have relatively low population density, new areas on urban periphery continue to be opened for development (Yılmaz, 2014).

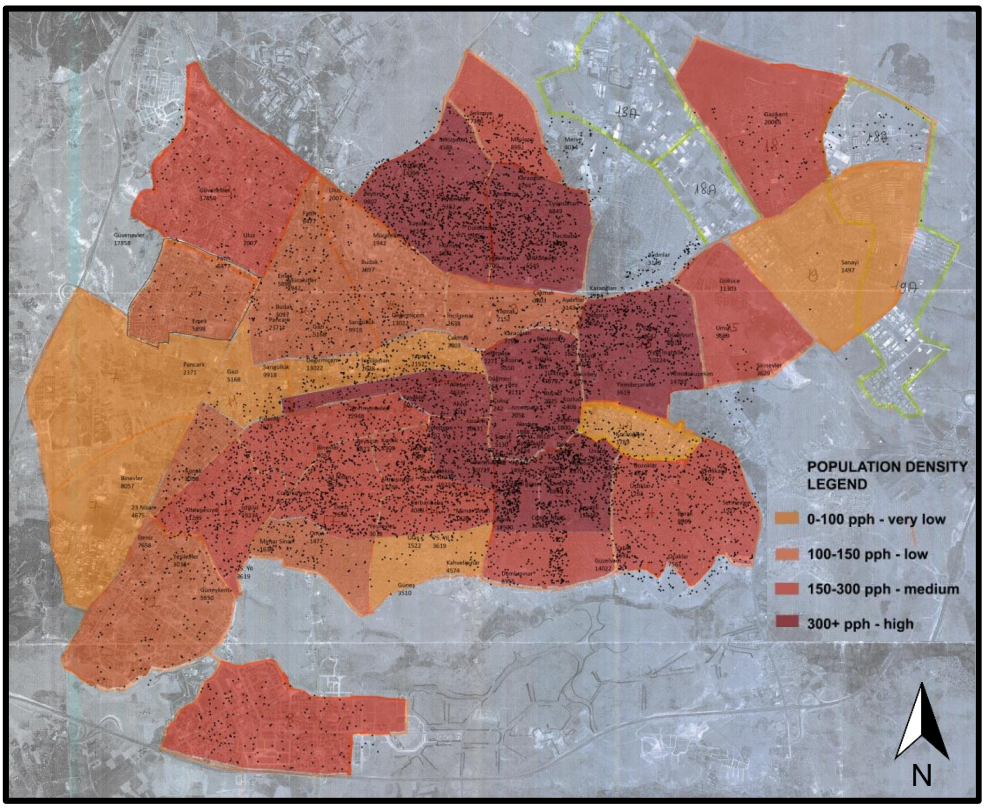

Figure 68: Gaziantep Population Density

Source: (CRP 401-402 Planning Studio Analyses, 2012)

In general, the major travel corridors are formed between the center and the primary working areas in Gaziantep. The two main industrial zones (Organized Industrial District and KÜSGET) are located in the north and north-east part of the city (Figure 69). They incorporate more than one-third of total jobs in the city and these zones are

the two major destinations for the house-to-work daily trips (Climate Actions Plan of Gaziantep, 2011). According to Transportation Master Plan (2006), 65.000 employees are transferred to OIZ from the center of Gaziantep and 40.000 employees are transferred to KÜSGET area in daily trips. The routes with the highest traffic volume in the urban area are indicated in Figure 69 and according to this figure, most of the travels occur between working and residential areas. Hence, the routes with highest traffic volume in the urban area of Gaziantep should be addressed with effective public transport systems.

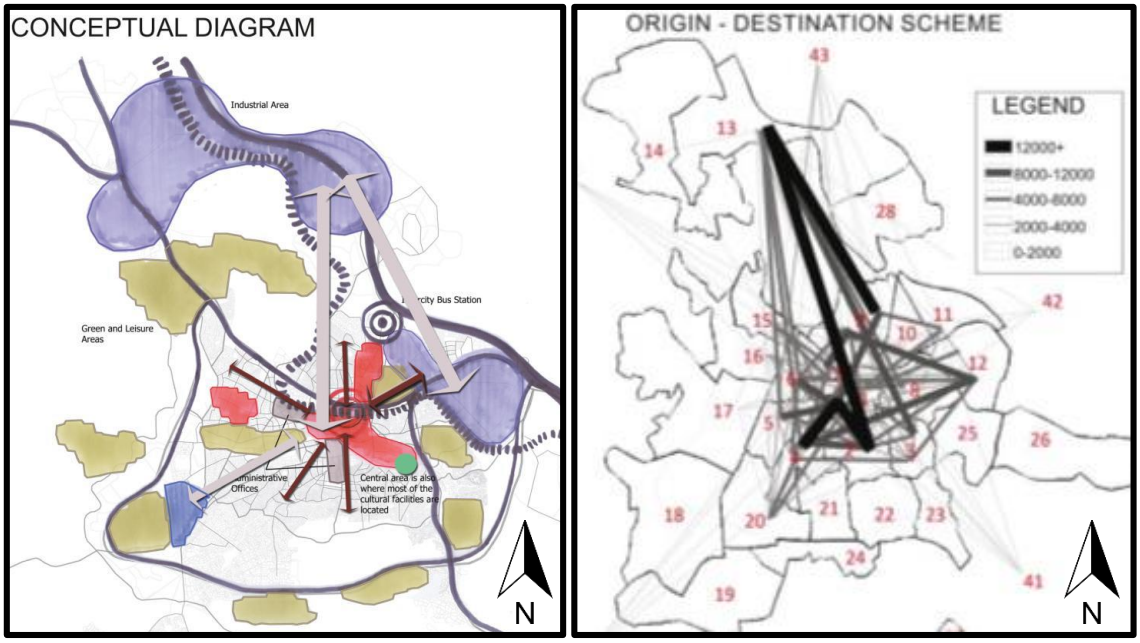

Figure 69: Relation between City Center and Working Area - Origin to Destination Schema

Source: (CRP 401-402 Planning Studio Analyses, 2012)

According to Öncü (2013), who worked on Gaziantep Transportation Master Plan (2006) as a city planner, transport planning decisions could not be implemented in practice in Gaziantep. He stated that the LRT system was to be serve the city center area with two different lines, but these lines were combined in implementation. Because of this, travel demand has reached 24.000 passengers per hour per direction today and hence, it is impossible that LRT rail system meet this demand (Figure 70, and Figure 71).

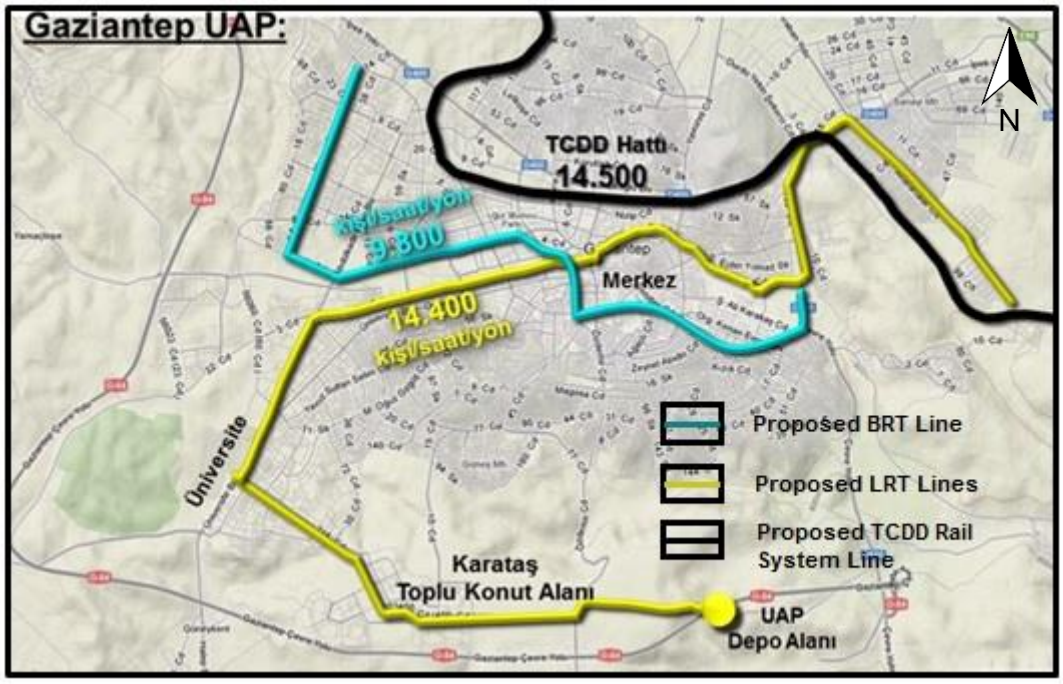

Figure 70: Proposed Public Transport Lines in Transportation Master Plan (2006)

Source: (Öncü, 2013)

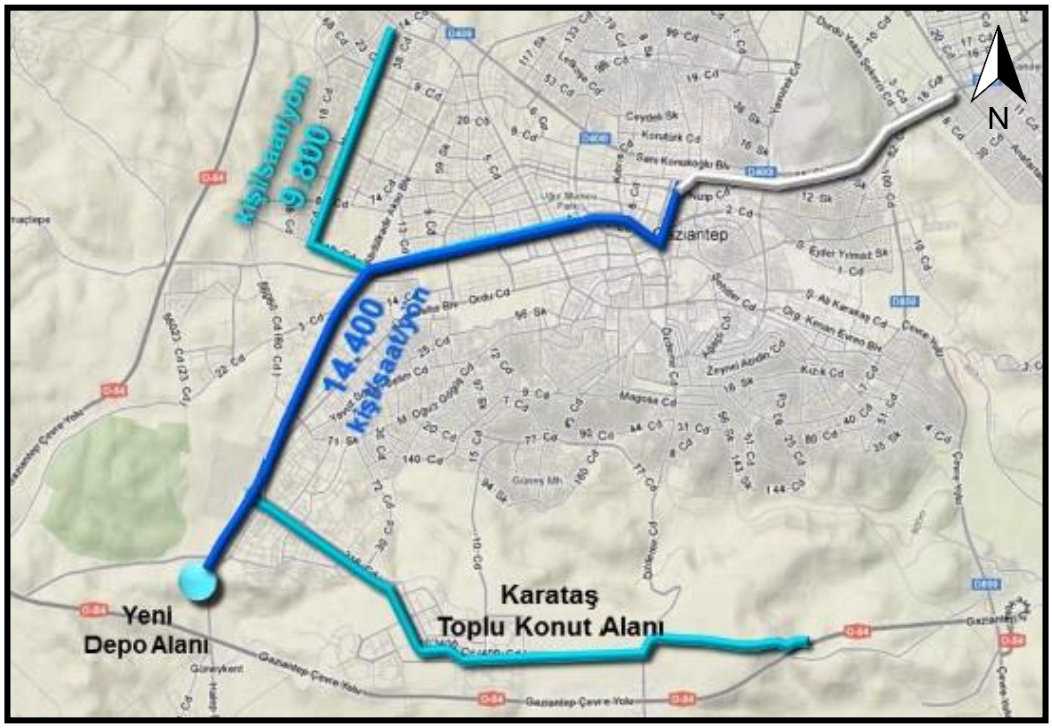

Figure 71: Implemented LRT Lines in Gaziantep

Source: (Öncü, 2013)

In addition, Öncü (interviewed with Özgür - 2009) emphasized that;

> *Gaziantep Transportation Master Plan (2006) proposed a metrobus system for the city. The Greater Municipality decided to construct a rail transit system instead of a metrobus system. The rail system was projected to carry 17.000 passenger/hour and it would cost approximately 170 million dollars. DPT refused to allocate funding for this investment; and the Mayor allocated the municipality's own resources to the project. During this process, further studies at the municipality also resulted in changes in the routes of the rail transit system and the plan was revised.*

The case of urban rail system in Gaziantep shows that there were considerations to carry out the transport plans in integration with urban plan; however, the two plans were not prepared during the same time period and hence it is not possible to claim that there was an integrated and coordinated planning approach. There appears to have been a priority to complete the urban transport plan, while the urban plan was made much later. The urban plan that was in effect during the making of the urban transport plan was too old to influence and guide the transport plan. As a result, the transport plan contained statements for the urban plan to take into consideration; but it was not integrated into an urban or metropolitan plan since there was no recent urban plans during its preparation.

Analysis of regional plans for the Gaziantep case also reveals important points for the regional plan and transport plan integration in the Turkish context. The regional plans do not include any spatial definition or analysis and they do not address integration between land use and transport. They have some implications for transport in very general terms, but strategic transport nodes and corridors have not been identified. For this reasons, these implications cannot be translated into specific and spatial strategies that can shape the transport network and investments. As a result, regional plans cannot influence transport plans, although based on the literature review and international best-practice case studies review in this study, integration of land-use and transport plans is most effective if it starts at the regional planning level.

The Gaziantep case also showed that the potential of transport investments in shaping urban form is not adequately recognized. Expansion of the distances between working and residential areas resulted in excessive high commuting distances and times, and urban sprawl has been recognized as a problem in many plans. Despite this, transport investments that triggered further sprawl were made, and the southern ring road investments is one example. These ring road projects are made by the Ministry's Highway Agency, not local government, and this issue of too many actors in transport investments may be an issue hindering coordination and integration in planning. The strategy that aimed to develop urban macro form along the transportation corridors was also neglected until the GAZİRAY Project, and so far a long period of time, has been ignored that transportation investment plays an important role in urban development. It can be concluded that planning approach that provides integration between transport and urban development has been limited so far in Gaziantep. The experts in the local government stress that in the past few years metropolitan plans and transport plans started to be updated with a view to carry them out in integration with each other; and interviews with them reveal that this was due to the vision and approach of the new mayor. It remains to be seen whether integration will be attained between these plans and whether it will be maintained throughout implementation. The experience so far shows that there are no legal or other obligations to encourage or force local governments to make urban and transport plans in integration and coordination with each other; and that uncoordinated plan-making has been common so far with plans subject to change in implementation. When a coordinated approach is seen, this is not due to a legislation but because of the local leader's attitude.

CHAPTER 6

6. CONCLUSION

In this final chapter, the research will be summarized in general terms. Main aims and findings of the research are highlighted and recommendations are given for future implementations in Turkey as well as in Gaziantep. Furthermore, further research areas are pointed out and proposals are made for further studies.

6.1. Summary of the Research

The study started with a literature review on the link between transport and urban development. Within a historical framework, walking, transit, and automobile city concepts were examined to understand how transport technologies influence urban development. Moreover, the need for coordinated planning of transport and urban development in contemporary cities was clarified and it was emphasized that linkage between transport and urban development should start at the regional level. It was also highlighted that transport was as an important tool for reshaping urban development and realizing urban development strategies. In this respect, especially, public transport systems can be used as an effective instrument. The analysis of world examples also supported this argument since they all showed how public transport investments can support the macro form development strategies. Best-practice examples also revealed that they have benefited from strong regional visions and that integration between transport and urban development should be started from the regional level.

The Turkish context has been analyzed within this framework. It was emphasized that many national policy documents in Turkey highlight the importance of the coordination and integration between transport and urban planning; however, these strategies and policies have not been successfully implemented in practice. There are only few laws and by-laws in Turkey that underline the need for integrated in planning

in urban and transport. The laws that assign tasks and responsibilities to municipalities do not stress the need for integration between transport and regional/urban plans. The By-Law on Spatial Plan Preparation suggests that transport plans and urban plans can be carried out in coordination when necessary, which again does not help ensure a coordinated approach. It should also be noted that Turkey does not have an Urban Transport Law; and hence there are no legal documents defining how urban transport plans should be made. While national policy documents often emphasize the need for an integrated and coordinated planning of urban and regional plans and urban transport plans, the legal framework does not provide obligations for such a planning approach.

The Gaziantep case study findings also highlight the lack of a legal framework that can ensure an integrated planning framework. Urban and regional planning history and implications for urban transport were studied with a chronological order to identify the level of the coordination between urban development and transport investments from past to present. Moreover, transport plans and investments in Gaziantep were analyzed in order to identify whether transportation investments in Gaziantep have been shaped in accordance to regional and urban plans. The findings are described below in relation to the main research questions of the study.

6.2. Research Questions and Main Findings of the Research

The main research questions of the study were as follows:

1. Is the political and legislative framework in Turkey adequate to ensure an integrated and coordinated approach in urban and regional planning and transport planning?

2. Does the case of Gaziantep, with its various recent transport investments, reveal an example of integrated and coordinated planning in regional/urban plans and transport plans?

In order to explore the case of Gaziantep, the following sub-questions have been identified:

3. To what extent are regional/urban plans and transportation plans being prepared in integration and coordination with each other in Gaziantep?

- How effective are regional and urban plans in directing regional and urban transport investment planning decisions and transport investments in Gaziantep?

- Are transport investments implemented according to the transportation master plan which is coordinated with urban spatial plans?

- In Gaziantep, is integrated and coordinated planning approach achieved by local authorities?

- Are transport investments being used as a tool for shaping urban development and realizing urban development strategies?

As a result of the analysis of the Turkish context, national policy documents, legislations and the case of Gaziantep in terms of the integration and coordination between urban/regional plans and transport plans, following outcomes can be identified as the main findings of the study:

- Many national policy documents in Turkey underline the importance of the coordination and integration between transportation and urban planning. However, these strategies and policies has not been successfully implemented in practice. The absence of comprehensive legal regulations and enforcement for integrated planning is the most important reasons for gap between these policy documents and practice. There are limited number of laws and by-laws in Turkey that underline the need for integrated in planning in urban and transport, and they do not provide obligations for an integrated approach.

- Linkage between transport and urban development should started with the identification of strategic transport nodes and corridors at the regional level. However, neither 2010-2014 nor 2014-2023 TRC1 Regional Development Plans include any spatial definition or analysis that could influence transport planning; and they could not address integration between land use and transport. Strategic transport nodes and corridors were also not identified in these regional plans.

- Gaziantep is the regional growth center that has grown even faster than the national average and industrial role of city is still stepping up. For these reasons, the management of the Gaziantep metropolitan region is an exceedingly complex task and governments need to closely coordinate land use plans, infrastructure investments and urban services. However, government policies, unplanned additional master plans, increasing population and accelerating urbanization have made Gaziantep relatively uncoordinated within planning processes.

- The case of urban rail system in Gaziantep shows that there were considerations to carry out the transport plans in integration with urban plan; however, the two plans were not prepared during the same time period and hence it is not possible to claim that there was an integrated and coordinated planning approach. The urban plan that was in effect during the making of the urban transport plan was too old to influence and guide the transport plan. As a result, the transport plan contained statements for the urban plan to take into consideration; but it was not integrated into an urban or metropolitan plan due to the lack of a recent urban plan during its preparation.

- The Gaziantep case also showed that the potential of transport investments in shaping urban form is not adequately recognized. Expansion of distances between working and residential areas resulted in excessive high commuting distances and times, and urban sprawl has been recognized as a problem in many plans. Despite this, transport investments that triggered further sprawl were made, and the southern ring road investments is one example. These ring

road projects are made by the Ministry's Highway Agency, not local government, and this issue of too many actors in transport investments may be an issue hindering coordination and integration in planning. The strategy that aimed to develop urban macro form along the transportation corridors was also neglected until the GAZİRAY Project, and so for a long period of time, has been ignored that transportation investment plays an important role in urban development. It can be concluded that planning approach that provides integration between transport and urban development has been limited so far in Gaziantep.

- The experts in the local government stress that in the past few years metropolitan plans and transport plans started to be updated with a view to carry them out in integration with each other; and interviews with them reveal that this was due to the vision and approach of the new mayor. It remains to be seen whether integration will be attained between these plans and whether it will be maintained throughout implementation.

- The experience so far shows that there are no legal or other obligations to encourage or force local governments to make urban and transport plans in integration and coordination with each other; and that uncoordinated plan-making has been common so far with plans subject to change in implementation. When a coordinated approach is seen, this is not due to a legislation but because of the local leader's attitude.

6.3. Recommendations for Future Implementations

Based on the integrated planning approach, some recommendations can be made for the case of Turkey. These are listed as follows:

- Both land use and transport strategies and policies should be simultaneously evaluated and urban/regional plans and transportation plans should be closely coordinated in Turkey. In order to ensure this, legal obligation have to be

introduced to force governments to carry out plans in integration and coordination.

- Coordination between the planning of transport and urban development should start at the regional level in Turkey. Strategic transport nodes and corridors should be identified in regional development plans, and legal framework must ensure that transport plans take into account regional plan strategies.

- Following from the above two statements, it is clear that the absence of a legal obligation and sanction is a major issue for the Turkish case. Necessary legal arrangements should be made in Turkish planning mechanism. This includes the introduction of an Urban Transport Law, the absence of which has been stressed in a number of national policy documents, such as the Urbanization Congress Reports. Such a law can help identify how urban transport master plans are to be prepared and this would include a section on coordinated and integrated planning.

- Transport investments, especially public systems, should be used as an important instrument for shaping urban development and realizing urban development strategies. This issue can also be addressed by an Urban Transport Law, as described above.

- Transportation investments should be carried out in accordance to the transportation plans that are integrated with the spatial plans in cities and regions. In other words, implementation of plans are also extremely important: maintaining coordination and integration during planning stage is not adequate. Plan changes can result in implementations that do not comply with the original plans and coordination can be easily lost in implementation.

- Awareness of the central and local planning authorities should be raised about the need of integrated and coordinated planning approach and different planning authorities should work more compatible.

- Guidance should be given for national and local planning authorities and best world examples about the integrated planning approach should be introduced in Turkey.

6.4. Limitations of the Study

It is important to note that the study had some limitations. First of all, up-to-date data is not easy to access. Data for the trips by transportation modes in Gaziantep could not be obtained and the data belongs to the year 2011 and LRT system that started to operate in 2010, was not includes within transportation modes in this data.

Secondly, Gaziantep Urban Transportation Study that was completed in 1999 could not be obtained. For this reason, some information about this study was acquired from other sources.

Lastly, ongoing planning studies (Territorial Development Plan, Metropolitan Plan and Transportation Master Plan) are not finalized by Gaziantep Metropolitan Municipality yet. It has been stated during interviews that these are all carried out in integration and close coordination, and hence inclusion of this experience into the study could reveal further result.

6.5. Future Research

In this thesis, it was intended to highlight the need for integration and coordination between regional/urban plans and transportation plans. It was considered that transport is an important tool for shaping urban development and realizing urban development plans. The study presents an example for further studies in terms of data collecting method, case study approach, interviews, analyzing national, regional and local plans, and policy documents.

Following this example, an extensive study about integration between regional/urban plans and transport plans can be conducted for other metropolitan cities in Turkey, either by focusing on single case studies, or by comparing a number of case studies. Furthermore, new studies for Gaziantep can be handled after the ongoing planning

studies such as Territorial Development Plan, Metropolitan Plan and Transportation Master Plan are completed. These plans that are simultaneously prepared can be analyzed in detail with the same framework. Finally, international comparisons can be made by focusing on how legal framework are designed in other countries and whether they help ensure integrated and coordinated planning of urban and regional plans and transport plans at the local level.

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APPENDICES

APPENDIX A: INTERVIEW QUESTIONS

Subject: Integration and Coordination between Regional/Urban Plans and Transportation Plans: The Case of the Rail Transit Investments in Gaziantep

Name-surname :…….. Date : …. /…../2015
Title :…….. Time : …. : ….
Phone number :……..
E-mail :……..

Many national policy documents in Turkey (National Development Plans, National Transportation Master Plans, Council of Urbanization (2009) etc.) underline the importance of the coordination and integration between transportation and urban planning. However, these strategies and policies has not been successfully implemented in practice.

1. In Turkey, what are the difficulties in providing coordination and integration between spatial plans and transport plans in practice?
(Please rank towards to *very important* to *not important*)
***(1**-very important **2**-important **3**-roughly important **4**-slightly important **5**-not important)*

☐ Lacking of coordination between central and local governments

☐ Many different institutions (Ministry of Transport, Maritime Affairs and Communications, Municipalities, Housing Development Administration, Ministry of Environment and Urbanization etc.) deal with transport and urban development and conflicts between them

☐ Lacking of policies and legal regulations for encouraging integrated planning approach

☐ Lacking of legal regulations for entailing integrated planning approach

☐ Disruption of integrity of spatial plans due to the frequently plan modifications

☐ Unlike the transportation plans, different transportation investments are realized in terms of route, technology etc. due to the financial problems

☐ The urgency of short-term demands overriding long-term visions in transportation sector

Other reasons:……

2. How coordination and integration between urban and transportation plans can be achieved in Turkey? Which practices and arrangements should be made? (Please rank towards to *very important* to *not important*)
*(**1**-very important **2**-important **3**-roughly important **4**-slightly important **5**-not important)*

☐ For local governments, guidance (documents and publications) about the integrated planning approach should be given by central government authorities

☐ Planning decisions that shape the urban transportation plans and transport investments should be determined on upper scale levels (e.g. determine urban transport corridors on regional development plans)

☐ Legal regulations should be made in order to provide integration between transport and urban plans

☐ Urban Transport Law should be created

☐ Negative effects of the fragmented approach (plan modifications) on integration between transport and urban plans should be considered and this issue should be added into the planning modification conditions

☐ Transportations plans and spatial plans should be carried out by a single authorities

☐ Financial problems should be solved in order to implement transport plan decisions without any changes

☐ Central and local governments should be recognized that transport investments can be used as an important tool for realizing urban development strategies and integrated planning approach should be embraced (awareness about the integrated planning approach should be increased and best world examples should be introduced)

Other reasons:……

APPENDIX B: LIST OF INTERVIEWEES

1. **Burcu Ç. Özüduru,** Academician (Gazi University), 18 September 2015

2. **Metin Şenbil,** Academician (Gazi University), 18 September 2015

3. **Saffet Atik,** Director of BELDA LTD., 05 October 2015

4. **Erhan Öncü,** Director of Ulaşım-Art LTD., 07 October 2015

5. **H. Murat Çelik,** Academician (Istanbul Technical University), 08 October 2015

6. **Haluk Gerçek,** Academician, 10 October 2015

7. **Necati Uyar,** Director of Egeplan Planlama LTD., 14 October 2015

TEZ FOTOKOPİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü	x
Sosyal Bilimler Enstitüsü	
Uygulamalı Matematik Enstitüsü	
Enformatik Enstitüsü	
Deniz Bilimleri Enstitüsü	

YAZARIN

Soyadı : Yaman
Adı : Yusuf Cem
Bölümü : Bölge Planlama, Şehir ve Bölge Planlama

TEZİN ADI: Integration and Coordination between Regional/Urban Plans and Transportation Plans: The Case of the Rail Transit Investments in Gaziantep

TEZİN TÜRÜ: Yüksek Lisans [x] Doktora [ ]

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. [ ]
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. [ ]
3. Tezimden bir (1) yıl süreyle fotokopi alınamaz. [x]

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: