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ANALYSIS OF URBAN GROWTH IN DEVELOPING
COUNTRIES AND STRATEGIES FOR SPRAWL
MANAGEMENT: THE CASE OF IZMIR

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ANALYSIS OF URBAN GROWTH IN DEVELOPING COUNTRIES AND
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*I dedicate my thesis
to my beloved mother Necla Ince
and my beloved father Ramazan Ince,
Who have trusted and supported me all the time*

*Bana her zaman inanmis ve beni desteklemis
sevgili annem Necla Ince ve
sevgili babam Ramazan Ince'ye
ithafen*

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ABSTRACT

Urban growth is a multidimensional and complex phenomenon that is subject of a wide range of disciplines such as geography, sociology, economy and environmental sciences. Urban sprawl, which is defined in a broad sense as low density, dispersed and inefficient use of land and resources, is one of the most debated form of urban growth in the field of urban planning. There have been a growing awareness especially on undesired impacts of uncontrolled urban sprawl in recent decades as a part of sustainable development paradigm. Urban sprawl management, which refers to a common term to circumscribe strategies and tools to regulate urban land use and urban expansion, has become an explicit spatial policy in many metropolitan areas and cities.

Theoretical debates and practical implementations on urban sprawl and its management have been rather insufficient in developing countries, including Turkey. As a result of rapid urbanization and continuing population growth, major cities in Turkey have been facing with the problem of uncontrolled urban growth and sprawl. To deal with this problem and achieve more sustainable solutions for cities, well-structured policies and regulations for the management of urban sprawl have to be established, at both local and regional levels.

This study aims at exploring potential sprawl management policies and strategies suitable for Turkish cities. For the purpose, it examines the concept of urban sprawl and sprawl management strategies in western cities together with the implemented good examples and their impacts. Then, it explores the nature of urban sprawl in developing countries with an empirical analysis, which explores urban sprawl in İzmir Metropolitan City, the third largest city in Turkey. It uses several spatial indicators including the population, population density, built-up areas per inhabitant and annual land taken for built-up per inhabitant, for the years 1975, 1990, 2000 and 2014, to explore urbanization process and to measure level of urban sprawl in İzmir. Finally, using the outcomes of the analyses, it identifies and discusses potential sprawl management strategies for İzmir Metropolitan City.

Keywords: Urban sprawl, urban sprawl management, urban growth, Izmir.

RESUMEN

El crecimiento urbano es un fenómeno complejo y multidimensional, que constituye objeto de estudio para un amplio abanico de disciplinas, como la geografía, la sociología, las ciencias económicas y del medio ambiente. La expansión desordenada de las ciudades, definida en sentido amplio por la baja densidad, el aprovechamiento disperso e ineficiente de la tierra y sus recursos, es una de las más cuestionadas formas de crecimiento en el campo de la planificación urbana. En las últimas décadas, se ha ido tomando especial conciencia de los efectos indeseables de tal crecimiento descontrolado en relación con el paradigma de desarrollo sostenible. La gestión del mismo, en expresión referida al conjunto de estrategias y herramientas para regular el uso del paisaje urbano y la expansión de la ciudad, se ha convertido en política espacial explícita en muchas ciudades y áreas metropolitanas.

Debates teóricos e implementaciones de tipo práctico en torno a la gestión del crecimiento desordenado de las ciudades se han demostrado, en su mayoría, insuficientes para los países en vías de desarrollo, incluida Turquía. Como resultado de la urbanización acelerada y del continuo crecimiento demográfico, las principales ciudades turcas se han enfrentado a este problema. Ante semejante situación, y con miras a obtener soluciones más sostenibles, ha sido necesario elaborar políticas bien estructuradas y reglamentar el crecimiento descontrolado tanto a nivel local como regional.

Este estudio se propone explorar las posibles políticas y estrategias adecuadas de gestión del crecimiento problemático en las ciudades turcas. A tal propósito examina dicho concepto y las estrategias para su gestión en ciudades occidentales con buenos ejemplos de implementación y sus efectos. Seguidamente examina la naturaleza del crecimiento descontrolado en países en vías de desarrollo, centrándose en el análisis empírico del área metropolitana de Izmir, tercera ciudad de Turquía por tamaño. Para ello se ha servido de varios indicadores espaciales que incluyen la población, la densidad demográfica, las áreas edificadas por habitante así como el territorio urbanizado por habitante y por año, en 1975, 1990, 2000 y 2014, describiendo el proceso de urbanización y evaluando el nivel de crecimiento descontrolado en Izmir. Para concluir, y

como resultado del precedente análisis, se identifican y discuten las posibles estrategias de gestión de tal expansión en el área metropolitana de esta ciudad turca.

Palabras clave: crecimiento urbano desordenado, gestión del crecimiento urbano desordenado, Izmir.

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CHAPTER 1. INTRODUCTION

The urban population Worldwide has highly increased since 1950s. Today more than a half of the world population live in cities, and it is expected that this trend will increasingly continue all over the world, particularly in developing countries. Therefore, the urban growth will continue to occur in the cities of developing countries as well.

Urban areas have been growing by not only consuming open space, but also damaging or fragmenting natural areas, consuming natural resources and polluting environment more than the before. There have been growing attention to undesired environmental outcomes of urban growth and in particular urban sprawl in all developed countries. According to the latest report of UN HABITAT (2016, p. 1), *“the current model of urbanization is unsustainable in many respects. Many cities all over the world are quite unprepared for the challenges associated with urbanization”*.

There have been a general agreement on the statement that urban sprawl, which refers to low density, dispersed and ineffective use of land and resources, is one of the most unsustainable type of urban growth, and should be overcome. As the starting point and main argument of the study, urban sprawl is a form of urban growth, which should be managed or controlled on behalf of achieving the balance between nature protection and livable cities. Today managing urban areas and urban expansion has been one of the most important challenges of 21 century in achieving sustainability requirements with regard to urbanization and related environmental issues.

Cities in western countries have developed variety of strategies such as greenbelts (e.g. England, and Spain), urban growth boundaries (e.g. Portland, Oregon), Transit Oriented Development (e.g. Copenhagen),

smart city (e.g. Amsterdam) to combat with urban sprawl and its undesired consequences. Each strategy has its own strengths and weaknesses and each comes up with different level of success depending on national policies and socioeconomic structure at local level.

Theoretical debates and practical implementations on urban sprawl and its management have been rather insufficient in developing countries. However, sprawl management policies in developing countries have particular importance compared to the developed world cities, especially because of the rapid urbanization and related environmental problems they are experiencing. Turkey is also within this group and as a result of rapid urbanization and continuing population growth, major cities in Turkey have been facing with the problem of uncontrolled urban growth and sprawl.

In particular, major cities in Turkey like Istanbul, Ankara, and Izmir have been experiencing rapid growth both in their population and in built-up areas. They have been expanding towards their surrounding peripheries in various ways, consuming large amount of land and requiring significant infrastructure investments as well. Although there have been various challenges related to sustainable urbanization achievements, the concept of urban sprawl management has not raised enough attention in developing countries yet. In order to deal with this problem and achieve more sustainable solutions for cities, well-structured policies and regulations for the management of urban sprawl have to be established, at both local and regional levels.

This study examines urban sprawl and urban sprawl management strategies from both developed and developing countries perspectives. It aims at exploring potential sprawl management policies and strategies suitable for Turkish cities. For the purpose, it examines first the concepts of urban growth and urban sprawl, gives the prominent discussions on the field. As one of the most important topic of the urban sprawl

literature, sprawl management approaches and strategies are elaborated together with the implemented good examples by taking the western cities as references.

Then, the thesis explores the nature of sprawl in developing countries with an empirical analysis, which explores urban growth and urban sprawl in İzmir Metropolitan City, the third largest city in Turkey. For the main data source of the analysis, the grid level built-up area information from the Global Human Settlement Layer (GHSL) database has been used for the first time for Turkey and Izmir case. GHSL is a spatial database that recently developed and maintained by Pesaresi et al. (2015) and the Joint Research Centre of the European Commission.

The analysis uses several spatial indicators including the population, population density, built-up areas per inhabitant and annual land taken per inhabitant, between the periods of 1975, 1990, 2000 and 2014, to analyze urban growth and to measure level of sprawl in İzmir. Finally, using the outcomes of the analyses, it identifies and discusses potential sprawl management strategies for İzmir Metropolitan City.

In this context, the study addresses the following research questions:

- What are the main urban sprawl management policies and strategies developed in western cities?
- Which strategies have achieved successful results? What can be learnt from these experiences?
- How cities in developing countries, particularly in Turkey, have been experiencing urban sprawl? What policies do they apply for sprawl management?
- Which urban sprawl management strategies suits best for developing countries and for Turkish cities?
- What is the characteristics of urbanization in Turkey and in İzmir? How Turkish cities and İzmir deal with urban sprawl?

- Which sprawl management strategies might be proposed for the metropolitan areas in Turkey and for İzmir?

The thesis consists of seven chapters. The first chapter defines the need for the study and sets the objectives. Then it introduces the main research questions and the structure of the study. The second chapter describes the main conceptual and theoretical background related to urban growth, urban sprawl and urban sprawl management respectively.

The third chapter examines the worldwide good practices regarding the urban sprawl management strategies, policies and plans at national, international and local levels. Then, it reviews non-governmental organizations, which have been particularly working for reducing undesired outcomes of urban sprawl

The fourth chapter introduces the case study, İzmir Metropolitan City. It elaborates the urbanization process of İzmir with a historical perspective and summarizes the current planning approaches, practices and plans in the context of urban growth and sprawl. At the end of this chapter, a brief review of previous studies that explore urban growth in Izmir is also given in order to make use of their results.

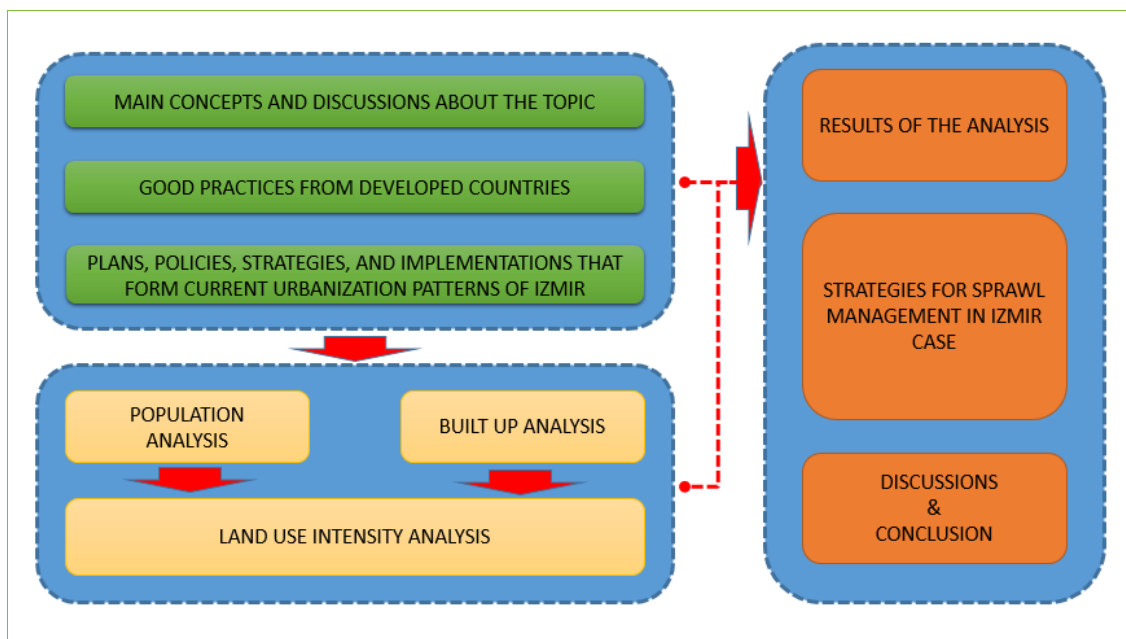
The fifth chapter consists of an empirical analysis, which aims to understand both urban growth and urban expansion in Izmir Metropolitan Area. It explores spatial characteristics and level of sprawl in particular. In the analysis mainly two type of data have been used: the population data from Turkish Institute for Statistics and the grid level built-up data available for four different years 1975, 1990, 2000, 2014.

The grid level built-up area information have achieved from the recently developed Global Human Settlement Layer (GHSL) database produced by the European Commission. Using these two data sets, change and distribution of population, and change in built-up areas and land use intensity were analyzed over time. Each districts in Izmir Metropolitan

City have been analyzed separately together with the urban core. Findings of the empirical analysis were evaluated and discussed together with the urbanization experience of Izmir for three periods between 1975-1990, 1990-2000 and 2000-2014.

In the light of the empirical analysis, the sixth chapter examines the current urban sprawl trends in particular zones and districts of the İzmir Metropolitan Area. Then it discusses whether previously reviewed sprawl management policies and strategies could provide meaningful solutions for Izmir case. The conceptual framework and the main structure of the thesis are further explained with a diagram as in Figure 1.1.

Figure 1.1 Conceptual framework of the thesis



CHAPTER 2. LITERATURE REVIEW

The main objective of this chapter is to explore the two consequent concepts, urban sprawl and urban sprawl management, which constitute the basis of the thesis. In this chapter, these two concepts are described and discussed with their interrelated physical, environmental, historical, social and political aspects. The sub-categorization of these concepts for developed and developing countries is also elaborated with similarities and dissimilarities.

2.1. Urban growth and urban sprawl

Urban growth is a multidimensional and complex phenomenon that is subject of a wide range of disciplines such as geography, sociology, economy and environmental sciences. It should be emphasized at the beginning that, the term “urban growth” implies expansion on socio-spatial configuration of urban areas, rather than growth in their economic structures. In general, the studies on urban growth can be classified into four groups, as shown in Figure 2.1.

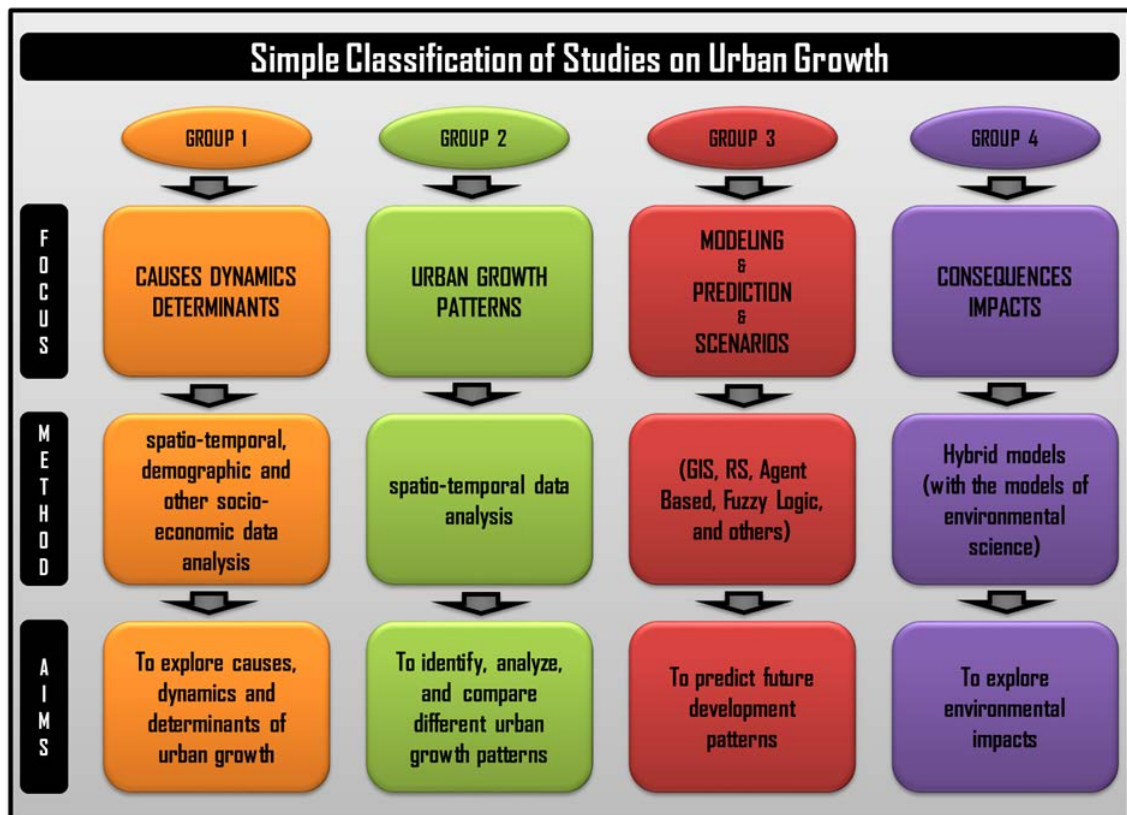
The first group studies mostly belong to the field of economic geography, which deals with the uneven distribution of economic activities across space. This approach focuses on the causes, dynamics and determinants of urban growth by using mostly economic and socio-spatial temporal data. A large proportion of the theoretical debates in that group, takes their roots from the key theoretical scholars such as Doreen Massey, Neil Smith and David Harvey.

The second group studies focus on spatial configuration of urban growth, mainly to its forms and patterns. Wilson et al. (2003) identifies three categories of urban growth: infill, expansion and outlying. As seen in the Figure 2.2 outlying urban growth further separated into isolated, linear branch, and clustered branch growth (Bhatta, 2012).

In a broader sense, Tsai (2005) categorizes spatial structure of a metropolitan area based on three dimensions: form, pattern, and development type (see Figure 2.3).

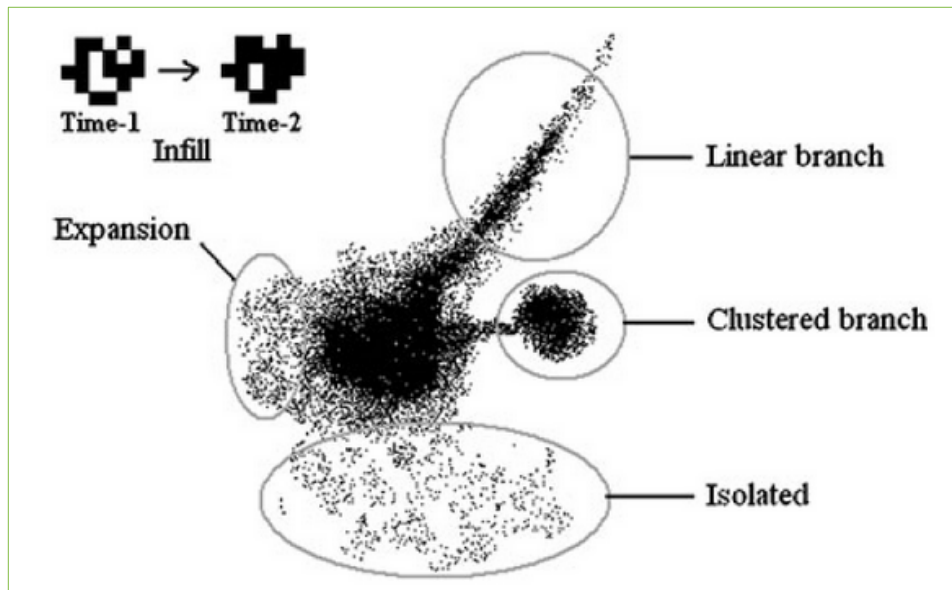
A considerable amount of studies such as Ewing (2002), Galster (2001), Bhatta (2010) investigate the types and degrees of sprawl and deals with their definitions.

Figure 2.1: Classification of studies on urban growth



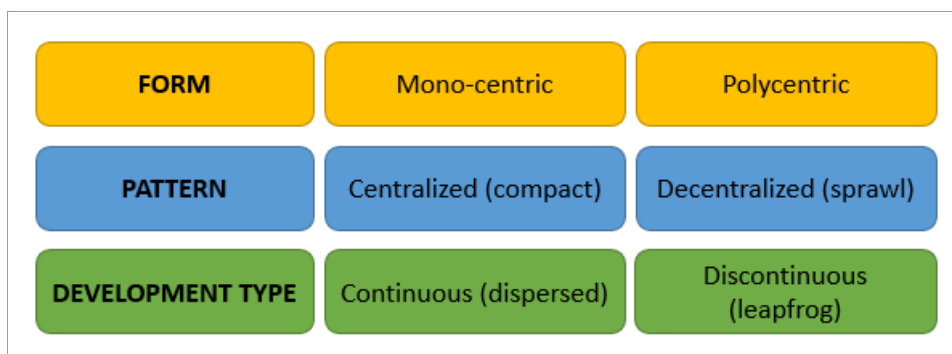
The third group of studies focus on modeling and predicting the current and future (possible) urban growth patterns by developing different scenarios. Since these attempts on urban modeling have been accelerated since 1980s with the wider use of computers, it has been possible to simulate and analyze complex urban systems under different conditions (Batty, 1997; Torrens and O'Sullivan, 2001; Li and Yeh, 2000; Huang et. al, 2008).

Figure 2.2: Schematic diagram of urban growth patterns



Source: Bhatta, 2012, p: 12

Figure 2.3: A simple spatial structure of a metropolitan area



Source: generated based on the categorization of Tsai, 2005.

The fourth group of studies deals with the consequences and impacts of urban growth. It has been widely perceived that the form of contemporary city is a source of environmental problems and different urban forms have different environmental impacts (Alberti et al., 2003; Beatley and Manning, 1997; US Environmental Protection Agency – EPA, 2001; Houghton, 1999; Hildebrand, 1999; Newman and Kenworthy, 1989, cited in Jabareen, 2006).

It should be noted that these groups could be flexible that one study may contribute to more than one group. For example, there are studies, which analyze different urban growth patterns and their possible environmental

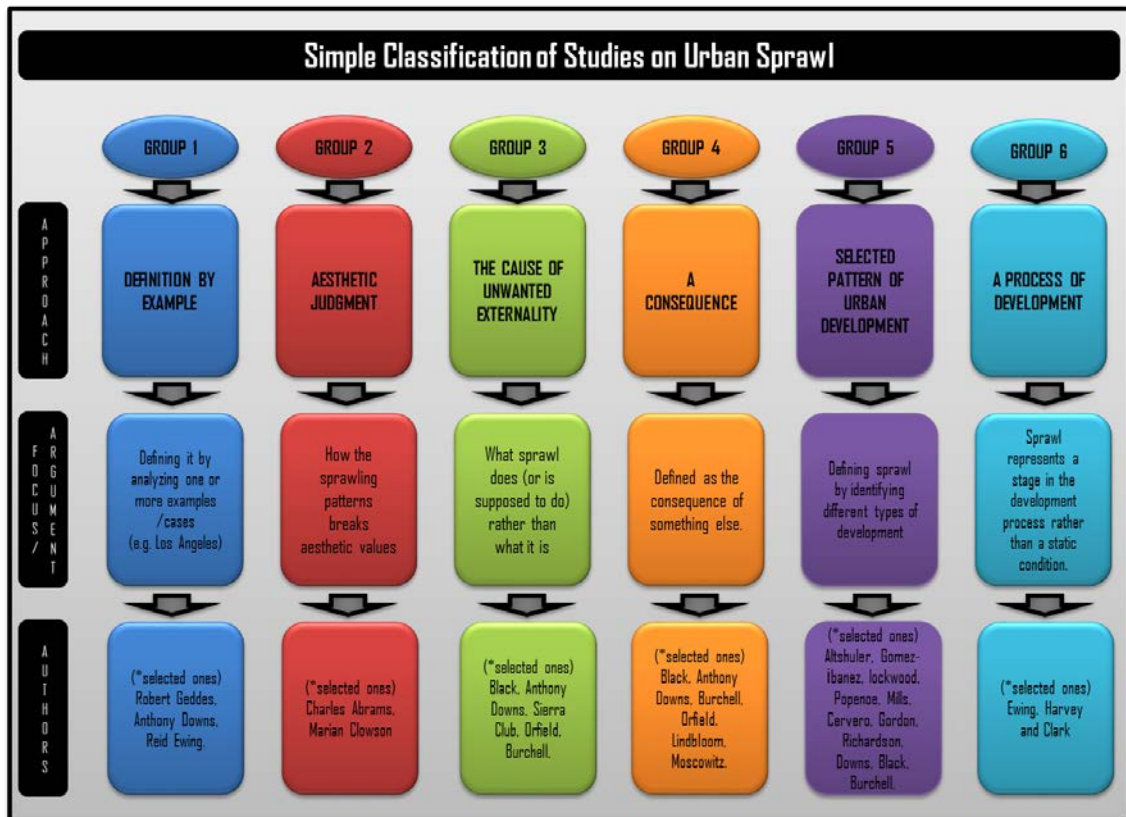
impacts. In urban studies literature, one of the most debated and studied aspect or pattern of urban growth is “urban sprawl”, particularly with its negative impacts on urban systems and natural environment.

The term of urban sprawl was first introduced in 1937 in southeastern United States. By the end of World War II, the major issues related to current debate on sprawl and its connection with transportation and income had already emerged (Nechyba and Walsh, 2002). Afterwards, the term urban sprawl has gradually become a name of many conditions (Galster et al., 2001). The literature itself is almost dispersed or scattered in explaining, measuring and defining urban sprawl.

During the last decades, several studies have raised this debate in order to deal with this confusion (such as Ewing 1994; Galster et al, 2001; Arribas-Bel et al, 2011; Bhatta 2010; Johnson 2001; Barnes et al. 2001; Wilson et al. 2003; Roca et al. 2004; Sudhira and Ramachandra 2007; Angel et al. 2007). Beyond its definition and its spatial configuration, urban sprawl constitutes high importance to understand dynamics of urban growth (Bhatta 2012). As shown in Figure 2.4, urban sprawl consists of a wide range of sub-themes.

There are mainly six approaches on urban sprawl related studies. In the first group, the aim is to define “urban sprawl” by analyzing selected cases. Still there is a big debate in the literature to define urban sprawl itself, by ignoring its causes and effects. Downs (2005), Geddes (1997), Ewing (1997) Gordon and Richardson (1997), Brueckner (2001), and Galster G. et al. (2001) have presented leading studies by proposing “American style” urban sprawl definitions. Then, several studies have arisen in order to re-define urban sprawl in different geographies having different characteristics; such as Chinese style (Fung, 1981; Wu and Yeh, 1999; Lin, 2001; Deng and Huang, 2004) and European style (Muñoz, 2003; Calafati, 2008; the European Environment Agency [EEA], 2016).

Figure 2.4: Classification of the studies on urban sprawl



Source: based on the classification in Galster G. et al. (2001)

The second group of studies consider urban sprawl as an indicator of aesthetic judgments for general urban development pattern. According to this normative approach, sprawl is an unpleasant/ugly development. The representatives of this approach (e.g. Clawson, 1962; Abrams, 1971; Frenkel and Ashkenazi, 2005) have used judgmental adjectives when they mentioned about the sprawl. For example, Frenkel et al. (2005) consider urban sprawl as a boring, homogenous form of development.

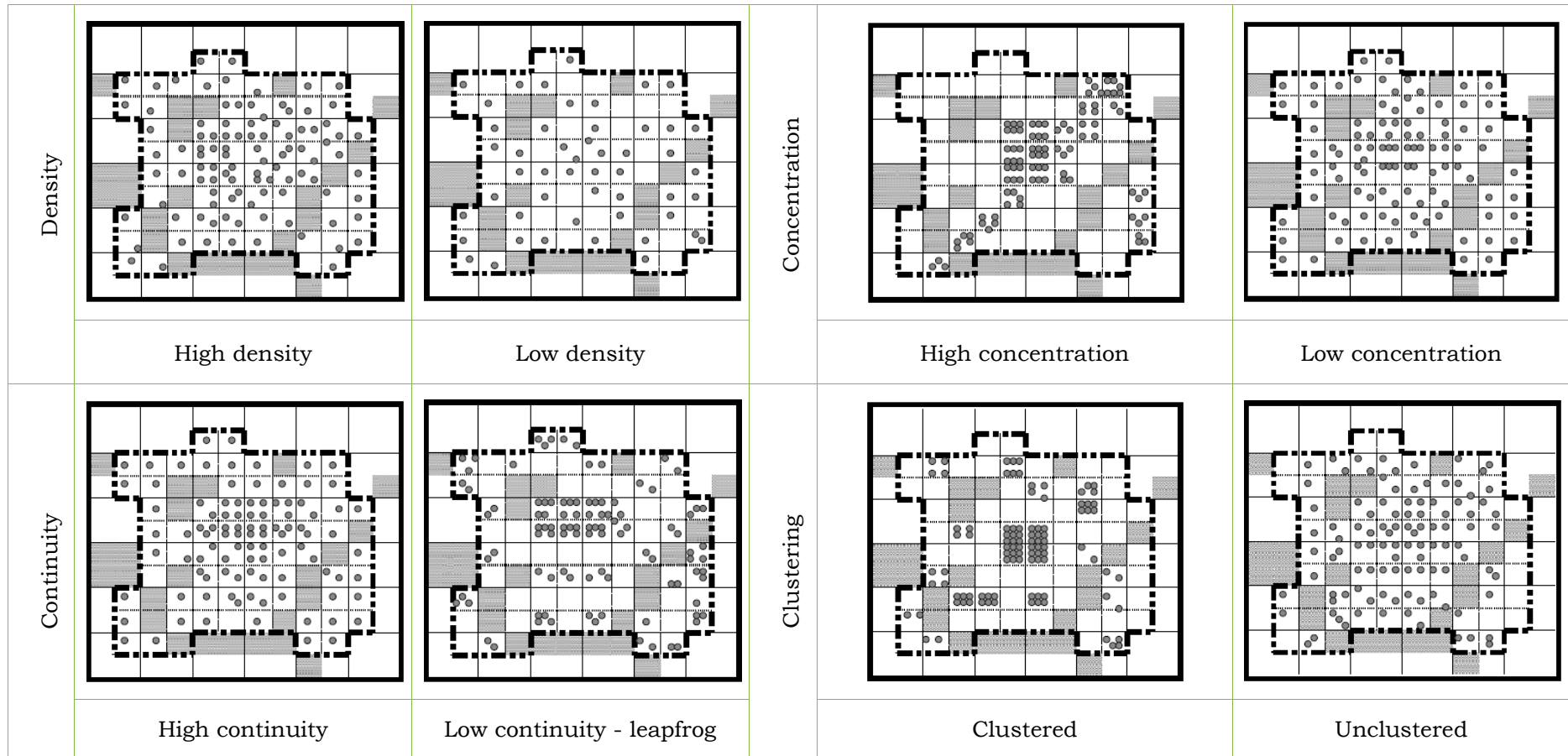
The third group of studies evaluates urban sprawl as the cause of unwanted externalities such as traffic congestion (Black, 1996; Downs, 1999; Vermont Forum on Sprawl, 1999), environmental contamination (Sierra Club, 1998), income and racial segregation of neighborhoods (Downs, 1998), the mismatch between jobs and housing (Orfield, 1997), and conversion of farmland to urban areas (U. S. General

Accounting Office GAO, 1999). The focus of this group is ‘what sprawl does’ (or is supposed to do) rather than ‘what it is’ (Galster et al., 2001).

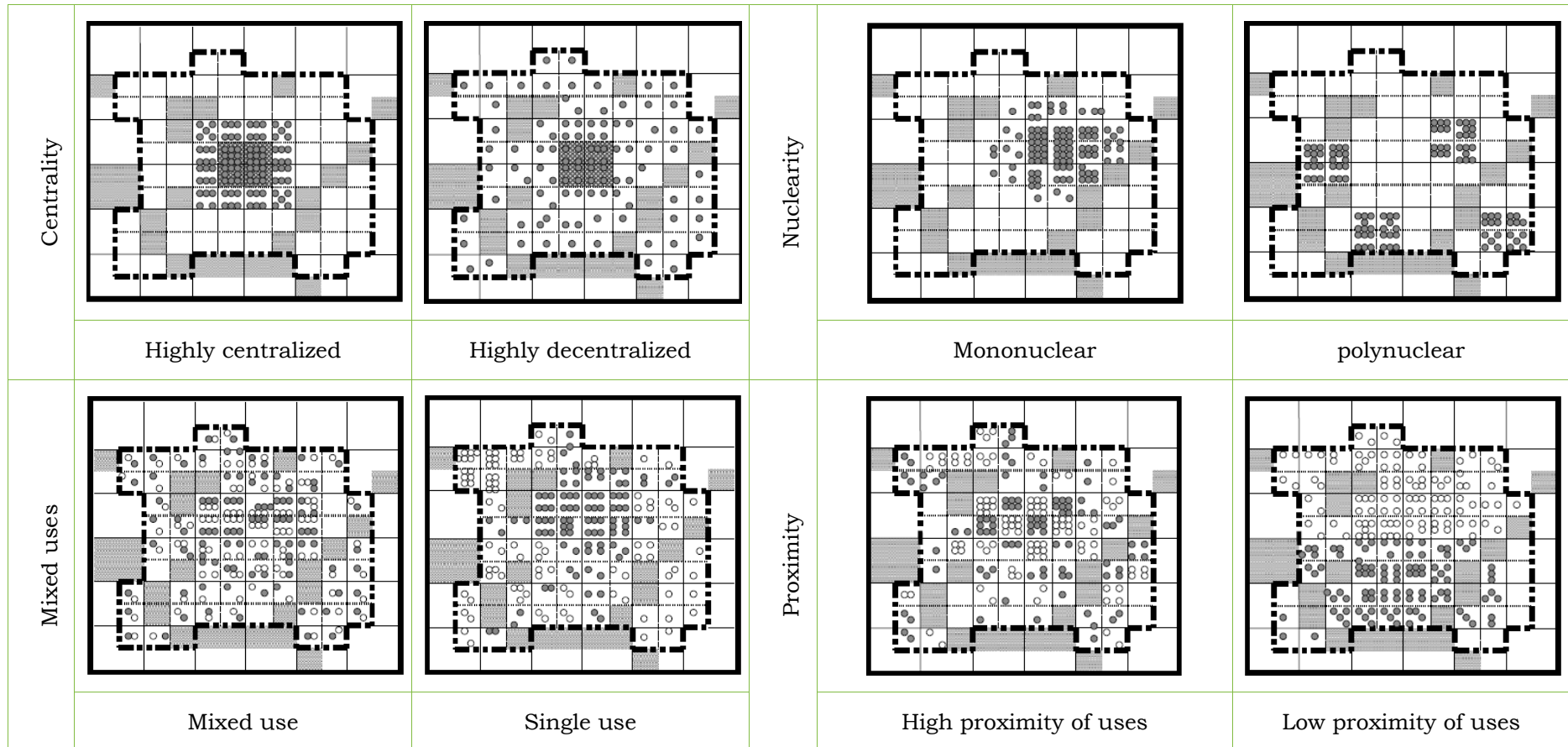
On the other hand, the fourth group of studies define sprawl as the consequence of something else. Main argument is that sprawl occurs because of fragmentation of control over land use in metropolitan areas. However, it is still unclear that whether sprawl is an intentional, necessary or inadvertent consequence of fragmented governance of growth. The main suggestion in this group is *“to understand the policies that induce specific development patterns could lead to their correction if there were a clear specification of what those patterns are”* (Downs, 1998; Black 1996, Burchell et al, 1998; Mozkowitz and Lindbloom, 1993; Orfield, 1997 cited in Galster et al., 2001).

The fifth group of studies define sprawl by identifying the development patterns associated with it. According to this type of studies, there are different forms of sprawl such as continuous development, ribbon development along corridors and leapfrog development. Galster (2001) ranks/classifies the studies according to their specific focus: low density (Lockwood, 1999), large lot single-family residential, (Popenoe, 1979), radial discontinuity (Mills, 1980), single land use or physical separation of land uses (Burchel et al., 1998, Cervero, 1991), widespread commercial development (Downs, 1998), strip commercial (Black, 1996; Burchel, 1998) and non-compact development (Gordon and Richardson, 1997). Galster (2001) makes a comprehensive classification of sprawl based on eight dimensions, which are density, continuity, concentration, clustering, centrality, nuclearity, mixed uses, and proximity (see Figure 2.5).

Figure 2.5: Eight dimensions of sprawl



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Source: Galster G. et al., 2001, p:689-699

In the sixth and the last group, some authors (Ewing, 1997; Harvey and Clark, 1965) suggest that sprawl represents a stage in the development process rather than a static condition. It means that, some parts of urban areas may pass through sprawl stage before eventually thickening and diversifying, so they can no longer be characterized as sprawl. According to this approach sprawl should be considered as a process of urban development. Consequently, it might be better to specify, “What does sprawl refer to?” instead of making so many definitions. Bhatta (2012, p.10) states that urban sprawl in the literature refers to the following:

- certain patterns of land use,
- processes of land development,
- causes of particular land use behaviors,
- consequences of land use behaviors.

In this context, the consensus reached in the literature on the main characteristics of urban sprawl can be stated as following: it is low density, suburban development around the periphery of cities leading to inefficient utilization of resources.

2.2. Compact vs. sprawl development

There is an ongoing debate on urban sprawl, which can be specified under two contradictory thoughts: for and against. Owusu (2012) summarizes briefly these two approaches as opponents and proponents of sprawl. Opponents have asserted the negative outcomes of sprawl such as the increased automobile travel and congestion, high levels of pollution, loss of farmland, duplicative infrastructure at high costs to society, limited employment accessibility, concentrated poverty, and many other undesirable outcomes.

On the other hand, proponents of sprawl have been arguing that, sprawl type urban development may improve satisfaction of housing preferences,

provide good quality and serene environment, better public schools and lower crime rates. This point of view also criticizes urban intensification, which is a part of smart growth strategy, as more intensified urban areas lead to more traffic generated problems. Melia et al. (2011) claim that in locals, where intensification occurs, worsen local environmental conditions, while creating benefits for the global environment.

Similarly, a large amount of studies criticize compact city by using indicators of livable cities. Neuman (2005, p: 16) summarizes the main argument behind this approach: *“For a city to be sustainable the argument goes, functions and population must be concentrated at higher densities. Yet for a city to be livable, functions and population must be dispersed at lower densities”*. This is another question of the debate, which is still partly unclear and conflicted.

Although this debate is still at the heart of the literature on urban and environmental studies, there is a wide consensus among planners and researchers that compactness is more desirable for sustainable urban development (Newton, 2000). As the starting point and the main argument of the thesis, urban sprawl is a form of urban growth, which should be managed and controlled on behalf of achieving the balance between nature protection and livable cities. In the light of these discussions, there arises a question, which is “how uncontrolled urban sprawl could be managed?”

2.3. Urban sprawl management

2.3.1. Definition and concepts

Urban growth or sprawl management has been defined and presented in numerous ways. Briefly, it is the common name of the strategies and efforts that struggle against rapid expansion of cities. Hare (2001) defines urban growth management as a strategy, tailored by each community, to guide growth within that community. Such a strategy that entails a

collection of policies, regulations and intensives that support growth objectives of the community. While Hare emphasizes the area-specific aspect of growth management concept, Nelson et al (2004) make a definition with a planning and institutional perspective. They define urban growth management as the deliberate and integrated use of the planning, regulatory and fiscal authority of state and local governments to influence the pattern of growth and development in order to meet projected needs. Consequently, the idea lying behind all sprawl management efforts is to retrain sprawl and its implication for open space and farmland.

As King (2001) states, a number of terms have been generated to describe organized resistance to unregulated urban sprawl in addition to the term “urban growth management”. Smart growth, planned growth and metropolitanism are some of these terms, which are even not synonyms. Generally, these terms refer to the efforts, which aim to make a connection between development and quality of life, to improve vitality of city centers and older suburbs, and to preserve open space and other environmental assets.

2.3.2. Policy instruments for sprawl management

It is clear that without any management efforts, urban areas always have a tendency of spreading towards their peripheries, as long as the population grows. There are basically two options covering almost all approaches of growth management efforts, which are (1) to prevent and (2) to restore. While the first option requires strict government policies preventing the large-scale outskirts developments and road constructions, the second one focuses on making the city centers more attractive by improving the life conditions and providing mixed used urban areas (e.g., by brownfield projects). Including both of the preventing and restoring attempts, the main policy instruments for sprawl management,

developed and implemented in the western countries, are elaborated in the sub-sequent sections of this chapter.

Prominent approaches of sprawl or growth management have originated especially from North American and European practices. Although the majority of the sprawl-related literature and concepts have been developed in North America since 1940s, European literature on sprawl management also provides a wide variety of approaches for sprawl management. Urban sprawl in Europe has several common characteristics with the urban sprawl in North America, but it has its own characteristics (Milanovic, 2008).

Horn (2013) makes a useful classification of growth management approaches with an evolutionary or historical perspective. The earliest attempts at controlling the post-World-War II industrializing city were named as 'the first generation' of urban growth management efforts. The most popular tool was driven by central government as a restriction of development beyond the demarcated strip of green or undeveloped land.

Greenbelts were the earliest attempts of *"controlling the encroachment of the town of city into its countryside"* (Tomas, 1970, cited in Horn, 2013, p.45). A greenbelt refers to a physical area of open space, farmland or the green space, that surrounds a city or metropolitan area and is intended to be a permanent barrier to urban expansion (Bengston et al., 2004). *"The earliest greenbelts were established in the United Kingdom in the late 19th century as introduced by the Garden City pioneer-Ebenezer Howard. As part of the UK physical land use planning system and Town and Country Planning Act, promulgated in 1947, this country formalized the implementation of greenbelts with the primary aim of urban containment"* (Horn, 2013, p: 92).

The first construction of new towns had similar motivation and they were an outcome of greenbelt efforts. The emphasis within these towns was

the limitation of size and density, limitation of automobile dependency and that it had to be surrounded by a belt of undeveloped land or open space. The first new town was established in England (Letchworth), and later the ideology spread to the United States with the establishment of Radburn. Then, many of the European cities (e.g. London, Copenhagen and Amsterdam) and some other cities from other countries (e.g. Seoul, San Francisco, Ottawa, Adelaide and Dunedin) constructed new towns. In some way, these cities had experienced varying level of success in curbing urban growth, but implementing a greenbelt resulted to another pattern of development called 'leapfrog' which is criticized in terms of the need of commuting their residents to reach to inner city (Horn, 2010; 2013).

The second-generation urban growth management efforts differentiated from ancient ones by having consideration on future growth. Since the early 1970s, it was recognized that placing a limit on growth needed to be balanced with strategies to accommodate or at least deal with future growth. Urban Growth Boundaries (UGB) or urban edges concepts emerged during this period particularly in the United States (Oregon, Iowa, California, Tennessee, Washington and Boston), cities in the UK, and in Sydney and Copenhagen. These edges or boundaries can be defined as institutional boundaries with the sole purpose of containing physical development and sprawl and re-directing growth towards a more integrated, compact and arguably efficient urban form. Together with such an edge, strategies to ensure integration and compaction advocated to ensure the development of quality and well-maintained urban environments (Horn, 2010; 2013).

In contrast to the greenbelts, an UGB is not a physical space but a dividing line drawn around an urban area to separate it from surrounding rural areas. Zoning and other regulatory tools are used to implement an UGB. Areas outside the boundary are zoned for rural uses, and inside for

urban use. Unlike greenbelts, an UGB is typically drawn to accommodate expected growth for some periods. It is periodically reassessed and expanded as needed (Bengston et. Al., 2004).

Urban Service Boundary (USB) is another example of the second-generation urban growth management applications, which was first examined in Minneapolis-St Paul in early 1970s. Urban service boundary denotes the edge of urban service area and means that basic urban services will not be provided it's beyond (Horn, 2010; 2013; Bengston, et al; 2004).

Smart growth is another component of second-generation urban growth management approaches, which has still been discussed widely since 1990s. In Europe and particularly in the UK, the terms “compact city” and “urban intensification” have been used for almost the same definitions with the smart growth. *“The term ‘smart growth’ suggests a public-private approach to managing growth that will produce the best of both worlds: economic growth without the ugliness, congestion, environmental degradation, and wasteful public subsidies of sprawling development (Glendening, 1997). The smart growth model emphasizes a land use pattern of compact cities and suburbs surrounded by countryside that is devoted primarily to farming, forestry, and open space. Smart growth aims to create more compact development that is cheaper to service, less land consumptive, and more attractive than sprawl”* (Daniels, 2001, p. 277).

Basse (2010) emphasizes the term ‘management’ as the priority of this approach. *“Growth is not to be stopped in its tracks, nor necessarily slowed down”*. The goal is rather to manage urban sprawl by prioritizing intensification and mixed-use development, providing transportation alternatives and housing choices, and preserving natural heritage features, while still promoting targeted economic growth to reduce per capita consumption of land and energy, lower the cost of infrastructure

and make transit more viable (Eidelman, 2010). Smart and sustainable growth is also a central priority presented in the European Commissions' communication, Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth, accepted by the EU institutions as the new reform policy (Basse, 2010).

The third-generation urban growth management approaches are closely related to and discussed with the terms of sustainability, quality of urban life and living preferences. Horn (2013, p.94) summarizes them as, *“Already gaining momentum during the second generation of urban growth management and becoming more vociferous during the last decade is the counter discourse that a compact urban form is not the only way to nor does it imply sustainability. Beginning in the 1980s and increasing in popularity are various arguments against the combatants of urban sprawl and in favor of a more free market approach to urban growth”*.

Sustainability has become gradually a central part of almost all discussions on growth management approaches. Although the term sustainable development has its roots in the period of emerging environmental awareness of early 1900s, it has raised particularly after 1990s (namely The UN Agenda 21 [1992] and UN Habitat Agenda [1996]). By the end of the 20th century, the control of urban sprawl had become a major consideration of urban policy in most European countries (Milanović, 2008). During the last two decades, recognition of the strong contribution of physical arrangements of land uses to sustainable development has become widespread in Europe (Stead, 2011).

With the influence of sustainability notion, compact city concept has gained widespread popularity since the late 1980s in many western countries (Fulford, 1996). In OECD countries, especially in Europe, compactness was widely studied, analyzed and discussed as a way to meet urban sustainability goals. Commission of the European Communities (1990) emphasized the importance of environmental and

quality of life objectives in urban policy and promoted dense development and mixed land use (OECD, 2012).

More recently, the compact city is expected to play a role in achieving the OECD's green growth objectives, now it is a general policy driver for OECD countries. Green growth strategy, to which OECD countries are committed, emphasizes that economic growth and environmental preservation should be considered concomitantly. Cities and regions constitute one of the main spatial units in which green growth can be pursued. Therefore, a number of urban-related challenges arise as urban sprawl, greenhouse gas emissions and structural challenges for maintaining urban economic growth as well. The OECD report (2012) states that, *"the compact city concept appears well suited to addressing these challenges, which is why international organizations and academic research groups recently highlighted the significance of compact city policies for policy makers (e.g., OECD, 2010; UN HABITAT, 2009; UNEP, 2011; World Bank, 2010; WHO, 2011)."*

As another approach, Transit Oriented Development (TOD) concept has been discussed in the urban growth management literature widely since 1990s, just after Peter Calthorpe first set the idea in the United States (Carlton, 2007). As Carlton (2007, p.1-2) states, *"the idea that transit might orient development and visa versa is certainly not new... Transit as a form of transportation has been a part of the American urban landscape since the horse-drawn streetcar was popularized in the mid 1800's. Since that time, transit has interacted differently with development and developers during different periods. But throughout the history of transit, development has been a key component of its planning, success, and need. In "New Transit Town," TOD is differentiated from prior transit related real estate development theories by placing it in its historical context."* Calthorpe (1993; cited in Carlton, 2007; p.1) defines TOD as *"a mixed-*

use community that encourages people to live near transit services and to decrease their dependence on driving.”

According to the definition of Holmes, Hemert (2008, p. 4) “*Transit oriented development (TOD) is a mixed-use residential or commercial area intended to maximize access to public transportation. Such neighborhoods often consist of a center with a public transit station, surrounded by high-density development with gradually lower-density development spreading outward from the center. TODs or transit zones are typically located within a radius of one-half mile from a transit station, as this is generally considered a reasonable walking distance for pedestrians. The key components of TOD are given as follows (Hank, 2004; cited in Carlton, 2007, p. 20):*

- Organize growth on a regional level to be compact and transit-supportive
- Place commercial, housing, jobs parks, and civic uses within walking distance of transit stops
- Create pedestrian-friendly street networks that directly connect local destinations
- Provide a mix of housing types, densities, and costs
- Preserve sensitive habitat, riparian zones, and high-quality open space
- Make public spaces the focus of building orientation and neighborhood activity

Consequently, a successful implementation of TOD strategies might provide several benefits; for example, decreases traffic congestion, fuel consumption and increase air quality by reducing private car usage. Increases accessibility of urban services by encouraging mixed land use developments and walking distance community centres. Provide more options about affordable houses for middle-lower income groups close to main public transportation stops, etc. (Holmes, 2008)

Policies and instruments for the management of sprawl need two elements: the discouragement of sprawl and the encouragement of urban revitalization. In an EU-funded project, URBS PANDENS¹ (2005), they used a classification of policy types with regard to the control or amelioration of urban sprawl, which have been in use currently in many European Countries, as shown in the Table 2.1 (Milanović, 2008).

Table 2.1: Urban sprawl management - policy examples

Policy type	Examples of policy
Regulation	<ul style="list-style-type: none"> • Spatial (land use) planning • Restrictions on specific land uses • Density controls • Phasing and 'sequential testing' (UK)
Economic intervention: direct investment, taxation or subsidy	<ul style="list-style-type: none"> • Provision of infrastructure: transport, utilities and social facilities • Subsidies towards urban regeneration • Development taxes • Property taxes • Trading in development permits
Institutional change, management and advocacy	<ul style="list-style-type: none"> • Size and function of municipalities • Special agencies for urban revitalization • Advocacy, partnership and policy dialogues • Information, targets and 'league tables'

Source: Couch et. Al., 2007; cited in Milanović, 2008.

¹URBS PANDENS is an EU funded project that is concerned with cross-European patterns of urban sprawl. The project team comprises eight European partners aiming the developments of robust strategies for a transition towards a sustainable development of urban regions.

This wide range of policy responses indicates that, at least there is a common approach, namely European way, which allows making such categorization in sprawl management. However, it is highlighted in the URBS PANDENS (2005) project that, the strategies and instruments that are employed in particular regions or situations may show differences because of legal framework and cultural habits that are deeply embedded in a particular region's political history (Milanović, 2008).

On the other hand, OECD report (2012) on “compact city policies” across OECD countries provides another classification, which contains more cases other than European countries such as Canada, Japan, Australia, USA, and Turkey etc. The table below summarizes the policy instruments that are widely used in OECD countries. They are classified by the type of policy intervention such as informative, regulatory, fiscal, public investment and partnership (OECD, 2012).

It is clear from the former example that a growth management strategy usually encompasses a range of tools and mechanisms towards the containment and direction of urban growth rather than a single, standalone approach (Horn, 2010).

Table 2.2 gives major urban sprawl management instruments, which have been used in specific cities and countries. It makes a categorization of interventions being regulatory/informative, regulatory, fiscal, public investment and partnership. For example, in particular locations, regional plans and urban development or design guidelines have been in use as regulatory/informative instruments for managing sprawl. Besides, particular instruments such as urban growth boundary (UGB), urban service boundary (USB), greenbelts, restriction on green field development and variety of tax regulations etc. have been used for other specific purposes as given in the table.

Table 2.2: Urban sprawl management instruments by specific countries

Type of the intervention	Name of the instrument	Purpose / mechanisms / how to achieve the stated goal	Examples (country name indicates nationwide use)
Regulatory / informative	National urban development guidelines	To show the direction of urban policy and encourage regional/local governments to follow	Czech Republic, Korea, Japan
	Regional master plan	To declare explicit compact city goals / instruments and guide public and private investment	Melbourne (Australia), Montreal (Canada), Paris (France)
	Urban design guidelines	To reduce perceived density and increase quality of life in high-density neighborhoods	Melbourne (Australia), Vancouver (Canada), Portland (United States)
Regulatory	Urban growth/containment boundary	A line drawn around an urban area to separate it from surrounding rural areas to limit urban development outside boundary	Melbourne (Australia), Vancouver (Canada), Japan, Portland (United States)
	Greenbelt	A zone that divides an urban area from the surrounding rural areas, to limit urban development in the belt. Sometimes greenbelts are accompanied by public or non-profit acquisition of open space or development rights	Vienna (Austria), Ontario (Canada), Frankfurt (Germany), Budapest (Hungary), Rome (Italy), Barcelona (Spain), Korea, Switzerland, United Kingdom
	Urban service boundary	Similar to urban growth boundaries, but beyond boundaries, certain urban services such as sewer and water are not provided. Often linked with adequate public facilities ordinances that prohibit development in areas not served by specific public services and facilities	Santiago (Chile), Maryland (United States)
	Agricultural / natural land reserve	A zone in which agriculture/nature is recognized as the priority use, to ensure that agricultural/natural land is preserved and available for farm and natural uses both now and in the future. It often acts as urban growth/containment boundaries and greenbelts	Vancouver (Canada)
	Minimum density requirement	Zoning codes designate minimum density, in addition to maximum density, to ensure intensive use of land in specific areas	France, Portland (United States), Vancouver and Montreal (Canada)
	Mixed-use requirement	Zoning codes designate mixed land use	Paris (France)
	Restriction on green-field development	A target (e.g. 50%) of new development in green-fields. Sometimes combined with minimum density requirement.	United Kingdom, Melbourne (Australia)
	Zoning deregulation for densification / mixed land use	Zoning deregulation for additional housing units in existing residential areas or for mixed land use	Vancouver (Canada)
	Restricted location of facilities causing high trip frequency	Stricter regulation of location of large facilities that cause high trip demands: hospitals, stadiums, large retail stores, etc.	Japan
	Development tax / fee / charge	To discourage urban sprawl by levying taxes/fees/charges on developers in order to fund services for new development or to capture the capital gains on land price appreciation	British Columbia (Canada), many States in the United States
	Parking tax / fee / charge, congestion tax / fee / charge	To discourage private car use and promote public transport usage	London (UK), Stockholm (Sweden), Oslo (Norway)

Type of the intervention	Name of the instrument	Purpose / mechanisms / how to achieve the stated goal	Examples (country name indicates nationwide use)
Fiscal	Amenity bonus	Developers provide public amenity contributions within their urban development project (both as cash and in the form of library, park, childcare, community center, etc.) in exchange for allowing greater density	Vancouver (Canada)
	Subsidies for densification	Incentive to households and developers to promote focused investment in growth priority areas (transport nodes, etc.)	Toyama (Japan)
	Incentives for renovation and preservation of buildings	Incentives for conversion of vacant houses and offices in cities	Melbourne (Australia)
	Taxation of insufficient density	A sub-density tax is imposed for the development which does not meet the requirements	France
	Location Efficient Mortgage (LEM)	LEM increases the amount of money homebuyers in urban areas are able to borrow by taking into account the money they save by living in dense, walkable neighborhoods close to public transit.	Seattle, Chicago, Los Angeles, San Francisco (United States)
	Use-value tax assessment in urban peripheries	Land is taxed at a lower agricultural or forestry value rather than the higher values associated with development uses. It provides farmer landowner with an incentive to maintain agricultural use. Typically includes requirements that the owner be actively engaged in farming	Japan
	Split-rate property tax	Proportionally higher taxes on land than on built structures. It is an incentive to develop brownfields by making it more costly to hold on to vacant or underutilized, centrally located sites	Sydney (Australia), Hong Kong (China), cities in Pennsylvania (United States), cities in Denmark and Finland.
	Public infrastructure investment	Major investments include public transport system, streetscape, plazas, libraries, and structured parking.	Many cities, including Portland (United States)
	Purchasing land for natural reserve	Protecting open space in and around urban areas through acquisition. One of the most expensive tools but has a lasting impact on urban form. The location should be carefully chosen so as not to lead to leapfrog development	Portland (United States)
Public investment	Development agreement for dense/mixed-use development	Public-private agreements often include higher density and mixed-use in the public partner's requirements, along with floor-area bonus and financial support for developers	Portland (United States)
Partnership	Public-private partnership	Public-private agreements for infrastructure investment such as public transport system, streetscape and plazas.	Vancouver (Canada), Toyama (Japan), Portland (United States)

Source: OECD, 2010a; OECD, 2010b; Bengston et al., 2004.

2.4. Urbanization and sprawl management in Turkey

Many of the developed countries have realized negative outcomes of urban sprawl and developed many strategies to deal with it. This situation has been rather ignored in developing countries although urban population have still been growing rapidly and urban space have been expanding with low densities in many cases.

2.4.1. Urbanization in Turkey

The process of urban management and planning in Turkey is quite different from the ones in western countries especially in terms of its dynamics and speed, which brings different outcomes in urban space. There are three periods that show different properties in urbanization history of Turkey, starting from the establishment of the republic in 1923 (Sengül, 2009):

- 1923-1950 urbanization of the state,
- 1950-1980 urbanization of the labor,
- 1980-2000 urbanization of the capital.

During the first period, defined as “radical modernity period” (Tekeli, 2001), majority of the efforts were spent to build up modern cities, based on the belief that the modern society can be created with new urban areas and both modern cities and societies should represent the power of the state. For that purpose, the cities were to be developed and structured along the boulevards and wide main streets, squares or urban parks with a statue of Atatürk (the founder of the state) as a symbol of the republic. After the Second World War II, industrialization policies had started to transform economy, society and the physical structure of the large cities such as Istanbul, Ankara and İzmir. Squatter houses and slam areas (in Turkish it is called ‘gecekondu’, meaning rapid-overnight constructions) first emerged in these cities during this period (Gültekin, 2014).

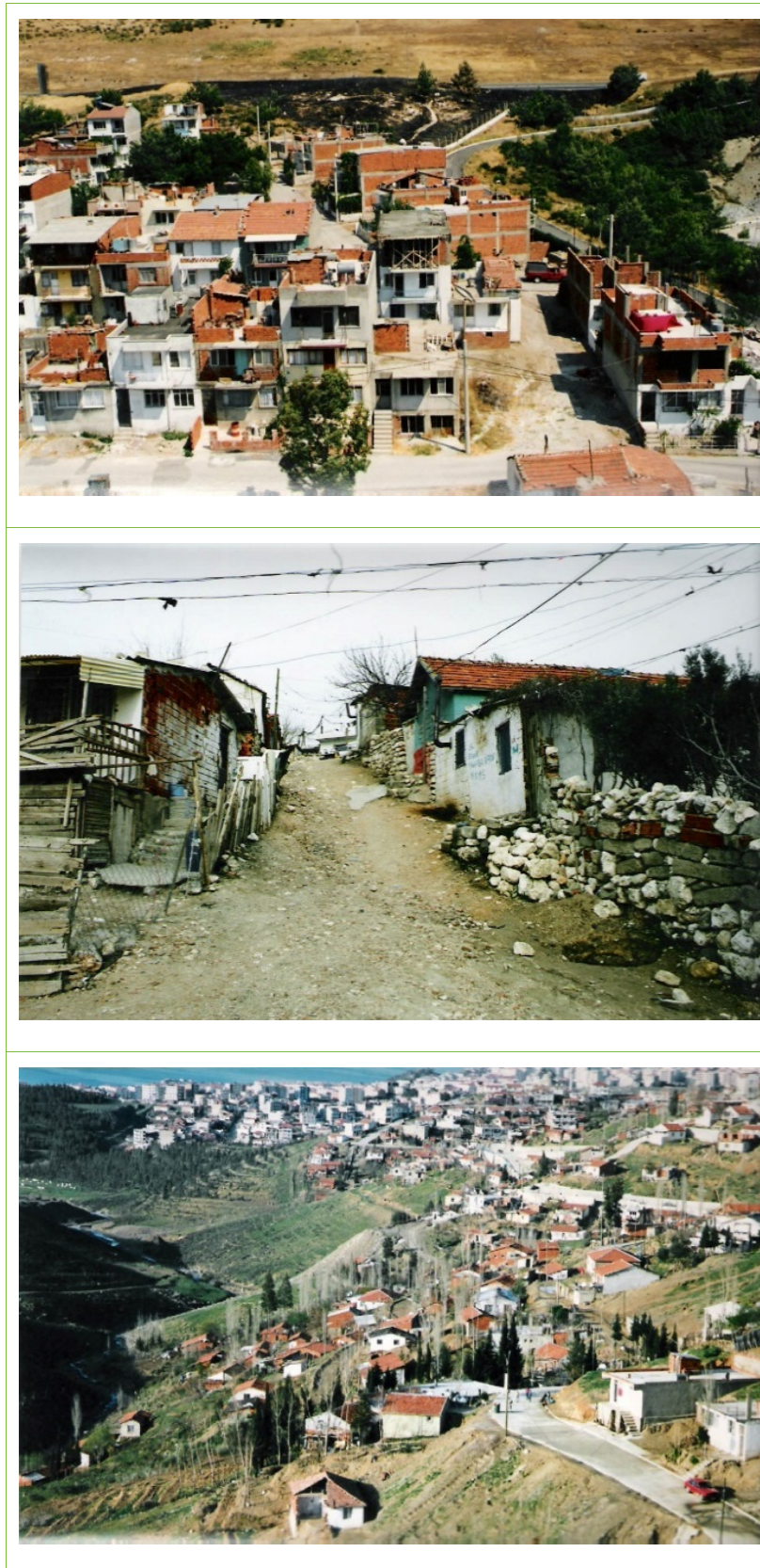
The second period, defined as “populist modernity period” by Tekeli (2001), characterized as the period of “urbanization of the labor” by Şengül (2009) and criticized as “urbanization without industrialization” by (Erman, 2012). Different from experiences of Western Countries, Turkey had experienced rapid urbanization as a result of its attempted integration into the emerging capitalist markets in 1950s. Democratic Party, which came to power in 1950, promoted private and foreign investments, carried on land reform and agricultural industrialization.

All of these initiatives and developments caused structural changes in Turkish cities. The cities were more than the areas of modernity but were the space of capital and labor force accumulation, in other words, they became the areas of reproduction of the production. While the population living in the cities in 1950 was 25%, it rose up to 44% in 1980. Because of the job opportunities, which are provided by the big cities, rural population had begun to move to urban areas.

Not only that attractiveness of big cities, but also some other booster reasons encouraged this rural-urban migration such as industrialization and shift in national agricultural and land policies. In this environment, the squatter houses, gecekondu neighborhoods, with insufficient infrastructure had started to surround the cities inevitably. As a result, an uncontrolled urban sprawl had appeared for the first time in Turkish cities.

As given in Figure 2.6, squatter settlements have always been in bad physical conditions from the beginning. Without basic urban infrastructure such as, clean water, drainage, even roads and electric line, this pattern of development has started to change physical pattern of big cities mainly in İstanbul, Ankara and Izmir.

Figure 2.6: View from squatter settlements (gecekondu areas) in Izmir



Source: personal archive, taken at 2001 and 2002.

Squatter housing is not only a physical, but also a multidimensional social phenomenon that many developing countries have experienced. It could be considered as an uncontrolled low-density land allocation and expansion of built-up areas. It is illegal on the one hand and a catalyzer of further urban development on the other. Should be highlighted again that the development of squatter settlements (gecekondu) is one of the most important component of urbanization of large cities in Turkey.

After 1970s, while the “globalization” period started in the world, the process of rehabilitation was initiated for the city centers, which lost their appeal and started to turn into depression areas. Urban sprawl, at that time, continued at the suburbs. The third period from the beginning of 1980s, some radical changes were witnessed and a new period started. Modernization attempts were left behind and ‘the state of wealth’ and ‘mass production’ came to the core. Tekeli (2001) calls this period as “erosion of modernity”, and Şengül (2009) calls “urbanization of capital”.

Local administrations, which gained power in urban management and planning, deemed urban regeneration as the unique method in their implementations for bringing solutions to spatial issues. During this period, emergence of new squatter settlements continued. From the beginning of 1980s new type of housing started to be produced: closed (gated) and luxury housing for middle-upper income groups. Gradually, the signs of social and spatial segregation became more evident than the past.

The percentage of urban population rose 77% at the beginning of 2000, while it was 44% in 1980 and 25% in 1950s. While in 1950s, there were only two cities with more than 500 thousand dwellers, today this number exceeds 40 cities. Consequently, through the Metropolitan Municipality Law accepted in 1984, Istanbul, Ankara and Izmir were declared as metropolitan municipalities. Within the first decade, the number of

metropolitan municipalities rose up to 8, and to 16 in the second decade, and it rose to 30 in 2014 (Turkey National Report, 2014, p. 1).

As a result of rapid urbanization and population growth, major cities started to challenge with various problems such as deterioration of inner city areas, traffic congestion (especially in metropolitan cities such as Istanbul, Ankara and Izmir), lowering air quality and loss of open spaces (e.g., farmlands and forests). As a respond of these ongoing problems, several regulations put on the urban planning agenda. One of this regulation was about urban regeneration. Differently from the former periods, in 2000s, urban regeneration was implemented through the collaboration of the local administrations and the private sector.

Following the 1999 earthquake, regeneration of the pieces of land in the city with high economic value was gradually legitimized based on such justifications, which take preventive measures against earthquake risks and constructional changes required in the harmonization process of the European Union and fortifying the global identity. So, holistic planning system, deployed especially for metropolis, was replaced by mega urban projects. During this progress, Turkish Public Housing Administration (TOKİ), though a public institution and given its legitimized privileges, attained the status of a monopoly teaming up with its partners as if it were a private sector institution, redirecting urbanization policies through mega projects. Such projects, planned in contradiction with planning legislation, principles and the master layout plan in a fragmented manner, are implemented as the sole spatial strategy in creating new capital income. Such developments, backed up with legal regulations that contradict one another, created chaos in planning system (Gültekin, 2014, p. 3).

The Ministry of Environment and Urbanization was established in 2011 as one of the most important step in institutional and legislative arrangements of recent years in Turkey. This institutional structuring

aims to set forth the new spatial planning approach across the country, to establish the necessary institutional organization, to formulate the legal framework of proposed planning process and to determine general policies, guidelines and norms to solve problems regarding urbanization, housing and planning.

The process of urban sprawl is quite different in Turkey as a developing country, compared to the cities in western countries. As Erisen (2003, p.3) states, *“Turkish cities are differentiated from Anglo-Saxon or continental European industrial cities. Turkish well-to-do people preferred to live in high-rise apartments of the inner city, yet urban periphery was the place of shantytowns of immigrants. Even so, following the years 1980s, in the bigger cities of Turkey upper-middle and middle class residential areas have begun to choose their seats on the periphery of the cities. During the last two decades, new middle class, following the path of globalized world’s cities, has flourished in Turkey”*.

Therefore, after 1980s, new type of suburbanization have been added to urban experiences of metropolitan cities of Turkey which may be called as “gated communities” of upper-middle income social groups. These two type of contradictory suburbanization patterns have been under discussion mostly in terms of “socio-spatial segregation” concept that they create in the urban-suburban areas of large cities. Moreover, squatter settlements of the immigrants and privileged settlements of the upper-middle income social groups have been constituted the residential urban development patterns (like low density and scattered) of the urban periphery particularly since 1990s.

Istanbul, as the largest city, became the first city experiencing this kind of (low-density privileged housing on the periphery) development process stronger than any other Turkish cities as Tanulku (2013) states. Istanbul was also the pioneer metropolitan city of Turkey regarding to the first occurrence of squatter settlements on its periphery since 1945s.

Following the Istanbul, Ankara and Izmir were the other metropolitans experienced these kind of developments in their periphery.

These two different urban periphery developments in Turkish metropolitan cities are considered by Oncu (1997) and Tanulku (2013) as follow: after 1980s, *“large cities especially Istanbul, acquired a negative meaning for the new middle and upper classes due to a mixed urban culture, causing tensions in public spaces between established inhabitants and newcomers, erosion of a common culture and increasing crime rates. Related to that, cities became associated with environmental degradation due to increasing pollution, density, declining green space, urban infrastructure and general living quality. The changing meaning of cities created a wish to live in a detached house, especially a house far from city centres, which became a status symbol for upper classes”* (Tanulku, 2013).

Consequently, urban periphery of Turkish metropolitan cities have been suffering both illegal housing developments of the low income groups and privileged housing developments of the middle-upper income groups as well as the developments and large projects of other sectors' establishments like industry and commerce.

2.4.2. Sprawl management in Turkey

Considering the urban sprawl management in Turkey, according to a recent report of OECD (2012), Turkey does not have policies directly focused on the compact city approach yet. However, it is recognized as a significant issue and the compact city concept and objectives for preventing urban sprawl have recently been placed into the national policy documents.

Supporting balanced settlement development and an urban form growing in a controlled way were also held in National Development Plans, Urbanization Council and KENTGES. In Urbanization Council, which

took place in 2009, policy recommendations were developed to identify and eliminate bottlenecks in land supply, which is required for house construction in settlements. KENTGES, which is the result document of the Council, includes legal arrangements for supporting urban macroform developing in a balanced way, the control of growth and actions for changes in spatial plans (Turkey National Report, 2014).

OECD (2014, p. 276-277) report summarizes these two national documents in terms of their consideration on sustainable and compact city goals as following:

- The 9th Development Plan is a national policy document, which was approved by the Turkish Grand National Assembly on 28 June 2006. It forms a basis for other national and regional plans/programs including the government's Medium-Term Program, sectorial and institutional strategy documents, and documents required in the EU accession process such as the Pre-Accession Economic Program and the Strategic Coherence Framework. This national plan sets out an integrated approach to the changes to be made in the economic, social and cultural spheres. One of its main development axes is defined as "increasing competitiveness" and has two main objectives that support a compact city approach:
 - Improving the energy and transport infrastructure: a comprehensive national urban transport strategy that is sustainable and consistent with energy, environment, economics and housing and land use policies will be set up. This strategy will be binding for the public sector and indicative for the private sector. Rail-transit-system projects will be planned in corridors with insufficient alternative transit modes and where travel demand during peak hours is expected to be at least 15.000 passengers/hour in a single direction.

- Protecting the environment and improving the urban infrastructure: identification of the country's urban infrastructure requirements in order to protect the environment and preparation of an urban infrastructure master plan and financing strategy.
- KENTGES, the Integrated Urban Development Strategy and Action Plan (2010-2023), is a national strategy document prepared under the Ministry of Public Works and Settlement in 2010. It establishes principles, strategies and actions for providing healthful, balanced and livable urban development as well as structural solutions for urbanization. It also identifies implementation principles and connects them to an action program. It is used as a reference framework document at the national level. One of the main priority axes of the KENTGES, “improving quality of space and life in human settlements”, promotes the compact city approach with the following objectives and strategies:
 - Sustainable human settlements. In the urban development process, the urban form that decreases costs, uses resources efficiently and prevents extensive growth will be encouraged.
 - Sustainable urban transport system. For urban transport plans, the principles of accessibility, safety, comfort, reliability, sustainability and cost-efficiency are to be considered.
 - Sustainable and diversified land and dwelling supply.
 - Development and revitalization of central business districts and sub-centers through sustainable policies.
 - Balanced distribution of social facilities and services in human settlements (under preparation).

As a conclusion, there have been several attempts/regulations including prevention from urban sprawl, and promotion for compact urban form in national scale: which are “The 9th Development Plan (2007-13)” and “The Integrated Urban Development Strategy and Action Plan (2010-23)”. In

Turkey, there are several other national scale regulations that restrict urban development such as “soil protection regulation”, “forest protection regulation”, “catchment basin protection regulation”, “code of protection of cultural and natural properties” etc.

It is clear that, these kind of regulations have been operating in order to protect natural assets from all human activities including urban development. This means regulations push up the tendencies coming from human settlements, however does not provide guide and control on urbanization tendencies inside the city. Finally, in Turkey there are no structured policies and regulations at local and regional scales for the management of urban sprawl.

CHAPTER 3. GOOD PRACTICES ON SPRAWL MANAGEMENT

Analyzing and exploring a selection of good cases / practices worldwide might provide useful insights for developing better sprawl management approaches. There are considerable amount of policies and strategies that are already implemented or being implemented for the management of urban sprawl. However, only a limited number of studies evaluate their impacts or achievements. Due to the contradictive nature of the topic, most of the available studies could only analyze effectiveness of particular sprawl management policies or strategies, rather than discussing their applicability under certain conditions.

Therefore, before examining the worldwide cases on sprawl management, the key question should be what the good practice is and how it can be applied. What can we learn from the experiences of cities all around the world? How their policies have been anticipated? Could they reach their goals? What are the strengths and weaknesses of their policies in practice? How do they manage participation of public and private institutions/organizations to the management process? This chapter intends to find answers to those key questions exploring worldwide cases.

There is a big variation in the scale of sprawl policies and instruments, i.e., urban, regional, national and international levels. All cases at different scales have different characteristics, hence should be categorized to analyze them. For the purpose, the selected good practices on sprawl management worldwide are elaborated under the following three categories: 1) organizations, 2) plans, policies and strategies, 3) selected projects (which are generally at urban scale). Under these main categories, all of the cases are further elaborated by taking their geographical scales (urban, regional, national, and international) into consideration.

3.1. Organizations

3.1.1. Description of organizations

In the last two decades, the number of organizations, which are acting for public interest, has been significantly increased. In addition to the quantity, they have been diversified in terms of their scopes and activities including such as corporations, associations, institutions, non-governmental organizations (NGOs), nonprofit organizations (NPOs) and international organizations etc. These organizations could simply be categorized according to their orientation (field) of activities and their level of operations (scale) (Vakil, 1997; Lewis, 2010; Kuruvila, 2015). This section classifies and reviews organizations in three levels (urban, national, international) according to their activities, related to sustainability and urban issues, which have direct or indirect effects on urban sprawl management activities.

The role of international organizations on urban sprawl management efforts has been crucial especially in European Union countries. The organizations like European Commission, European Environmental Agency (EEA), OECD etc., not only produce information for policy-makers, but also set field specific goals and criteria (e.g., sustainable development policies to be adopted by for countries or regions). In addition to this, they provide funds to national or local governments to achieve future objectives and to remove regional disparities. As mentioned earlier, macro policies and instruments to realize green economy and sustainable development in Europe, for instance, affect also the national and local urban development policies. In this chapter, the focus is given on the urban-related policies and instruments, and they are stated and explained briefly.

National or regional organizations are selected based on their activities related to sustainability issues. They are becoming increasingly important actors in environmental politics, especially in European

countries and in non-European countries such as China (Yang, 2005), Canada (Tomalty and Townshend, 2005).

Local organizations are common organizations such as think tanks, urban scale associations, networks, resident federations, which are generally reflecting their community-based goals and act as advocates, mediators between policy makers and local residents.

In a study by Environmental Careers Organization (ECO, 2004, p. 329), it was highlighted that, *“plans without citizen involvement don’t have staying power. When people feel left out of important decisions, they won’t be there to help out when public support is critical to a project’s approval”*. At this point, local organizations have critical role to bring decision makers and citizen into together and provide a communication platform between them.

The EU considers Civil Society Organizations (CSOs) as non-state, not-for-profit structures (including community-based organizations, non-governmental organizations, faith-based organizations, foundations, research institutions, trade unions, women's organizations, cooperatives, professional and business associations, and the media) in which people organize to pursue shared objectives and ideals.

According to European Commission (2012), "support to" and "participation of" CSOs and LAs (Local Agents) in pursuit of internationally agreed goals and development effectiveness are both acknowledged as core EU policy orientations. In Europe, local level participation have been well organized and local governments are responsible to implement nationally and internationally adopted criteria of European Union. In 2015, European Commission has approved a decision as “supporting financially civil society organizations and local authorities” in their way to achieve sustainability goals. (European Commission, 2015).

It is also worth mentioning that the European Cities are more compact (or sustainable) when they are compared with the American counterparts. Portney and Berry (2011) claim that in recent years, U.S cities have been closing the gap with European cities because of the development of local citizen groups as some of them also listed in this section. Without differentiating their types, some of the leading and effective organizations worldwide are given in Table 3.1: Organizations related to sprawl management and their activities. They are related to sustainable urban development and selected based on their scales. Some selected active networks, alliances, and programs of the selected organizations are also included.

3.1.2. Evaluation of organizations and their activities

Local Organizations have crucial role in terms of promoting sustainable urban development policies and their implementation, as listed below:

- They increase awareness and sensitivity of residents on conservation and improvement of urban and environmental values/assets, not only for those they have in their territory locally, but also for global values. For instance, Toronto Environmental Alliance (TEA) is working to help Torontonians for protecting the Greenbelt from urban sprawl by raising wider awareness of the Greenbelt's benefits (e.g. agricultural and recreational); building better relationship with its communities, and promoting stronger support for local economies.
- Local organizations act as mediators, advocates between local governments (policy-makers) and residents. They establish a bridge providing residents opportunities to participate decision-making processes related to future of their community (continues at p. 37).

Table 3.1: Organizations related to sprawl management and their activities

SCALE	ORGANIZATION	DOMAIN	DESCRIPTION	INSTRUMENT/ACTIVITY	SOURCES
LOCAL	Sustainable Seattle	SEATTLE REGION (USA)	Sustainable Seattle was founded in 1991 when a dedicated group of citizens came together out of concern for our long-term community well-being	The organization has develop five sets of community-based indicators on sustainability, and shared with other communities. Works to build a thriving and liveable future in their region by connecting, educating and inspiring people, organizations and businesses.	http://www.sustainableseattle.org/
	Sustainable Calgary	CALGARY (CANADA)	Sustainable Calgary (SC) is a citizen-led, non-profit organization started in 1996 when a group of Calgarians came together to discuss ways to improve the sustainability of the city. It advocates sustainable principles.	Promote dialogue among diverse groups of people including local residents and decision-makers. Develop tools to monitor Calgary's long-term sustainability and quality of life and wellbeing. Conduct research and write reports about sustainability issues and policies.	http://sustainablecalgary.org/
	1000 Friends of Oregon	OREGON (USA)	Incorporated in 1975. 1000 Friends of Oregon is a private, non-profit, charitable organization aimed at common sense planning and managed growth.	Defend and improve state regulations and land use laws. Develop new policies/programs to help Oregon manage growth at the local, regional and state levels. Get involved in litigation to enforce existing laws.	https://www.1000friends.org/
	Toronto Environmental Alliance (TEA)	TORONTO (CANADA)	As a not-for-profit organization TEA advocate on behalf of all Torontonians for a green, healthy and equitable city.	Protecting the Greenbelt from urban sprawl by engaging local habitants. Promote the agricultural production and recreation facilities in greenbelt areas of Toronto	http://www.torontoenvironment.org/
	Equiterre	MONTREAL (CANADA)	In 1993, they established ASEED (Action for Solidarity, Equity, Environment and Development). It obtained non-profit status in 1995 and the name to Equiterre in 1998.	it develops projects in agriculture, transportation, fair trade, energy, responsible consumption and climate change	http://www.equiterre.org/en
	Vivre en Ville	QUEBEC (CANADA)	Vivre en Ville is a public interest organization that contributes to the development of sustainable communities throughout Quebec.: They work from the building and the street to the neighborhood and the urban area.	Vivre en Ville offers a wide range of training workshops, from general or thematic conferences to technical workshops. They also provide a series of guides, case studies, fact sheets, etc. Their mission are consulting, advocacy, and create awareness.	https://vivreenville.org/
	Better Environmentally Sound Transportation	LOWER MAINLAND REGION (CANADA)	BEST, as a non-profit organization, has been working to create vibrant, healthy, communities built around walking, cycling, and public transit and car shares since 1991.	Promotes and creates solutions in sustainable transportation and promotes walkable compact urban patterns.	http://best.bc.ca/
	Smart Growth BC	BRITISH COLUMBIA (CANADA)	Smart Growth BC was created as a joint project of the University of Victoria Eco-Research Chair of Environmental Law and Policy and West Coast Environmental Law Association.	The smart growth project aimed to provide sound alternative policy solutions by placing priority on infill, redevelopment, and densification strategies. Promotes compact development.	http://smartgrowth.bc.ca/
	Ontario Smart Growth Network	ONTARIO (CANADA)	The Ontario Smart Growth Network was founded in 2003 to bring together groups that were working to replace urban sprawl with compact, liveable communities.	Their job is to help people working within the complex field of smart growth to connect, learn from each other, and collaborate on projects and campaigns.	http://smartgrowthontario.ca/

SCALE	ORGANIZATION	DOMAIN	DESCRIPTION	INSTRUMENT/ACTIVITY	SOURCES
	Udalsarea 21	BASQUE REGION (SPAIN)	The Basque Network of Municipalities for Sustainability	The Udalsarea 21 mission is to promote the establishment of first-rate Local Agendas 21 and consolidate the Local Action Plans as an integrated management instrument. They effectively contribute to environmental improvement and to quality of life, and to foster the role of the municipalities in the sustainable development policies of the Basque Country.	http://www.udalsarea21.net/
NATIONAL	American Planning Asociacion	USA	APA is an independent, not-for-profit educational organization that provides leadership in the development of vital communities. Created in 1978.	The American Planning Association supports federal, state and local policies that encourage the siting and design of new smart growth development. Encourage compact, transit-accessible, pedestrian-oriented, mixed-use development patterns and land reuse.	https://www.planning.org/
	EPA (US Environmental Protection Agency)	USA	EPA is an agency of the U.S. federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress.	Develop and enforce regulations. Give grants for environmental issues. Teach people about the environment. Publish information Provide technical assistance Relation to the topic: Promotes smart growth and compact developments	http://www3.epa.gov/
	Smart Growth America	USA	Smart Growth America is a coalition of advocacy organizations that have a stake in how metropolitan expansion affects the environment, quality of life and economic sustainability. Partners include national, state and local groups, working on behalf of the environment, historic preservation, social equity, land conservation etc.	Coalition Building: Governors, business owners, bicycle activists, parents and organizations across the country. Policy Development: They work with leaders at all levels of government to show which policy options are best for different communities and can help communities go from idea to implementation. Research: in urban development, transportation, vacant lands; share of information with policy-makers.	http://www.smartgrowthamerica.org/
	David Suzuki Foundation	USA & CANADA	The David Suzuki Foundation is a science-based non-governmental environmental organization in national level.	Create liveable communities — assist urban centres in Canada to protect green and blue spaces and promote transit-oriented development and pedestrian- and cycle-friendly transportation options. They are against sprawl development. Developing guides for policymakers	http://www.davidsuzuki.org
	Pembina Institute for Appropriate Development	CANADA	The Pembina Institute is a Canadian non-profit think tank focused on energy. Founded in 1985.	They are mainly working on how to reduce energy use in general. They promote public transportation solutions both to reduce energy use and air pollution. They are working on how to shift commuting patterns and promote residents to live where they work. It is against sprawl development.	http://www.pembina.org
	Green Communities Association	CANADA	Green Communities Canada (GCC) is a national association of community organizations working with homeowners, businesses, governments and communities to reduce our impact on the environment.	Collaborate with community partners, such as governments, businesses and local organizations, to identify priorities and develop strategies about sustainable urban development.	http://greencommunitiescanada.org/

SCALE	ORGANIZATION	DOMAIN	DESCRIPTION	INSTRUMENT/ACTIVITY	SOURCES
	Smart Growth UK	UK	An informal national coalition of organisations and individuals interested in promoting the Smart Growth concept	Emphasises compact and accessible urban communities and which opposes urban sprawl and car dependency. Promotes Smart Growth concept and formulates a set of principles	http://www.smartgrowthuk.org/
	Smart Growth Network	USA	The Smart Growth Network, a coalition of more than 40 national, state, and local organizations. The network promotes a set of principles to guide economical and environmentally responsible development, encouraging local governments to mixed-land use; preserve open space; provide transportation choices; strengthen and direct development.	They are working to minimize low-density, auto-dependent development, advocates a set of policies designed to overcome problems associated with sprawl by rethinking the costs associated with decaying inner-city infrastructure, reverse commuting, abandoned brownfields, disappearing green space and agricultural land on city fringes.	http://smartgrowth.org/
	Sierra Club	US	The club was one of the first large-scale environmental preservation organizations in the world, and currently engages in lobbying politicians to promote green policies. (Founded 1892)	Sierra Club has been supporting urban infill development as a means of combating greenhouse gas emissions and suburban sprawl. Revitalizing urban areas, making better use of vacant land in inner cities, and reducing consumption of natural resources can help reduce sprawl.	http://www.sierraclub.org/
INTERNATIONAL	EU - European Commission	Europe	Policies on urban planning and sustainability	White Papers Roadmaps Urban Agenda Europe 2020 strategy Programs, Projects, Funding etc.	http://ec.europa.eu/
	Energy Cities	Europe	Energy Cities is the European Association of local authorities in energy transition	Promotes to control urban sprawl in order to reduce energy consumption.	http://www.energy-cities.eu
	Connective Cities	Global	An international cities platform	To facilitate worldwide networking between urban actors from politics, administration, industry, science and civil society and to support a systematic and application-oriented exchange of experience and development of innovative ideas for urban projects.	http://www.connective-cities.net
	EUROCITIES	Europe	EUROCITIES is the network of major European cities that brings together the local governments of over 130 of Europe's largest cities across 35 countries.	EUROCITIES acts as either coordinator or partner in a range of EU-funded projects. Main areas of their activities include sustainable urban development, energy efficiency, and preservation of green areas.	http://www.eurocities.eu
	European Sustainable Cities Platform	Europe	The European Sustainable Cities Platform is an initiative by ICLEI and works as an information hub for local governments, organisations and interested individuals.	Their works include 1. Strengthen Local Agenda 21 or other local sustainability processes 2. Deliver integrated management towards sustainability 3. Ensure that sustainability is central to urban decision-making processes etc.	http://www.sustainablecities.eu/

SCALE	ORGANIZATION	DOMAIN	DESCRIPTION	INSTRUMENT/ACTIVITY	SOURCES
	European Sustainable Development Network (ESDN)	Europe	ESDN is an informal network of public administrators and other experts who deal with sustainable development strategies and policies. The network covers all 27 EU Member States, plus other European countries.	The ESDN is active in promoting sustainable development and facilitating the exchange of good practices in Europe and gives advice to policy-makers at the European and national levels	http://www.sdn-network.eu/
	Eco Compact City Network	Europe	ECCN is a network of cities, institutions, centres of research, developers, architects, and engineers interested in developing the culture of the “compact city”.	ECCN organizes international exhibition, conference, and publication. The aim of ECCN is to spread the culture of ECCN and constantly update the state-of-the-art of the “compact city” in order to offer the best solutions to the development of an urban environment in balance with the natural one.	http://www.eco-compactcity.org
	ICLEI (Local Governments for Sustainable Development)	Global	ICLEI is the only network of sustainable cities operating worldwide. A resource centre offering information, tools, networking, training and consulting services.	Association of over 1,200 local governments that represents the interests of local authorities within the United Nations and at international policy forums. A movement driving positive change on a global scale through programmes and campaigns on local sustainability.	http://www.iclei-europe.org
	Green World City Organization	GLOBAL (over 120 countries)	Green World City Organisation is global alliance dedicated to creating sustainable cities worldwide to address the issues of rapid global urbanisation, environmental pollution and climate change.	Green World City’s mission is to help build greener, more sustainable cities worldwide by providing a framework focusing on cost-effective solutions for Governments and large-scale developers and creating business opportunities for green companies.	http://www.greenworldcity.com/
	UNEP (United Nations Environment Programme)	Global	The United Nations Environment Programme (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development.	Assessing global, regional and national environmental conditions and trends. Developing international and national environmental instruments. Strengthening institutions for the wise management of the environment. It serves as an authoritative advocate for the global environment.	http://www.unep.org/
	UN Global Compact Cities Programme	Global	The Global Compact Cities Programme (or Cities Programme) is the urban component of the United Nations Global Compact; the world’s largest corporate responsibility initiative. Established in 2003.	Global Compact Cities Programme is dedicated to the promotion and adoption of the Global Compact’s Ten UN Principles by cities, and provides a framework for translating the principles into day-to-day urban governance and management.	http://citiesprogramme.com/aboutus
	URBACT URBAN NETWORK	Europe	URBACT is a European Territorial Cooperation programme aiming to foster sustainable integrated urban development in cities across Europe. It is an instrument of the Cohesion Policy, co-financed by the European Regional Development Fund, the 28 Member States, Norway & Switzerland.	Mission is to enable cities to work together and develop integrated solutions to common urban challenges, by networking, learning from one another’s experiences, drawing lessons and identifying good practices to improve urban policies.	http://urbact.eu/

1000 Friends of Oregon organization may be a good example of this kind of local organizations. Co-founder of the organization was ex-governor of Oregon, and his starting point was “Oregon needed a citizen watchdog group to ensure that local decisions reflected the voices of Oregonians and not those of special interests”. Pillars of the organization are to advocate compact, sustainable, and healthy community, by all means, doing it with the residents.

- Some local organizations give more attention to information production. Sustainable Calgary is an example of this type of organizations that create opportunities to learn about sustainable living principles, policies and practices such as education forums and workshops. Their members conduct research and write reports about sustainability issues and policies. Similarly, Ontario Smart Growth Network was founded to bring together the groups that were dealing with urban sprawl and aiming to create compact, livable communities. As another local organization, Smart Growth BC has been conducting programs and projects in order to be able to set sustainable criteria to achieve their compact city goals.
- Several effective local organizations serve as a model for others in terms of their organizational structure and/or the success they have achieved. For instance, Sustainable Seattle provided inspiration to the founders of Sustainable Calgary. Sustainable Seattle has developed five sets of community-based indicators on sustainability, and shared them with other communities. The organization summarizes their works as to build a thriving and livable future in their region by connecting, educating and inspiring people, organizations and businesses.
- Many other local organizations aim to increase living conditions of their community centers by promoting sustainable transportation modes, and placing particular importance to create livable streets. This approach helps to keep people in the urban centers instead of

a more dispersed living environment. Better Environmentally Sound Transportation (BEST) can be given as an example of this kind of organizations that has been working to create vibrant, healthy, communities built around walking, cycling, public transit and car shares solutions.

- Particularly in Europe, several associations and networks of municipalities are contributing to the sustainable development policy implementations. Udalsarea 21 is a case from Spain, which includes a network of 203 municipalities in the Basque Region. Since 2002, this network coordinates and promotes Local Agenda 21 projects in order to improve inhabitants' quality of life and the environment, for a greener future.

National Organizations also have crucial roles in developing and implementing sustainable urban development policies, as summarized below:

- Most OECD countries have developed and implemented national sustainable development strategies (NSDS) in accordance with the 1992 mandate of Agenda 21. According to the OECD (2006), the stakeholder participation (e.g., business, unions, and non-governmental organizations) is one of the major prerequisite for achieving success in these development strategies.
- There are national organizations that primarily concern on environmental issues such as US Environmental Protection Agency (EPA), Pempina Institute of Appropriate Development and Sierra Club, David Suzuki Foundation etc. Their common ground is the protection of natural or unbuilt areas from uncontrolled urban sprawl. Therefore, they promote compact development. For instance, Sierra Club works to create awareness about revitalizing urban areas and making better use of vacant land in inner cities in order to stop urban sprawl. They believe that, it is possible to

consume less resource by adopting new growth patterns in urban areas.

- Several leading organizations and networks are promoter of smart growth principles. Since the term smart growth was developed at first in the US, most of the institutional formations are originated from there. Smart Growth America and Smart Growth Network are leading organizations of US that are contributing to minimize low density, auto-dependent development on the one hand, to maximize reuse of inner vacant and brownfield areas on the other hand. There is another smart growth institution in the UK working with similar motivation. Smart Growth UK is a national coalition of organizations and individuals interested in promoting the smart growth concept.
- In addition to these organizations as mentioned above, there are chambers of urban planners and architects, which are functioning in national level. They contribute to policy-making process by lobbying, by monitoring during the implementations, and by providing public participation to planning processes.

International Organizations also have crucial roles in developing sustainable urban development policies and setting goals and objectives for their members:

- At this level, many organizations have been active particularly in Europe that is because there is a strong network between European countries under the umbrella of the European Union and the European Commission.
- Many organizations at global or international level are working on the broad concept of sustainability. While some of them work targeting to cities and urban areas (such as Connective Cities, URBACT, EUROCITIES Eco Compact City Network and European Sustainable Cities platform etc.), the others (such as UNEP, EEA,

IPCC, etc.) consider cities as a part of environmental sustainability policy.

- Urban development related issues are the core concern of many environment-based organizations. Cities, by its nature, are resources of many environmental problems and their activities and growing patterns have to be controlled. Regarding to this, most of the organizations pay attention to urban planning decisions in assessing impact of energy use at the level of buildings, neighborhoods, urban areas and regions. For instance, United Nations Environment Programme (UNEP), The Intergovernmental Panel on Climate Change (IPCC), European Environment Agency (EEA), Energy Cities promote mixed-used, transit oriented development, in order to reduce CO₂ emissions and energy use, as well as preventing agricultural land in general. Cahn (2003) states that energy consumption is mainly originated from urban activities and urban sprawl that is linked to high-level energy consumption by high transport demand and residential heating demand. *“We wish to reduce the demand for energy from the residential sector, particularly from space heating. Low density development – particularly individual detached houses, are more demanding in energy than multi-family buildings or terraced accommodation”* (Cahn, 2003, p. 7).
- There are also many influential associations of local authorities and city networks in Europe, which are collaborating to solve their problem related to urban areas by sharing their knowledge, experiences and innovative ideas. Energy cities, Eco City Network, European Sustainable Cities and Towns Campaign, Connective Cities, EUROCITIES are some of the most influential ones.

3.2. Plans, policies and strategies

Sprawl management approaches could take place in almost every scale and every step of spatial planning. Under this section, growth management related plans, policies and strategies are elaborated based on the following geographical categorization: 1) cities and urban areas, and 2) regions and countries.

Several well-known policies and strategies have been implemented for years in order to control urban sprawl across different countries and cities². Among them Greenbelts, Urban Growth Boundaries (UGB), Urban Service Boundaries (USB), Smart Growth Policies, Compact City Policies, Densification and Infill Development Policies are the most known and widely applied strategies. It is also important to note that implementing combination of some of these policies instead of implementing solely one is more common. The good practices presented in Table 3.2 mainly includes the implementation of these policies, which are well known in the sprawl management literature.

3.2.1. Greenbelts

As a regional scale policy, greenbelts are one of the widely implemented sprawl management strategies. Manchester and London are well known cities with their “greenbelt policy” approach, which was first proposed in the seventeenth century by Sir William Petty for Greater London. In 1898, Ebenezer Howard proposed Garden City model, which signify self-contained communities surrounded by greenbelts. The next proposal made by Dame Henrietta Barnett (of Hampstead Garden City fame), for a Green Belt five miles out of London. Both of these schemes failed due to lack of support (Hamson, 1969).

² The specifications of these policies are given in Chapter 2.

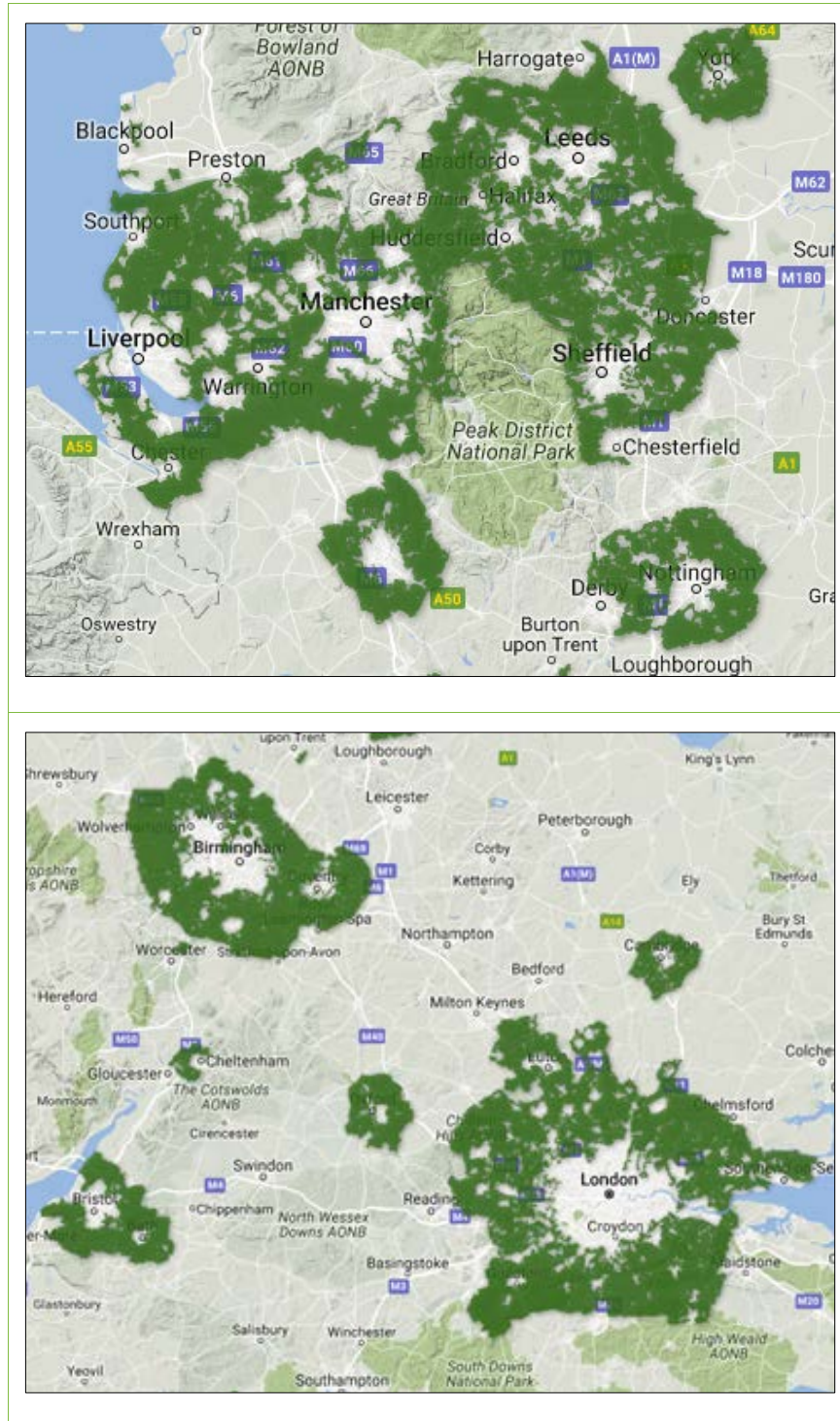
Table 3.2: A selection of good practices on sprawl management policies – policies, plans and strategies

Scale	Country	Location	Policies, plans and strategies	Relevancy	Additional notes
Metropolitan regions and urban areas	GERMANY	MUNICH	"Perspective Munich" (adopted in 1998)	Growth management ("our city is booming"), good planning process (No plans, but a framework of action), compact inner-city development strategy and development along the good public transportation	LUMASEC, (2008)
	NETHERLANDS	AMSTERDAM	Structural Vision Amsterdam 2040 (adopted 2011)	Good governance, a well-known compact city.	USEACT, (2013)
	GERMANY	STUTTGARD	Verband Region Stuttgart (Greater Stuttgart Region)	Good Governance, it acts as the political entity for the Stuttgart Region in the form of a public law corporation. Delegates to the Regional Assembly are elected every five years by the local population. This "regional parliament" is unique in Baden-Württemberg with model character in terms of regional management.	USEACT/URBACT Project https://www.region-stuttgart.org
	UK	LONDON	The London Plan of 2008	Much emphasis on the regeneration of the inner city and intensifying development and promoting more mixed uses, with a special focus on Opportunity Areas and Areas for Intensification that are well served by public transport.	OECD, (2012)
	FRANCE	PARIS	Paris Master Plan 2008 (Grand Paris Project) Regional Planning in Île-de-France	One of the 4 pillars of the plan is to lay out rules and guidelines about where and how to develop land. The plan says "Fight against uncontrolled urban sprawl". Densification around metro stations.	http://www.green-lotus.org/wp-content/uploads/2015/03/07-SDRIF-for-YANGON.pdf
	ITALY	ROMA	General Municipal Regulatory Plans (GMRP) "GMRP ecological networks" (adopted 2003)	Greenbelts Ecological Network and Territorial Planning	http://www.isprambiente.gov.it/en/projects/biodiversity/ecological-network-and-territorial-planning
	SPAIN	BARCELONA	Protection of Spaces of Natural Interest (PEIN)Plan (1992)	The Plan protects biological corridors connecting the twelve most important natural areas thus contributing to the preservation of wildlife diversity.	http://geographyfieldwork.com/BarcelonaGreenbelt.htm
	US	OREGON	Land Conservation and Development Act 1973	One of the strongest growth management laws of the US	Nelson and Moore (1996)
	US	WASHINGTON	Growth Management Act 1990	The GMA establishes thirteen goals to guide cities and counties in developing comprehensive plans and development regulations for growth management	Laschever (1998)

Scale	Country	Location	Policies, plans and strategies	Relevancy	Additional notes
	US	LANCESTER County Pennsylvania	Growth Management Element 2006 "BALANCE"	A comprehensive plan that protect mainly rural areas. Provides a growth management framework	http://www.farmlandinfo.org/sites/default/files/Balance - Lancaster.pdf
National	UK	NATIONAL	Green Belt Policy 1995 (amended in 2001)	It aims to prevent urban sprawl by keeping land permanently open. The most important attribute of greenbelts is their openness and permanence. The five purposes of greenbelts are to check the unrestricted sprawl of large built-up areas; to prevent neighboring towns from merging into one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns and to assist in urban regeneration.	OECD (2012)
	SPAIN	NATIONAL	Consolidated Land Law (2008)	It clearly adopts the European concept of compact cities and criticizes dispersed development. "minimizing this growth's impact and encouraging the regeneration of the existing city".	OECD (2012)
	SPAIN	NATIONAL	Spanish strategy for urban and local sustainability	To reuse or recycling of the urban network, management and rehabilitation of the built heritage, rather than consumption of land by extensive development of new networks and new building construction To create urban structures based on density, complexity and mixed use	OECD (2012)
	SPAIN	Vitoria-Gasteiz	The Strategy of Vitoria-Gasteiz 2015	Promotes urban compactness based on the General Urban Organization Plan. It gives priority to inward growth, recovery, reuse and re-densification, eco-efficiency and sustainable mobility. It establishes guidelines for the rehabilitation of the built city, the sustainable management and Sustainable Mobility Plans.	OECD (2012)
	SWEDEN	Gothenburg	Gothenburg Comprehensive Plan 1999	A special focus on compact city redevelopment of Gothenburg's industrial, brownfield areas with mixed land use, especially around safe interchange transport nodes To concentrate on key nodes: creation of high-density nodes to reduce urban sprawl and promote the use of public transport.	OECD (2012)
	SWITZERLAND	Lausanne & Morges	Lausanne-Morges Agglomeration Project (PALM)	Its main priorities are mobility, urbanization and green networks. Concretely, it aims at the development of a compact high-standard agglomeration with four main city centers and ten priority sites.	OECD (2012)

There were continuing efforts respectively in 1935, 1938, 1947, and 1968 to protect natural areas surrounding the cities. Figure 3.1 shows the greenbelts of Manchester and London with their surrounding cities.

Figure 3.1: Greenbelts of Manchester and London with their surrounding cities



Source : Interactive Map of England's Greenbelts - <http://www.telegraph.co.uk>

Today, UK is pursuing the National Planning Policy Framework (NPPF), published in 2012 as a planning guidance, including “Planning Policy Guidance 2: Green Belts”. According to Natural England (Governmental Organization, 2010) ³, that green belt policy continues to be “highly effective” in its principal purpose as preventing urban sprawl and maintaining a clear physical distinction between town and country.

According to the OECD (2012), it is stated that most of the European cities such as Vienna, Copenhagen, Barcelona, Budapest and Berlin have followed this greenbelt tradition. It was also adopted effectively in some other non-European cities such as Hong Kong, China, Seoul, Tokyo, Toronto, Vancouver, Washington, D.C., Chicago, Boulder, Sydney and Melbourne.

Depending mainly on cultural and political structures of countries and societies, the level of success for these policies varies among countries and cities. For example, Morshed and Asami (2015) states that, the greenbelts implementations in Tokyo⁴ resulted unsuccessfully while it has brought success in preserving natural lands in England. On the other hand, greenbelt policy has been criticized as a main stimulating reason of “New Towns” movement in the UK, which can be characterized as low-density leapfrog urban development.

“The greenbelt of Seoul was successfully enforced because of the dictatorial regime backed by the military plan for the city. However, the

³ Natural England and CPRE, “Green Belts: A Greener Future”, 2010. Available at <http://publications.naturalengland.org.uk/file/93018>

⁴ Japan presents quite strict regulations on sprawl control since the City Planning Act of 1968 which is called particularly “Area Division”. This system basically provides a framework as “to promote orderly urbanization and to control disorderly urbanization”. City Planning Area is divided into Urbanization Promotion Area (UPA) and Urbanization Control Area (UCA) by a line, this system is often called the “line-drawing system”. This determines the size and shape of the future urban area (Tariquzzaman, 2009).

greenbelt resulted in a bipolar urban density, high density inside and outside the greenbelt (Tankel, 1963; Kim and Choe, 2011, 47). The greenbelt for Tokyo failed because of strong opposition from the residents and landowners. The greenbelt policy is rarely an effective planning tool to curb land conversion and to protect environmentally vulnerable areas in Asian cities, which are characterized by population growth, demand for buildable land, speculation and corruption” (Morshed and Asami, 2015, p. 5).

As a European country, Germany has a relatively strong tradition of urban growth management and greenbelt planning at both regional and local levels of implementation. In the German planning system, regional plans build a bridge between the spatial and economic goals and objectives developed at state level and the land use plans devised by municipalities (Frank and Morgan, 2012). In this context, Stuttgart could be a good practice in terms of several aspects which are; (1) its urban greenbelt strategy/approach that is “inner development before outer development”, (2) urbanization patterns (compact-polycentric) and (3) institutional structure of urban governance.

In 1994, Verband Region Stuttgart was established as the political entity for the Stuttgart Region in the form of a public law corporation. Delegates to the Regional Assembly are elected every five years by the local population. This "regional parliament" is unique in Baden-Württemberg with a model character in terms of regional management. One of the main tasks of this parliament is to prepare regional plan, which establishes key goals and objectives for the future spatial organization and development of the region. That plan substantially provides guidance for the development of the regional settlement structures by defining urban development and preservation areas. Greenbelts designation and decisions operates on that regional plans and they are implemented strictly. Today, the greenbelts of Stuttgart Region are almost completely

remaining as open spaces in comparison with the other regions of Germany (Siedentop et al., 2016; Frank and Morgan, 2012).

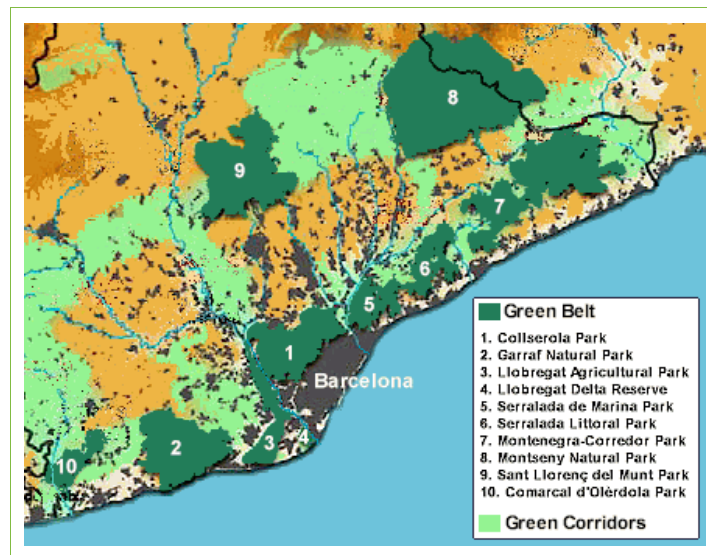
Since adoption of the Consolidated Land Law in 2008 (implemented by the Royal Legislative Decree 2/2008), Spain has been following the European concept of compact cities and criticizes dispersed development. It contains the principle of territorial and urban sustainable development, which addresses the need to avoid the problems and negative consequences of a dispersed urbanization model and to pursue the compact city model. Just after a year, in 2009, “Spanish Strategy for Urban and Local Sustainability” was released by the Ministry of Environment and Rural and Marine Environment. It provides a general strategy framework including, (1) to reuse or recycling of the urban network, management and rehabilitation of the built heritage, rather than consumption of land by extensive development of new networks and new building construction, (2) to create urban structures based on density, complexity and mixed use, (3) to organize urban structure on the basis of proximity and mobility networks, promoting to increase efficiency of public transport (OECD report, 2012).

Regarding to the greenbelts of Spain, Barcelona Metropolitan Region presents good implementations and urban development patterns. As being the core city of the region, Barcelona municipality (and several adjacent large towns), stands as one of the densest and urbanized regions of Europe. In Barcelona, urban development pattern is characterized as discontinuous growth in concentric rings accompanied by a pattern of isolated islands or urban spots in the outer fringe, which is defined as polycentric metropolitan system with a well-defined central city and several medium-size cities around.

As seen in Figure 3.2, Green Belts (L'anella Verda) of Barcelona consist of national parks and agricultural lands which have been protected by Ley de Espacios Protegidos since 1975 (Catalán et al. 2008). As another

case from Spain, The Strategy of Vitoria-Gasteiz 2015 is considered as a successful case of sustainable urban development. The strategy promotes urban compactness based on the General Urban Organization Plan. It gives priority to inward growth, recovery, reuse and re-densification, eco-efficiency and sustainable mobility. It establishes guidelines for the promotion of proactive policies for the systematic replacement and rehabilitation of the built city, the sustainable management of industrial estates and the implementation of the Sustainable Mobility Plan (Aguado et al., 2013).

Figure 3.2: Greenbelts of Barcelona



Source: <http://geographyfieldwork.com/BarcelonaGreenbelt.htm>

Since 1970s, Italy has been implementing green belt or greenways in order to control urban growth and mitigate the environmental damages of post war rapid urbanizations. General Municipal Regulatory Plans (GMRP), as the main planning documents, have been refreshing by the green belt initiatives. In Rome, for instance, “GMRP ecological networks” policies were adopted in 2003. Objective of those policies was to conserve the green areas including regional parks, agricultural lands at the hinterland of metropolitan area and the other areas of public green space (Amati, 2008).

3.2.2. Densification and infill

Today, compact city policies, such as densification and infill development policies, are other best-known growth management policies especially in Europe. According to a recent ESPON Project (2013), Paris is one of the most compact cities in Europe. Paris provides significant efforts on sprawl management particularly at metropolitan level. Whereas the state was the only influential player in the development and implementation of planning policies previously, the municipalities have become more active in 1980s and early 1990s by taking role in planning process. Although having had a growing and sprawling trend (also supported by the government previously), Paris has been representing a very intensive challenge against uncontrolled sprawl since 2008, when the comprehensive metropolitan plan had been adopted. One of the main objective of the existing plan is to control sprawl by making the old suburbs denser and connecting them to the core city effectively. One of the most important pillars of the plan is public transportation, which makes the densification efforts more efficient in practice. In greater Paris metropolitan area, there are mainly 18 municipalities that the densification policies⁵ have been taken place (Touati-Morel, 2015).

Amsterdam is another good case at metropolitan level of urban governance and sprawl management. As a national policy, the Netherlands has been using very detailed information regarding occupation, economic development, and built-up environment over the last 25 years, in order to make projections to accommodate the natural population and economic growth for the planning horizon of 2030. *“Cities and local authorities then apply a system of red and green contours: Red contours are boundary lines that remain in place for 10 years and that*

⁵ Touati-Morel (2015) analyzes the urban development policies by offering a typology as: (1) Incentive policy of soft densification (2) Interventionist policy of hard densification (3) Flexible policy of hard densification.

demarcate the area around existing towns and cities within which all future urban development must take place.... Green contours demarcate natural, cultural and heritage areas within which urban development may not take place” (Horn, 2015).

As being the capital, Amsterdam has given the priority to develop as a smart and sustainable city, which then listed within the top four sustainable cities of Europe⁶. In 2011, “Structural Vision of Amsterdam 2040” was prepared considering the future population estimations and their needs. One of the pillars⁷ of this structural plan was to densify designated parts of the city.

It is highlighted in the report of Plan Amsterdam (2011; p. 3) that *“the city has deliberately opted for densification of the city centre. The city has not chosen for growth by increasing its surface area but for intensification of the existing urban territory and for transformation of business zones”*. Main underlying justification of the densification strategy is *“More intensive use of the space in the city will make it possible to accommodate many more people and businesses. This increases the customer base for amenities, which makes it possible to manage energy and transportation more efficiently and removes the need to infringe upon the landscape”* (PlanAmsterdam⁸, 2011, p. 10)

Amsterdam Metropolitan Area Development Scenario for 2040 (Figure 3.3) was developed for guiding the developments in the metropolitan area.

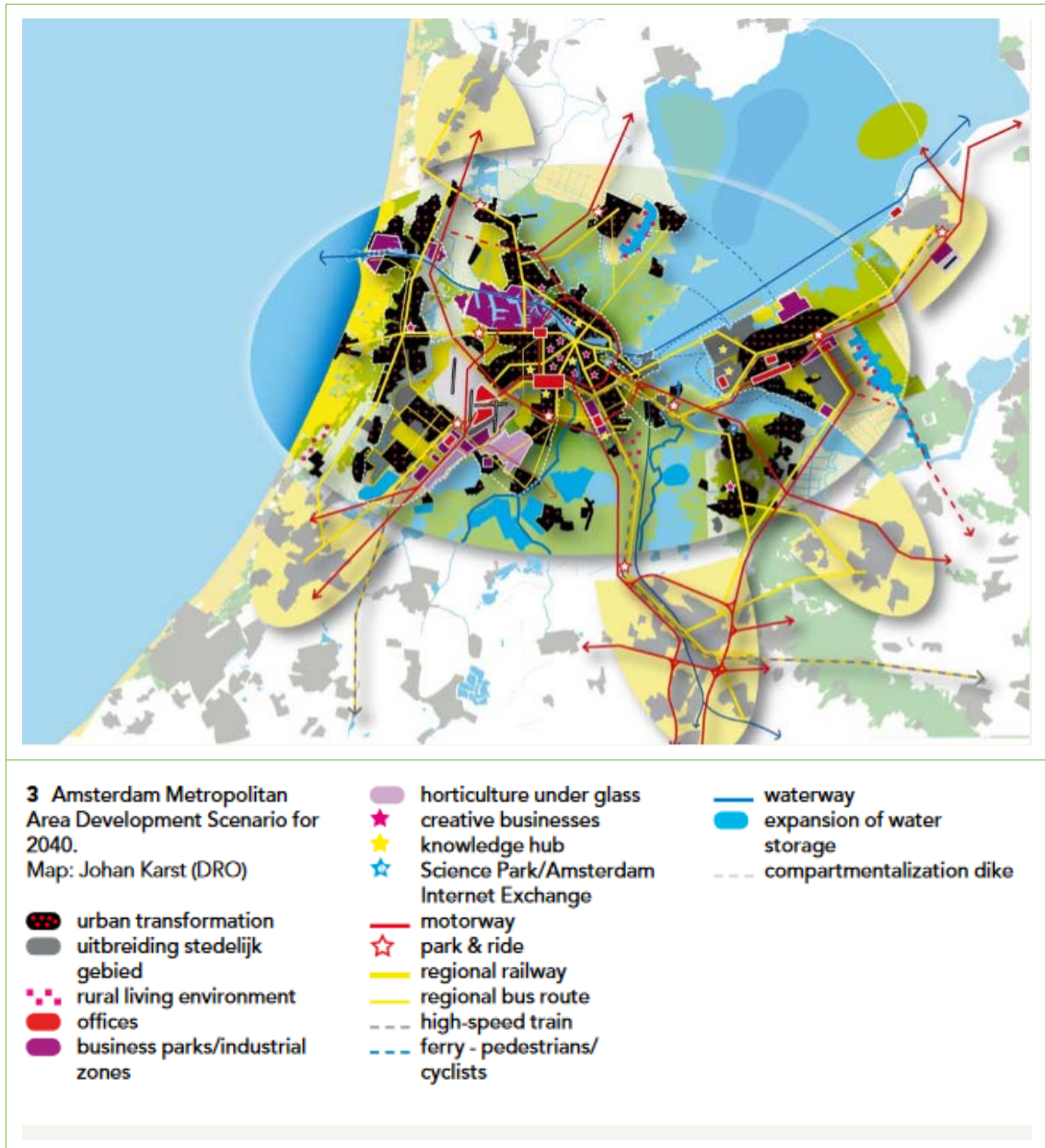
⁶ For further information: City of Amsterdam, Sustainability Report 2008-2009

⁷ The main pillars of the Structure Vision of Amsterdam are: (1) Densification (2) Transformation (3) Public Transport on the regional scale (4) High-quality design of public space (5) Recreational use of green space and water (6) the switch to sustainable energy.

⁸ Plan Amsterdam is published by the City of Amsterdam’s Department of Physical Planning www.dro.amsterdam.nl. (accessed in 2016) for more information see also <https://www.rijksoverheid.nl/binaries/.../2009/...2040...structural-vision/w1143.pdf>

It is claimed that The Structural Vision is a framework of analysis for spatial plans and provides the basis for setting the city’s investment agendas, but first and foremost the Structural Vision is a visionary scenario for the future (Plan Amsterdam, 2011).

Figure 3.3: Amsterdam metropolitan area development scenario for 2040



Source: Plan Amsterdam, 2011

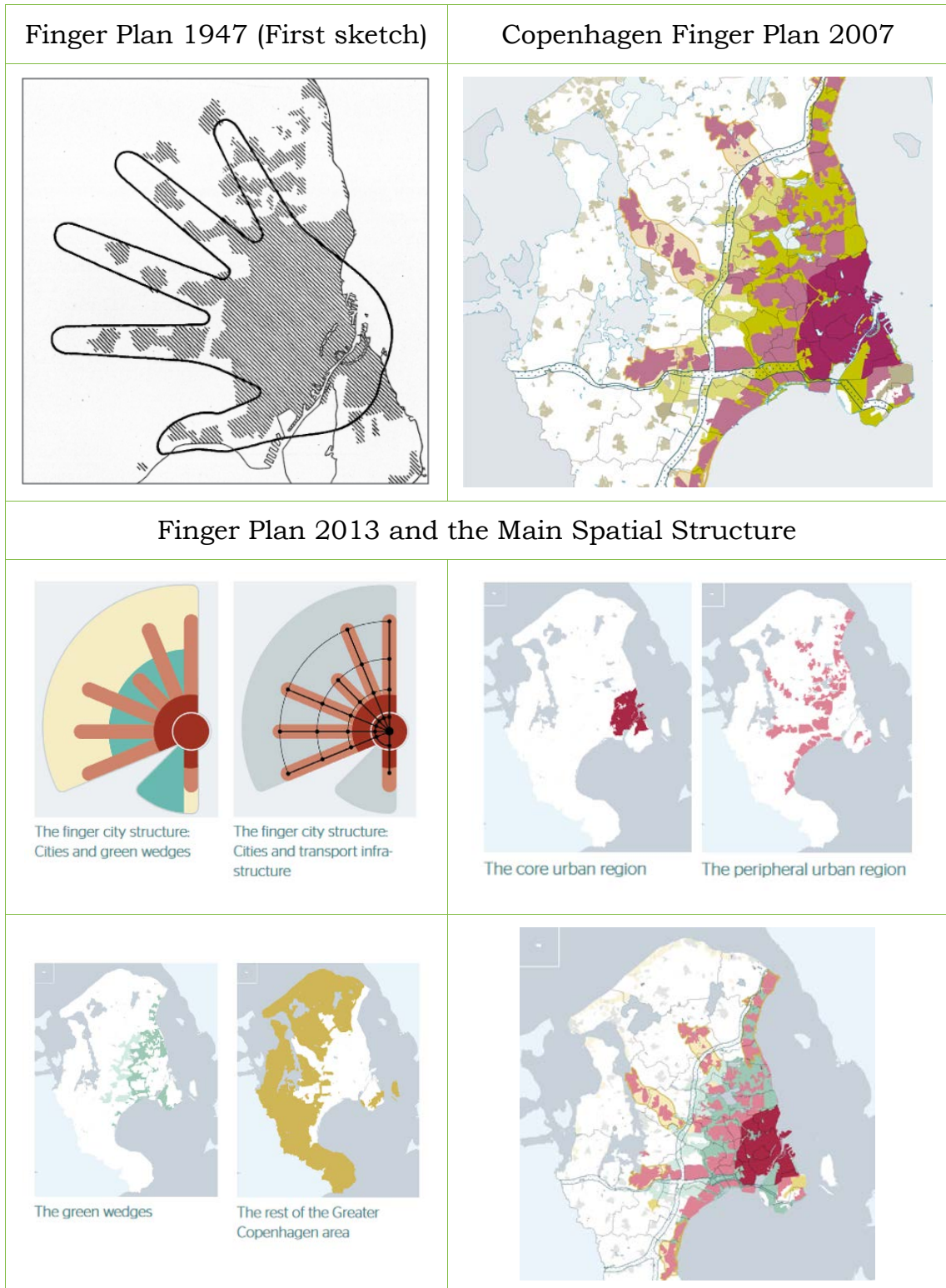
3.2.3. Transit oriented development

Copenhagen - as the capital and largest city of Denmark –with almost 2 million total population in its metropolitan area– has been one of the pioneer cities challenging with sustainability issues. The latest Municipal Plan of Copenhagen in 2011 point outs that *“Our growth must be sustainable and we want Copenhagen to be the obvious place to develop and test new environmental and climate solutions”* (Pisano et al., 2014, p. 6). Another aim of the city is to be first carbon-zero capital of the World in 2025.

Copenhagen is one of the most characteristic example of Transit Oriented Development strategy with its ‘Finger Plan’ created by Regional Planning Office in 1947. This ‘Finger Plan’ is a good example of a long-term planning vision, which shaped future urban development and rail transportation infrastructure. It was a draft proposal for Greater Metropolitan Area of Copenhagen and the later plans were prepared based on it: *“urban development is concentrated along city fingers linked to the railway system and radial road networks and the city fingers are separated by green wedges which are kept exempt from development”* (Pisano et al., 2014, p: 4). As seen in the Figure 3.4, the Finger Plan has formed the backbone of regional planning for the Greater Copenhagen area since 1948. Consequently, *“a five finger hand became a metaphor for defining where growth would and would not occur”* (Pisano et al., 2014; UN Habitat, 2013; Danish Ministry of the Environment, 2015). The figure gives the Finger Plan of 1947, 2007, and the 2013 with main spatial structure schema. According to the latest finger plan, The Greater Copenhagen area is divided into four types of geographical area:

- 1. The core urban region (the palm of the hand),
- 2. The peripheral urban region (the city fingers),
- 3. The green wedges, and
- 4. The rest of the Greater Copenhagen area

Figure 3.4: Finger Plan of Copenhagen



Source: Danish Ministry of the Environment, 2007 and 2015.

The core urban region (“the palm of the hand”) and the peripheral urban region (“the city fingers”) together, make up the “finger city”. Plan decisions have been set special provisions for each of the four geographical areas. Plan determined that urban development should take place at the core urban region (the palm and the fingers). The peripheral urban regions (fingers) should be well connected with the core (palm of the hand) by a good traffic infrastructure consisting of railway services with suburban trains, regional trains, metro and light railways, as well as an attached general road network. At the same time, the areas between the city fingers must be maintained as green wedges for regional outdoor recreation and agriculture (Danish Ministry of the Environment, 2015).

3.2.4. Growth management efforts in the US

According to Laschever (1998), land use planning in the United States, except for land owned by the federal government, has historically been performed by local municipal governments such as cities and counties (Laschever, 1998). In other words, planning in the America tradition involves the delegation of powers directly from senior levels of government (the nation and the states) to local communities. McKinney and Johnson (2009, cited in Seltzer, 2013) criticize that regions, states, and occasionally the nation have regularly sought ways to affect local planning goals, planning processes and implementing actions. Therefore, this situation sometimes causes mismatches between the scale of the issues and the institutions given the authority to address them.

As stated in the OECD report (2012), compact city approach has been evolved in the United States with the concept of urban growth control in the 1970s, when local environmental concerns and energy issues drew the attention of policy makers.

As it is stated by Nelson and Moore (1996), Oregon is a pioneer among the states in formulating, adopting and implementing statewide growth management policies in the US. Land Conservation and Development Act 1973 of Oregon, has been stated as one of the first strongest growth management laws of US. Local implementations of the state have been consistent with statewide planning objectives. Urban Growth Boundaries constitute the essentials of the law. Agricultural lands and natural areas around settlements were generally protected by strict rules. For instance, approval of a building as residence in a farmland requires the land to be used as farm. “2040 Growth Concept”, adopted in 1995, has been continuing to shape land use patterns with promoting compact, pedestrian-friendly and transit-supportive development pattern with several changes in times. This case is important as being one of the earliest steps to preserve natural areas from urban sprawl in the US.

On the other hand, in Washington, Growth Management Act (GMA) was adopted in 1990. The principal mechanism for implementing the Act's growth management goals is planning at the local level, by cities and counties. Local governments in the Washington State were responsible to develop their own comprehensive plans considering the requirements of GMA of 1990. The GMA establishes thirteen goals to guide cities and counties in developing comprehensive plans and development regulations, which are in brief (Laschever, 1998):

- Counties must designate the natural resources (agriculture, forest, mineral etc.) and preclude incompatible land uses and developments adjacent to these critical areas.
- Counties must designate urban growth areas and must prohibit urban development (even rural settlements that were allowed before the GMA) outside of these areas.

- Counties were allowed to allocate industrial development in rural areas only for natural resources based industrial activities that require very large parcel of land.
- Encourage development in urban areas in way such as infill, densification.
- Encourage citizen involvement.

Growth management approaches today in US basically stamp on these pioneers such as Oregon and Washington. Bosselman and Callies (1972, cited in Gale, 2007) state that landmark law of Oregon adopted in 1978 was one of the signal of the second “quiet revolution” in land use control. However, over the past two decades some states have found that further initiatives are necessary to control urban sprawl effectively. While some local governments have designed reasonably effective growth management systems, many others have not. In 1990, a small number of states have followed Oregon’s lead and enacted state sponsored growth management laws. Gale (2007) uses the term second “quiet revolution” for describing that process. These initiatives are designed to fill in the gaps between state environmental regulation, regional planning, and scattered and inconsistent local growth management efforts (Gale, 2007).

Lancaster Growth Management Element 2006 "balance" is an important case from those recent efforts. It is based on the two previous plans (1993 and 1997), and sets some significant new directions for the management of growth. The Growth Management Element is one of the three major components of the Lancaster County Comprehensive Plan⁹. It defines an

⁹ The other two components are the policy element and functional elements. For further information, see the report “The Comprehensive Plan for Lancaster County, Pennsylvania”, http://www.farmlandinfo.org/sites/default/files/Balance_Lancaster.pdf

overall framework, urban and rural area strategies and a plan for action designed to achieve the preferred future rather than the probable future.

Additionally, the growth management element consists of three main parts, which are framework policy, framework map and strategies. Key points of the overall framework can be summarized as: (1) allocate new developments within presently designated urban growth areas, (2) provide coordinated planning process between all governmental levels, (3) monitor the development in order to control the consistency between implementations and the plan, (4) gives special attention to projection for population growth and housing demand etc. (Lancaster County Planning Commission, 2006).

3.2.5. Final remarks on good practices

Consequently, there arise several key points from the good practices discussed above which could be highlighted as following:

- National and regional level of policies constitute central part of the issue for sustainability, especially in terms of managing the growth by protecting open spaces. Naturally, policies in that level have more comprehensive approaches for making growth and development economically, environmentally and socially sustainable. A selection of good practices of urban growth at national and regional level management is indicated in Table 3.2. For these cases, the final policy implementations generally take place in urban scale or in a particular urban area.
- As indicate in Horn (2010, p. 46) *“It is clear from the preceding examples that a growth management strategy usually encompasses a range of tools and mechanisms towards the containment and direction of urban growth rather than a single, standalone approach”*.

- Today, effectiveness of urban growth management at any governmental level is still one of the most studied and debated topic in the field. Each policy or strategy has negative or positive aspects or has advantages or disadvantages in different grades. Additionally, depending on cultural, political structures and geographical characteristics of the countries, regions, even urban areas, it cannot be suggested that a particular growth management policy or strategy applicable for all. For instance, while greenbelt policy encourages infill development or redevelopment, transformation, revitalization of inner parts of the city, in some way, may result by leapfrog development behind the designated belt. Therefore, greenbelt policy might be articulated with other open area preservation and urban development policies.
- Growth or sprawl management efforts in all over the world have still been in progress. What is more remarkable among the worldwide cases is that European cities have some advantages originated from their urban development traditions and history. It means that most of the European cities are more compact than the North American cities.
- In sprawl management, national policies determine general approaches, norms, and goals of countries and draw a line for desired future progress. On the other hand, local actors play critical roles on achieving these targets by implementing the plans and programs in practice. This means implementation step of sprawl management policies is crucial for final success. Bengston et al. (2004) and Pendal et al. (2002) emphasize that effectiveness of a growth management policy depends on the point that how that policy is being implemented in practice. There are several points that affect implementation of policies or projects, which are for instance good administration (Nelson and Duncan, 1995), monitoring (Bengston, 2003) and coordination.

- Consensus on plan (or project) is another critical point on success or achievement of goals. Planning authorities should bring together all stakeholders, local inhabitants, and investors to provide consensus among them before and during the implementation of projects.
- The urbanization itself has a complex and dynamic structure. It is changing over time by its nature. Plans, policies and strategies should come up with these changing dynamics. Plan itself does not mean a way of achieving desired future. Monitoring the implementations and being flexible for the changes when it is needed are also important aspects for success.

3.3. Selected sprawl management projects

The implemented projects related to urban growth / sprawl management can be mainly categorized into three: attracting centers, growing wealthier, and protecting nature. All three type of projects in all over the world use different tools (some of them similar), but they all have a common objective: stop or slow down urban sprawl and reduce its negative impacts on nature and urban centers.

3.3.1. Attracting centers

Projects that focus on city centers or inner areas for densification, revitalization, redevelopment of brownfield areas in order to prevent sprawl. Attracting urban centers is a common objective of almost all cities today. Especially for those cities which are suffering both population decline and/or physical deterioration in their inner city neighborhoods. Inner city decline is the other face of uncontrolled (generally sprawling) urban developments.

In Europe, the protection of empty land and the reuse and re-functionalization of inner urban areas are among the key strategies for the cities' sustainable development and their growth. In many cases,

while some parts attracting people with new investments, old and deteriorated parts lose their attractiveness¹⁰. That is why cities seek to overcome this emerging urban problem by the efforts of revitalization, transformation and rehabilitation projects. Objective of making the centers more attractive is twofold: making the centers livable and preventing sprawl.

Barcelona as one of the most crowded city in Europe, has been implementing successful revitalization project in order to prevent sprawl, moreover, make the city center more attractive. Poblenou neighborhood in Barcelona is one of the good practices of these efforts (Kulpa & Zamorano, 2015; Palermo and Ponzini, 2015; Casellas and Barbera, 2009). During the nineteenth century, Poblenou was an industrial center of Barcelona. As an industrial heritage, and located at the heart of the city, this neighborhood was considered as an asset to be protected and to be regained to the city¹¹.

With this approach, the project provided a rational reuse of the urban central place by providing new housing and employment facilities. It also helped preventing sprawl development. At the end, the city transformed 4 million square meters of underutilized land into a district with 60 percent of the total area designed for productive and commercial activity, and 40 percent to new and diverse housing. That means formerly industrial district had been transformed into a mixed-use, and dense urban space with additional efforts to improve quality of life by public

¹⁰ For further information Harvey “Spaces of Global Capitalism: A Theory of Uneven Geographical Development”. Verso. 2006

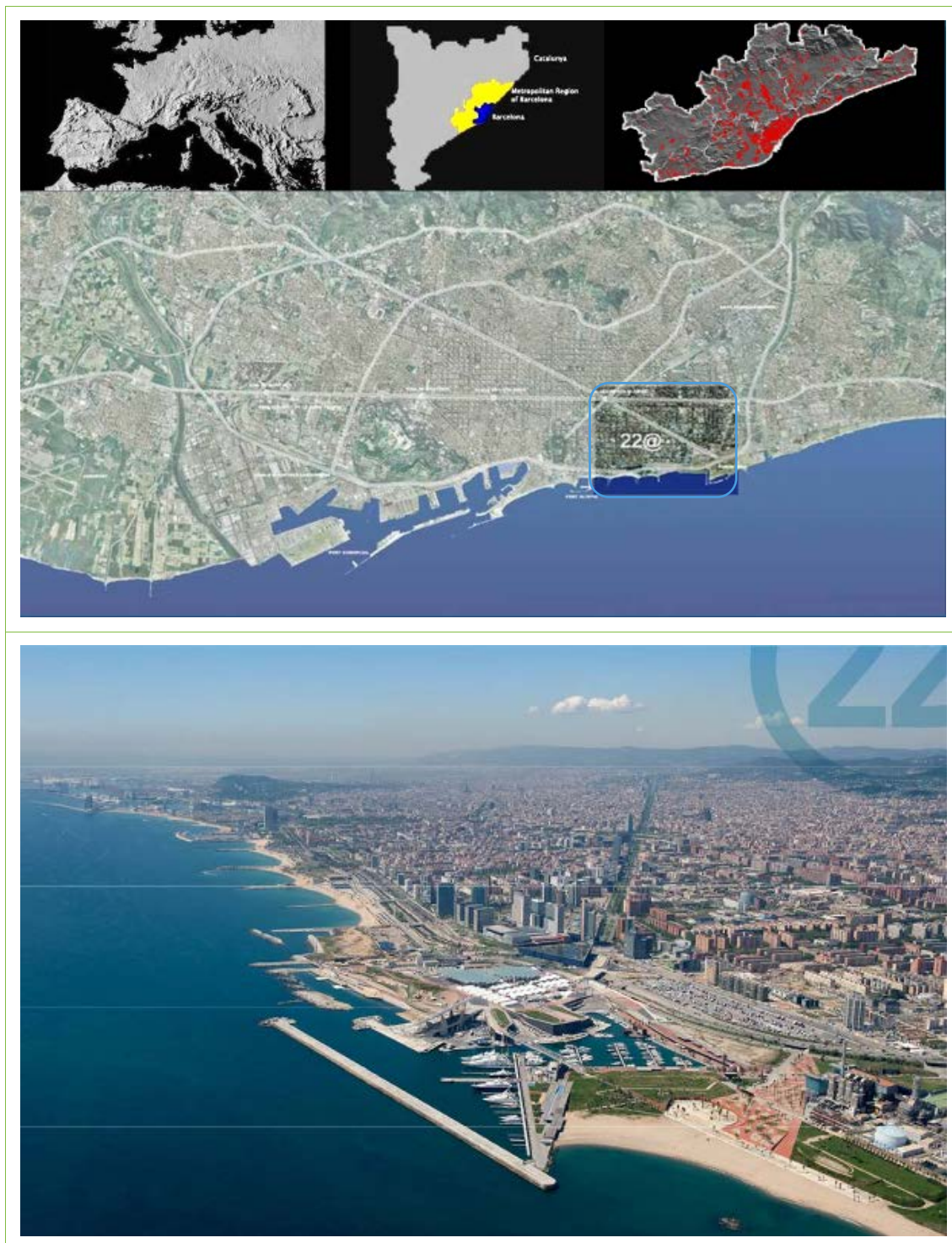
¹¹ For further information http://scholar.harvard.edu/files/montserrat-palares-barbera/files/el_patrimonio_industrial_poblenou_abstract_4_pages.pdf?m=1441289453 or http://www.22barcelona.com/documentacio/Estat_execucio_2009_ang.pdf

transport and people (pedestrian) oriented street design. Public spaces and green areas were also given high priority for redeveloping Poblenou neighborhood (Kulpa & Zamorano, 2015). 22@Barcelona Project in the neighborhood is one of the good model example for attracting centres projects. This project have been implemented as part of Barcelona's compact city strategies in the heart of the Metropolitan Core as seen in the Figure 3.5.

Milan, as one of the largest cities in Europe, could be another good example in terms of its recent transformation experiences. Since recent decade major industrial and production areas in Milan have been transforming into new districts that includes high-density residential, commercial and office uses. In Porta Nuova District of Milan, one of the largest urban renovation project of Europe is taking place. The project consists of three project zones, which are Garibaldi, Varesine and Isola districts. It is a good example in terms of several aspects: transforming that vacant, derelict, unused and also problematic area into a vibrant part of the city as well as creating a new point of attraction.

The location of the project area is crucial as being at the hearth of the city, so that project not only aims to develop an attractive center, but also improve the connection between its surroundings as a hub point. As seen in Figure 3.6, its master plan proposes mixed land use, a strong pedestrian and transportation connectivity and open public areas. The implementation of the project is almost completed except the large urban park, which is under progress. (Urban Land Institute, 2016; Porta Nuova Project web page, 2016).

Figure 3.5: 22@Barcelona project - Poblenou neighborhood, Barcelona



Source: Barcelona Municipality, 22@Barcelona project, 2017.

Figure 3.6: Porta Nuova project, Milan



Master plan of Porta Nuova, Milan



View from the project area



Pedestrian areas and connections



concept map

Source: www.porta-nuova.com - access 10/2016

3.3.2. Growing wealthier

It is a concept used by Kooshian and Winkelman (2011) to refer three points about urban development, which are returns on investments, savings on expenditures, and improved quality of life. This approach mainly considers economic well-being as a community and also considers preservation of natural resources together with economic success. The concept mainly emphasize economic benefits of smart growth strategy and take their roots from smart growth principles, which are:

- create a range of housing opportunities and choices,
- create walkable neighborhoods,
- encourage community and stakeholder collaboration,
- foster distinctive, attractive communities with a strong sense of place,
- make development decisions predictable, fair and cost effective,
- mixed land uses,
- preserve open space, farmland, natural beauty and critical environmental areas,
- provide a variety of transportation choices,
- strengthen and direct development towards existing communities,
- take advantage of compact building design.

As mentioned earlier, densifying urban centers is a common sprawl management strategy, included in smart growth principles that adopted and accepted widely in order to provide compact and sustainable development achievements. On the other hand, densifying cities bring undesired outcomes such as air pollution, traffic congestion, insufficient parking urban services etc. There is a considerable amount of studies and projects, which are seeking to solve these kind of problems as well as improving the infrastructure considering energy efficient, smart, and innovative solutions. It may be useful to select a case from the US, as the pioneer of smart growth approach, for this category.

Every year, United States (US) Environment Protection Agency (EPA) awards good practices on smart growth achievement in several different categories in the US. City of Hamilton, Ohio was awarded in 2015 within the category of built-up project. City of Hamilton is a good and interesting case because of its difficulties in economic structure and their reflections to urban areas. From the very early times, it was an industrial and business center for years. However, after 2000s, when the decline of steel and coal industry occurred in US, major businesses and factories left the downtown, the city had faced a 50% vacancy rates in its center. The city lost its economic power and vital urban life in its center as well (EPA, 2015).

In order to overcome this situation, several redevelopment, transformation, and preservation projects have been developed by a public-private partnership of City of Hamilton, Historic Developers, the Hamilton Community Foundation, and the State of Ohio. By developing these projects, downtown of the city has become an emerging hub of innovation and revitalization. One of the projects was transformation “Mercantile Lofts”, a highly visible complex in the heart of downtown that had been slated for demolition. This complex has transformed into a mixed used (housing and retail) area. Public private partnership made it easier to buy and redevelop properties that can encourage further revitalization in the heart of the city. This economic mobility created new economic opportunities for residents at the same time. Therefore, the city has achieved several smart growth objectives as creating walkable and lively streets, creating a community in the downtown by bringing in residents, jobs and amenities (EPA, 2015).

This example shows that economic wellbeing is quite important for cities. It should be strongly considered together with natural preservation strategies in order to achieve sustainable future in urban areas. It is also observed from this case that public-private partnership in

implementing/realizing plan decisions successfully. Figure 3.7 shows views from the Hamilton urban center.

Figure 3.7: Views from revitalized urban center of Hamilton City



<https://www.hamilton-city.org/DocumentCenter/Home/View/1567>



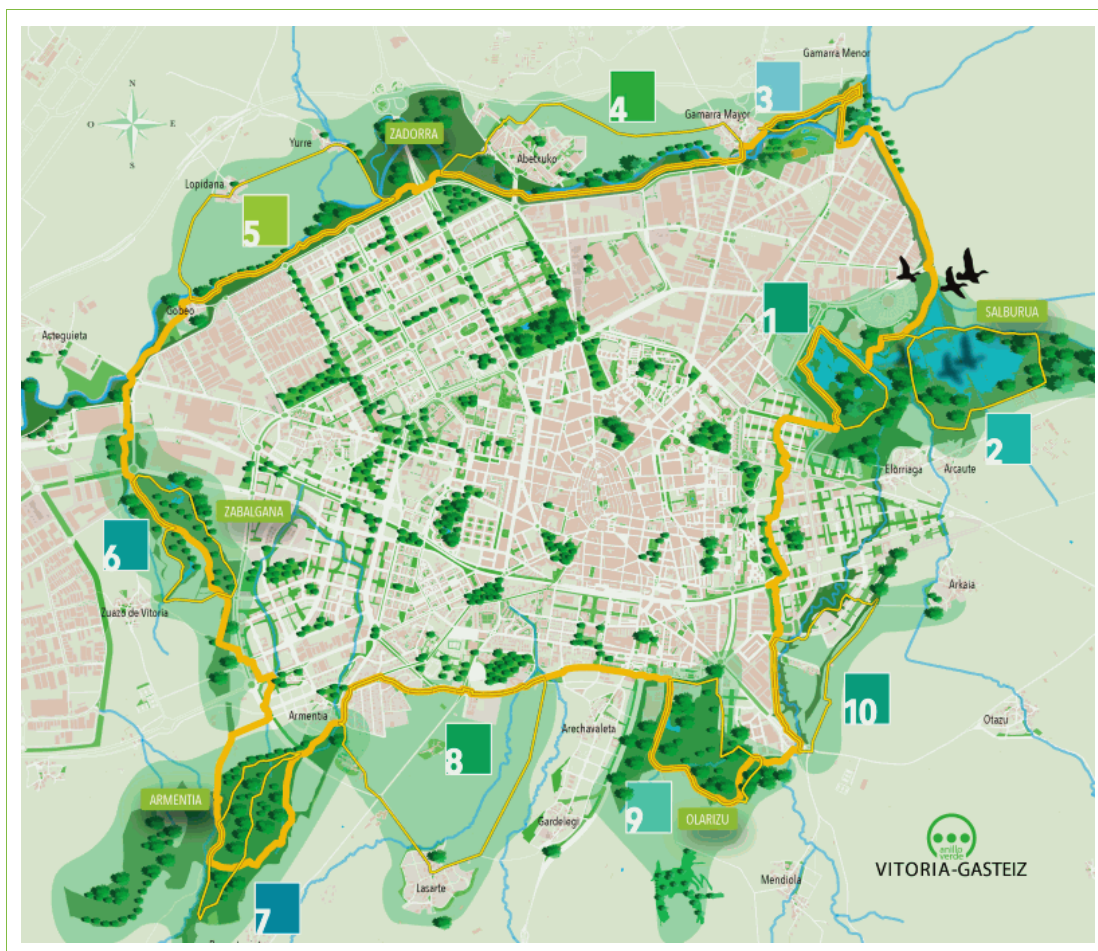
<https://www.hamilton-city.org/DocumentCenter/Home/View/1555>

Source: www.hamilton-city.org - access 10/2016

3.3.3. Protecting nature

Protecting nature projects focus on periphery of cities, as well as on the natural and open areas within the city, in order to protect and improve open fields and green infrastructure. Greenbelt project of Vitoria-Gasteiz, a compact city located in the Basque region of Spain, could be a good example for this category. As it is stated by Aguado (2013) that despite increasing pressure on the peri-urban area, the city maintains good urban planning practices and a high quality of life. It has achieved several prizes and international recognitions for its sustainable practices in different areas, as the Green Capital Award for 2012. As seen in Figure 3.8, urban core is surrounded by valuable natural areas such as wetlands, parks, and farmlands in Victoria-Gasteiz.

Figure 3.8: Greenbelt project of Vitoria-Gasteiz



Source: www.vitoria-gasteiz.org - access 09/2016

The idea of creating a green ring surrounding the city was first developed in 1980s and approved legally with General Urban Development Plan in 1986. The plan proposed that 300 hectares of land surrounding the city to be restored and joined to a large, already-existing green area. Most of the land within this area was under public ownership, and classified as land unsuitable for urbanization in the plan. This plan decision made it less expensive to acquire land and allowed the local authorities to control the planning process. The city and its surroundings are encompassing three concentric circles. There is an urban circle in the core, surrounded by peri-urban circle, which is deteriorated in the second half of twentieth century, and the third circle is dominated by farmlands, forestry and mountains. The main strategy is the conservation and restoration of that peri-urban areas and connecting them with the natural environment. In addition to ecologic targets, the plan was also including social and economic goals such as (1) promotion of these spaces as public use, (2) satisfying local people's demands for outdoor leisure areas, (3) fostering environmental awareness and education. By doing this, local residents were provided to be involved in this conservation process. As a conclusion, greenbelt project of Vitoria-Gasteiz can be considered as a good example of interconnecting, preserving and restoring the natural areas. At the same time, providing public use and encouraging citizens' involvement to the processes are other positive aspects of the project (Aguado, 2013).

In conclusion, an analysis of successfully implemented projects worldwide may give useful information in terms of several aspects such as planning processes, the way of civic participation, particular policies they implemented etc. On the other hand, it should be noted that controlling urban sprawl is a complex issue that its management requires more than implementing simple policies and good practices. As Cahn states (2003) urban sprawl by its very nature is a multi-faceted phenomenon, which needs multi-faceted solutions.

CHAPTER 4. DESCRIPTION OF THE CASE: IZMIR METROPOLITAN AREA

The case study chapter consists of two main parts. The Izmir case is introduced in the first part, in terms of socio-spatial, cultural and institutional structures as well as its urban growth process with a historical perspective. Current planning approaches, practices and plans are also summarized in the context of urban growth within the first part.

In the second part, prominent case studies, which elaborated and analysed Izmir in terms of its land use change, growth and/or sprawl, are reviewed to provide useful insides to the analysis.

4.1. Urbanization and spatial transformations in Izmir

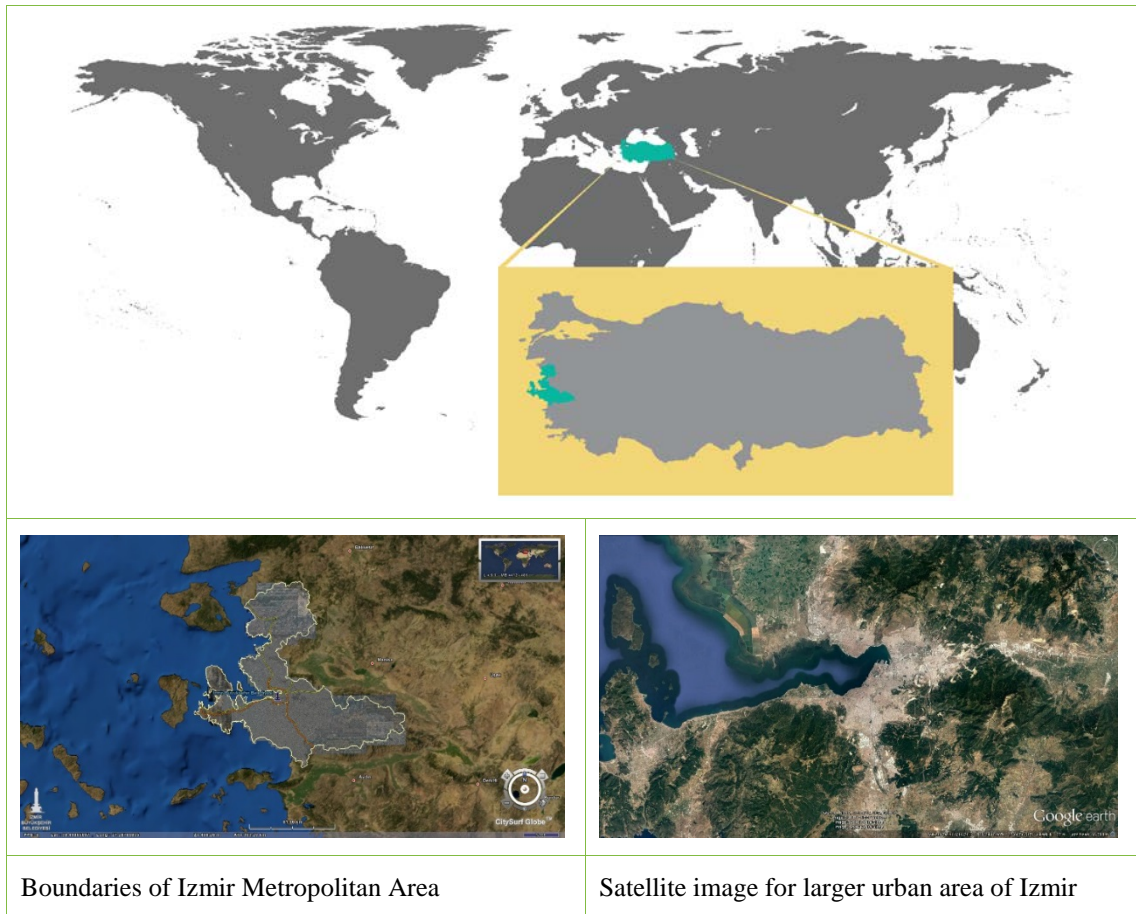
4.1.1. Location

Izmir, formerly Smyrna, is located at the western part of the country, in the coast of Aegean Sea. Izmir is the second largest seaport and the third largest city in Turkey with its almost 4 million inhabitants. Figure 4.1: The location of Izmir within Turkey and the World shows the location of Izmir within Turkey and the World besides the metropolitan boundaries with the topographic structure of the Aegean cost and a general view of artificial areas in Izmir from a satellite image. As indicated in images, the city of Izmir has been developed in such an area surrounded by mountains, agricultural lands and Aegean Sea.

4.1.2. Spatial and socio-cultural transformation

The history of urban growth in Izmir has five breaking points as shown in Figure 4.1 (Dünder, 2010): 1) Pre-republican Period, 2) Republican Period (1923-1948), 3) Liberal Period (1948-1960), 4) Planned Period (1960-1980), and 5) Neo-Liberal Period (post-1980).

Figure 4.1: The location of Izmir within Turkey and the World



Source: Izmir Development Agency, 2015, p:41; Citysurf Globe, 2016; Google Earth, 2016.

During the Ottoman period, (or pre-republican period) Izmir was one of the most important cities of the country in terms of foreign trade (and it has been still the western gate of the country). Social structure was constituted by multi-identity social groups, which are Levantines, Jews, Greeks, and Armenians. Trade activities were realized mainly by these foreign merchants. The population of the city was approximately 100.000 during the 18th century.

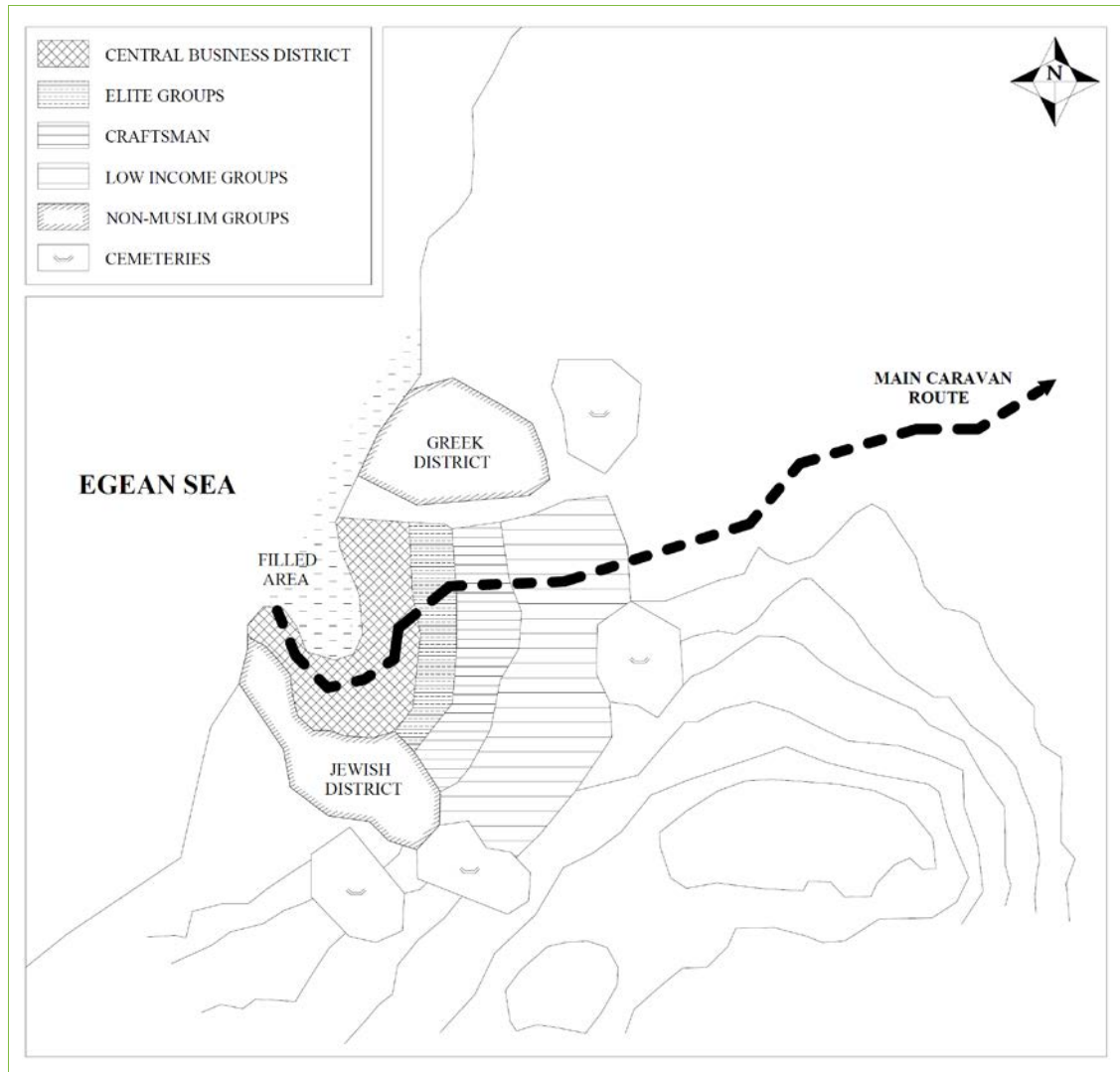
One of the most striking features of spatial structure in the 18th century was the residential segregation of different ethnic groups because of their different socio-cultural characteristics as seen in the Figure 4.2. While elite groups and non-Muslim wealthy groups had located at the surroundings of the central business district, middle and low-income groups that consisted majority of Muslims had located beyond the central

areas toward to Kadifekale. Since the trading activities had performed mostly by non-Muslim groups, their socio-economic structure was stronger than the Muslims (Sönmez, 2001; Kıray, 1972; Dündar, 2010).

Table 4.1: Major Characteristics of Urban Development in Izmir

Periods	Major Characteristics
Pre-Republican Period	<ul style="list-style-type: none"> - Modernization of the city with its cosmopolitan structure: first nationalist architectural movement. - Spatial reflections of Westernization: Intra-regional transportation: investments in railroad system and port providing the raw materials for European capitalism; Commercial transformation: khans replaced by hotels, bazaar streets, fevkani (commercial) mosques; Services linked to the West: banking, insurance, newspapers, posting; Education: missionary schools; Suburbanization starting in 1865; Different social groups of multi-identity: Levantines, Jews, Greeks, Armenians (foreign merchants). - The most important city of the Ottomans in terms of foreign trade.
Republican Period (1923-1948)	<ul style="list-style-type: none"> - Structural transformations of the Republican Ideology: “erasing the past”: early Modernism of Contemporary/ “Western” Izmir; brand new architectural understanding. - Post-war (Independence War) troubles: the need to re-erect the city after the 1922 Fire devastating almost three fourths of the city.
Liberal Period (1948-1960)	<ul style="list-style-type: none"> - As attractive in agricultural terms, rise of the migration flows to Izmir during the 1940s - 1940s: 2nd nationalist architectural movement - Accelerated urbanization and intense flows of migration - Emergence of squatter settlements in peripheral areas - Post-1950s: international style (invitation of foreign architects including René Dange-1925, Le Corbusier-1948 and Bodmer-1959)
Planned Period (1960-1980)	<ul style="list-style-type: none"> - Rapid development of inner-city industrialization - 1973 Master Plan: Linear macroform strategy in north-south direction and intense industrial development - Foreign investments - 1970s-need for housing: uninterrupted walls” of buildings dominating the city’s spatial appearance - Condominium Act resulting in rise of population density via increase in building heights: over-density
Neo-Liberal Period (post-1980)	<ul style="list-style-type: none"> - Piecemeal developments - Development of collective consumption areas - New populism indexed upon urbanization (urban development exemptions, allocation of title deeds, slum reclamation, revision plans, mass housing) - De-industrialization and beautification of prestigious areas - Conflict between politicians and NGOs on mega-scale projects - Efforts for mega-events: Universiad (2005); EXPO 2015 nominee

Source: Dündar, 2010, p.57.

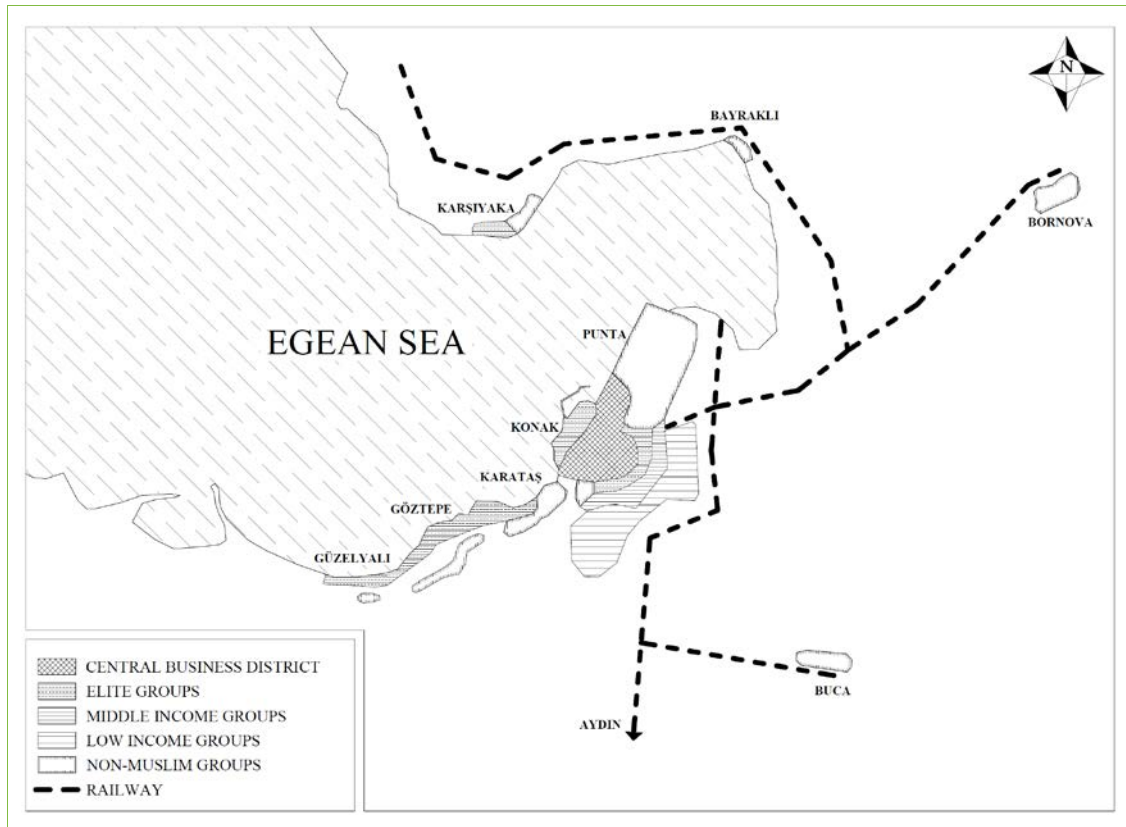
Figure 4.2: Spatial distribution of social groups in Izmir, at the end of 18th Century

Source: Kiray, 1972, cited in Kompil, 2005, p. 43.

Urban growth or particularly “suburbanization” history of İzmir started by 1865, just after the first railway of İzmir (also Anatolia) constructed by the foreign capital in 1856. Transportation infrastructure accelerated/encouraged other investments surrounding the city, including commercial and housing developments. In addition to the spatial growth, as mentioned before, socio-spatial segregation was one of the striking character of the city: high-level income non-Muslim population moved to periphery of the city, while middle low-level income non-Muslims settled and separated from the Muslim population (Kiper, 2006; Dündar, 2010). Figure 4.3 below presents the first railway and

spatial segregation of different social groups in Izmir at the end of 19th century.

Figure 4.3: Class segregation in Izmir, at the end of 19th century



Source: Kıray, 1972, cited in Kompil, 2005, p. 45.

İzmir had 200.000 inhabitants at the end of the 19th century, presenting a multi-cultural character. In 1857, the number of Muslim was 89.000. At the end of the 19th century, Turkish population was only 35% of whole population. While ethnic segregation was the dominant factor in spatial order in the 18th century, income dependent class segregation gradually had become more visible at the end of 19th century (Kıray, 1972).

With the development on railway and sea transportation, suburbanization movement had been started by the highest income groups. In this way, settlements such as Buca, Bornova, Gaziemir and Karşıyaka gradually began to flourish fulfilling the demand of the wealthy class people for summer housing and providing shelter for potential epidemics during this period. Gradually, these areas turned out to

suburbs. As shown in the images from 1880s and 1890 (Figure 4.4), İzmir port was a centre of foreign trade activities, and by the first railway it could be possible to transport agricultural products of suburban and rural settlements of Izmir.

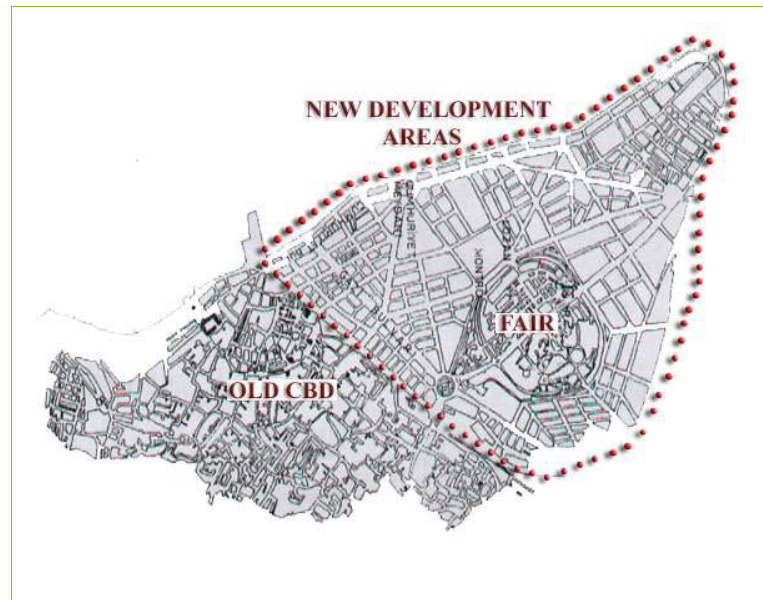
Figure 4.4: Views from İzmir port in 1890s



Source: Archive of photography, İzmir Metropolitan Municipality.

The 1920s were the years of significant changes both politically and economically. After proclamation of the republic in 1923, the city had begun to transform by the republican ideology¹². Development policies in the country were mainly based on industrialization, thus, industrial investments were supported in İzmir as well. Altınçekiç (1987) states that, this period of state-led national industrialization was the first rise period of industrial development of İzmir. In 1927, İzmir was the second city after İstanbul in terms of the number of industrial units. Most of these industrial activities were located at the centre and on the railway axis, which are “Bornova” on the northeast and “Aydın” axis on the south. The city centre had a dominant character in terms of capital accumulation. The first citywide master plan of İzmir prepared by the French architect Rene Danger in 1925. This plan (Figure 4.5) contains the urban development decisions parallel to the framework of the modernist approach of the new Turkey Republic.

Figure 4.5: The plan of Rene Danger for Izmir centre, 1925



Source: Altınçekiç, 1987, cited in Kompil, 2005, p. 46.

¹² National ideology was aiming to become an economically and politically independent country.

By the Danger plan, which especially contains the burned up area¹³, the organic settlement pattern has been changed in such a way that the existing spatial organization of the past has been replaced by the radial wide boulevards, spacious green areas, and wide public spaces. Gazi Boulevard and Cumhuriyet (Republic) Square had been established during this period (Figure 4.6). In this way, French Danger had carried the planning approach of the west to Izmir. At the same time, this plan had created the prestigious areas in the centre of Izmir (Çilingir, 2001).

Figure 4.6: Views from the public squares of Izmir in 1930s.



Source: Archive of photography, Izmir Metropolitan Municipality.

¹³ 1922 fire was one of the devastating disaster in the history of Izmir. It damaged physical, cultural and social topography of the central city, just after the Turkish Independence War and before the reclamation of the republic. The fire had mostly affected the Basmane and its surroundings in the center, while Armenian neighbourhoods completely burned, the Roum and Levant neighbourhoods devastated seriously. On the other hand, the population had decreased because of the immigration of foreigners and minorities that constitute the elite groups of the city (Çilingir, 2001).

Between 1948 and 1960, the dominant attempt was to liberalize the local economy. Turkey started to adopt import-substituted industrialization regime under the dominance of new right-wing government of Turkey. National liberal policies had affected the socio-spatial configuration of the cities. One of the most striking results of this capital accumulation process was the emergence of squatter settlements in the urban peripheral areas because of the migration of rural unemployed population (because of the mechanization in agricultural production). In other words, more labour requirements, originated from development of industrial sector in cities, attracted rural unemployed population to urban areas.

This transformation in economic priorities of the country reflected as emergence of squatter settlements in peripheral areas of industrial cities. Lack of comprehensive social policy of the state to deal with that population accumulation in urban areas brought complex socio-cultural and spatial problems. Izmir, as the third largest city of Turkey, had begun to grow and transform as an industrial city at that period. Started in the 1950s, the development of squatter settlements had continued and surrounded the peripheries of the urban area until the 1980s (Ünverdi, 2002; Sönmez, 2001; Penbecioğlu, 2012).

Planned period 1960-1980, increasing migration and rapid urbanization were the dominant character of 1960-1980 period. Based on the national economic policies, import-substituted regime of capital accumulation had shaped local economy as well. Industrial development had directed socio-spatial configuration of the city. There was a dramatic migration from rural areas and other small cities to İzmir in this period, and the migrants had to solve their sheltering problems themselves by contracting informal settlements generally to public lands, industrial production zones and even peripheral districts of the city (Ünverdi, 2002; Penbecioğlu, 2012). State Planning Organization was established and

attempted to plan the development of import-substituted industrialization through plans and policies. As a part of this planning attempt, Metropolitan Planning Bureaus were established in three major metropolitan cities (İstanbul, Ankara and İzmir) by the decision of the Council of Ministries in 1968.

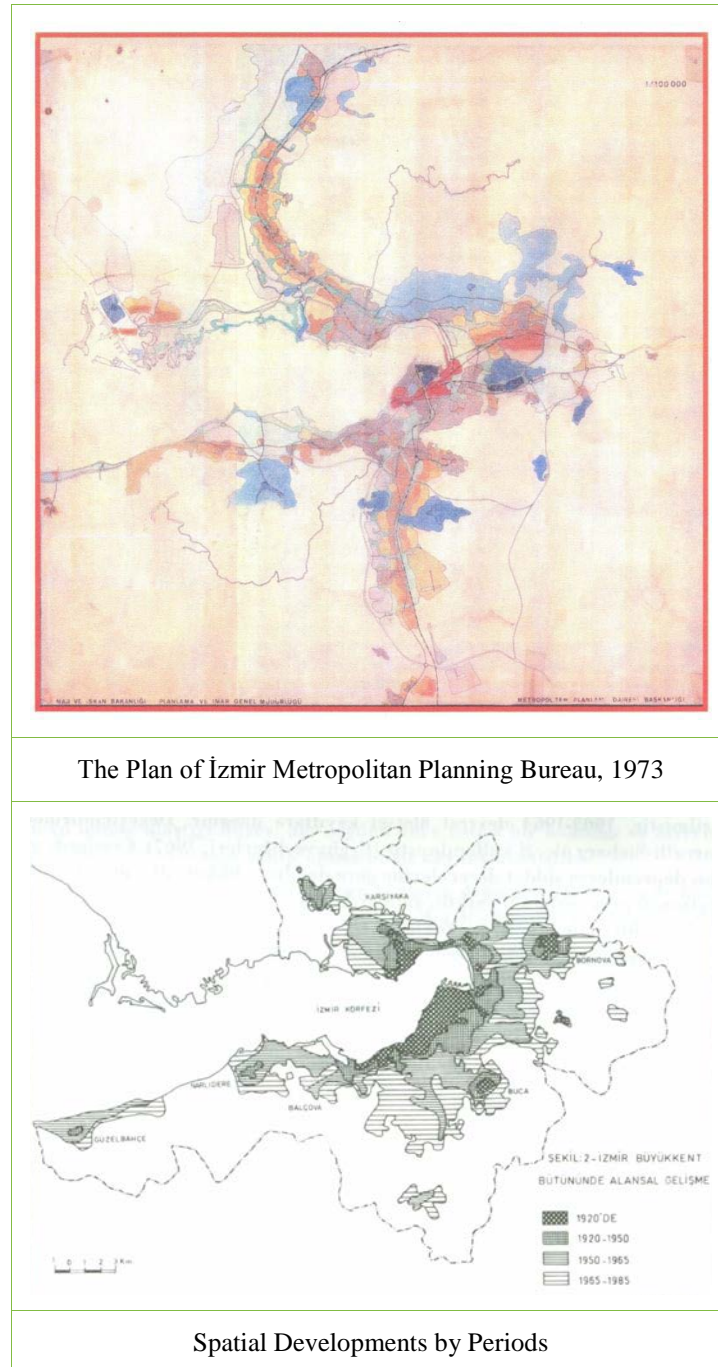
From the beginning of 1970s, Metropolitan Planning Bureau intended to prepare comprehensive and long-term metropolitan plans, which were based on comprehensive survey and analysis, participatory decision-making models and plan-project integrity. The first plan of İzmir Metropolitan Planning Bureau was approved in 1973. In this plan, a linear urban macroform development was proposed and defined within the axis of Aliğa heavy industrial zone in the north, and Torbalı agriculture-based food industry zone in the south (Figure 4.7).

To restrain growth of the city towards the periphery and to inhibit urban development within the east-west axis, a linear urban macroform development was proposed. The 1973 plan proposed: (1) the development of a rail transportation system along a linear line of development, (2) the planning of an industrial development zone in Çiğli. One of the main intention of that plan was to control urban growth by setting geographical and agricultural thresholds as well as limiting and directing the development towards three linear axes: north, south, and east. This plan played crucial role shaping the current macro-form of the city. Spatial development of the city from 1920s to 1985 can be observed directly from the map given with Figure 4.7. The 1973 plan proposed the industrial development as linear pattern extending the north-south axes. Furthermore, this plan proposed to move certain activities from centre to the outer parts of the city.

For instance, the production activities, which are noisy and pollutant, moved to the outwards. Although 1960-1980 period is called planned period because of accelerating planning attempts both national and local

levels, the first mass uncontrolled and unplanned spatial developments have been occurred in this period. Several neighbourhoods with “gecekondü”, squatter settlements in Turkish terminology, have spread all over İzmir. Location of this kind of developments in 1965 was mapped as below in Figure 4.8.

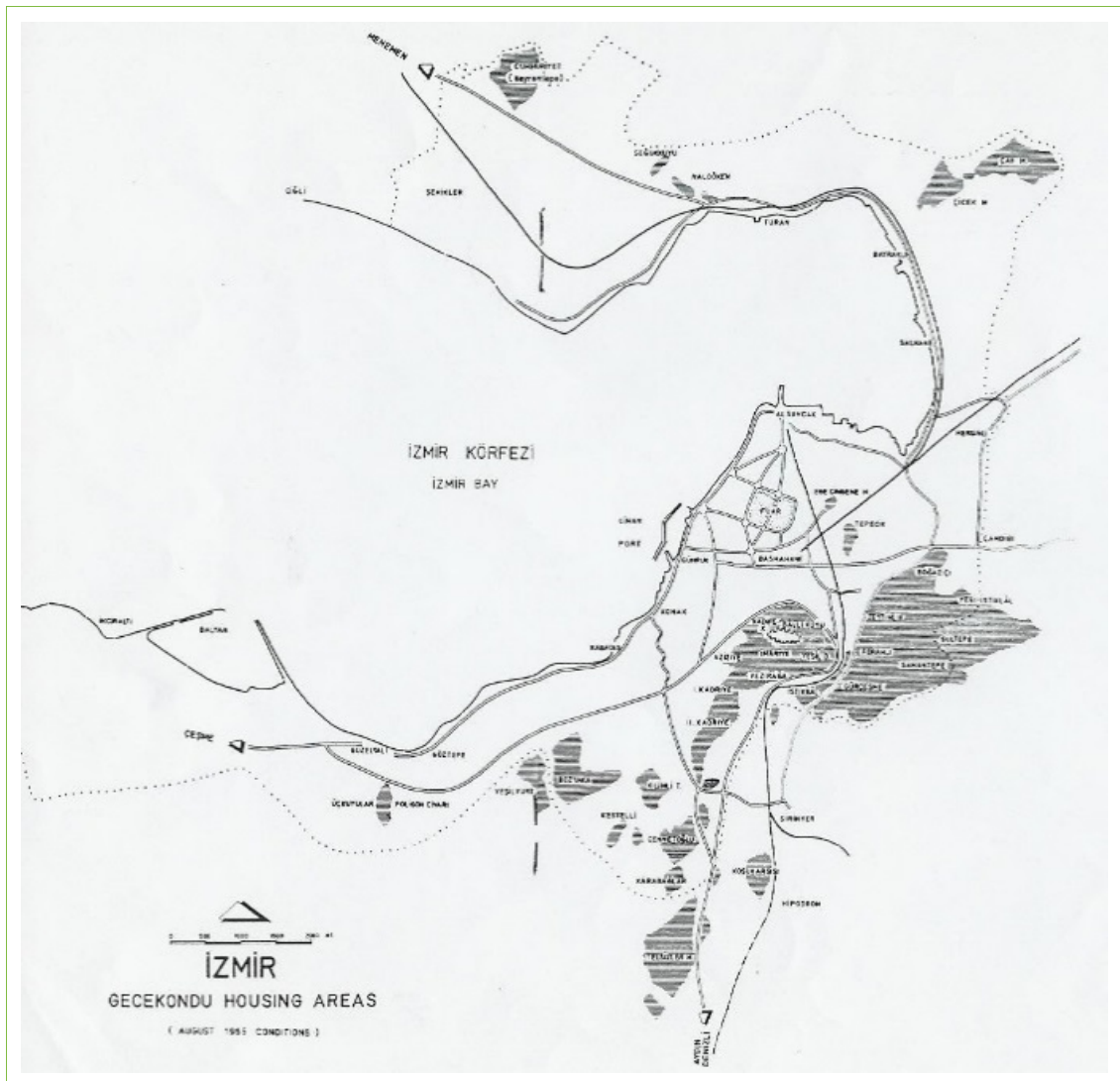
Figure 4.7: İzmir plan in 1973 and the spatial developments in different periods



Source: Arkon & Gülerman, 1995; cited in Penbecioğlu, 2012, p:152

The 1978 plan was prepared in order to solve the problems that come with the 1973 plan, and it considered those problems by an incremental approach. Therefore, instead of a comprehensive planning approach, urban development was directed by an incremental way and generally according to the demands of the peripheral municipalities. As a result of this approach, the development pattern of the city has become uncontrolled and independent across the municipalities.

Figure 4.8: Locations of squatter settlements (gecekodu neighbourhoods) in Izmir, 1965



Source: Ministry of Recons. & Resettlement, 1966; cited in Özdemir et. all., 2005, p:34

Neo-liberal Period after 1980s, the period after 1980s is called “urbanization of capital” in Turkey. Capital accumulation in urban areas

reached to its peak point within this continuing period and the patterns of uneven development become more striking in large cities. In parallel to general development pattern of Turkey, urban areas have been transformed intensely and rapidly in İzmir.

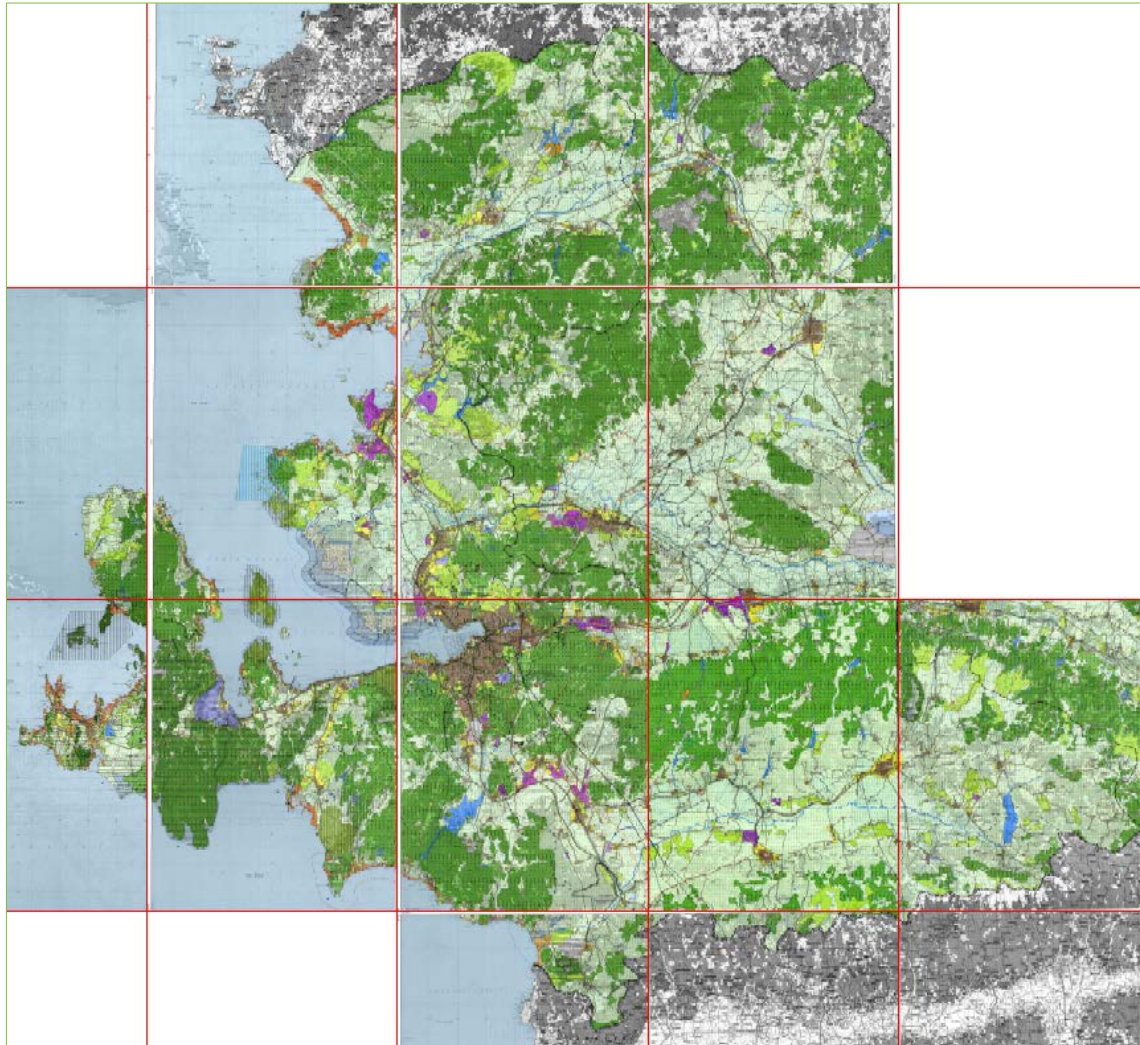
As being subject to all manner of economic restructuring process and the uneven flows of capital through the built environment, it was because of the increasing hegemony of capital on urbanization process particularly over the past two decades. Recent shifts include the emergence of new industrial and financial spaces, the large-scale construction of private apartments and gated communities for middle-upper income households, and large-scale malls and supermarkets and so on. As a way of dealing with the accumulation crisis, capital was directed to the property, and its reflections appeared as a huge building sector in İzmir as well as in the whole country. Countrywide settlement policies are determined in accordance with the locational demands of the national and international capital. The housing sector has gradually become the essential factor in terms of accumulation of capital within the city. Governmental policies have been developed which are concentrating on the housing investments by giving credit via banks and encouraging the mass housing projects (Kompil, 2005).

4.1.3. Current plans, policies and projects

Izmir – Manisa (a neighbour city) Macro Plan 1/100000 has been approved in 2014, which constitutes a basis for all subscale urban development plans. The plan indicates main land use decisions in the future such as development areas (housing and industrial etc.), natural and archaeological protection areas, as well as main transportation developments in a regional scale. The Macro Plan, as presented below in Figure 4.9, has been prepared with a comprehensive planning approach. Having such a comprehensive approach, the plan aims to provide a sustainable urban development by taking consideration into (1)

eliminating the effects of rapid urban growth and industrialization on environment and (2) controlling urban and industrial development.

Figure 4.9: Izmir-Manisa macro plan (1/100000), 2014



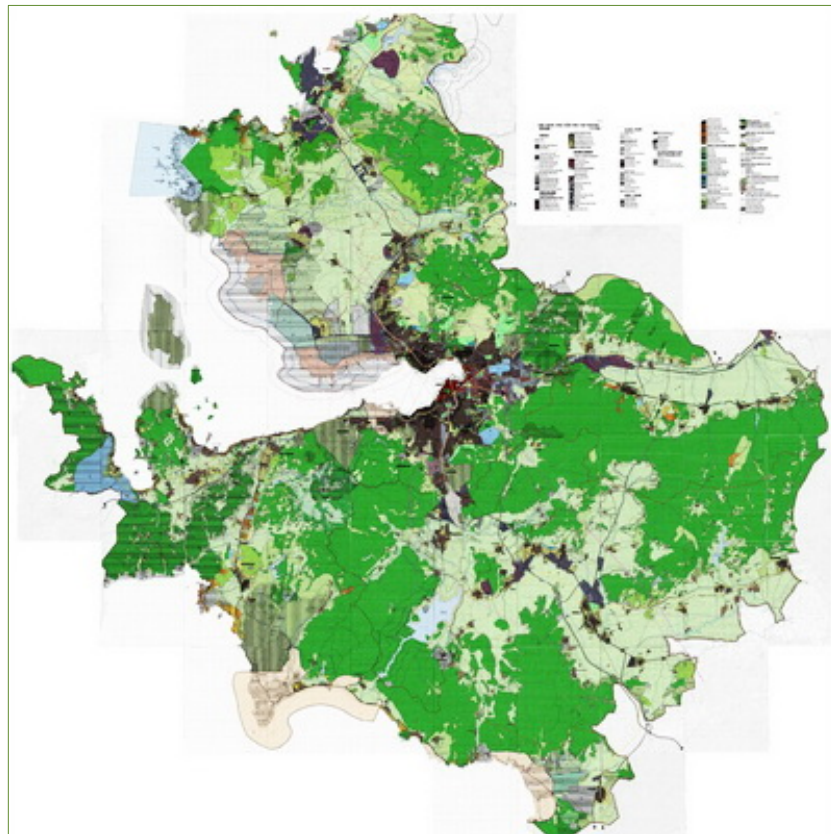
Source: İzmir Greater Municipality, 2015.

The macro plan considers newly urban development areas separately as for (1) the core city and for (2) the other settlements within the boundaries. Core city development strategies developed by taking natural and legislative thresholds (topography, disaster risks, and existing conservation laws etc.) into consideration. Doing so, it proposes new development areas on the northern axis of the city, especially in un-built-up areas and in already built-up sprawled areas. As stated in the planning report, being closer to industrial and large-scale commercial

facilities is another reason of the selection of these areas for new developments, which may facilitate the development with the use and improvement of existing transportation infrastructure. On the other hand, for the remaining settlements except for the core city, the plan proposes development areas separately for each settlement based on estimated future populations and local sectorial characteristics.

Existing 1/25000 (Figure 4.10) master plan have been prepared by İzmir Greater Municipality and approved in 2012, and it was prepared based on the previous regional plan and previous metropolitan boundaries which was covering only the core city. Therefore, currently, İzmir Greater Municipality is working on a new master plan based on the new metropolitan boundaries, which covers all provincial territory. Current Master Plan has been still in effect, and all sub-scale planning decisions should be convenient with its requirements.

Figure 4.10: Izmir master plan (1/25 000), 2012



Source: İzmir Greater Municipality, 2015.

Main aim of the 1/25000 Izmir master plan is settled almost the same with 1/100 000 İzmir -Manisa macro plan which is providing sustainable development goals by shortening uncontrolled urban growth and preventing agricultural, and natural environment. The adopted approach of the plan is planning the city as a whole with its all risks, problems, and values in order to reach a balance of protection-and-use. Plan proposes to limit spatial growth of the core city by designating/declaring the natural areas surrounding the city as “greenbelts”.

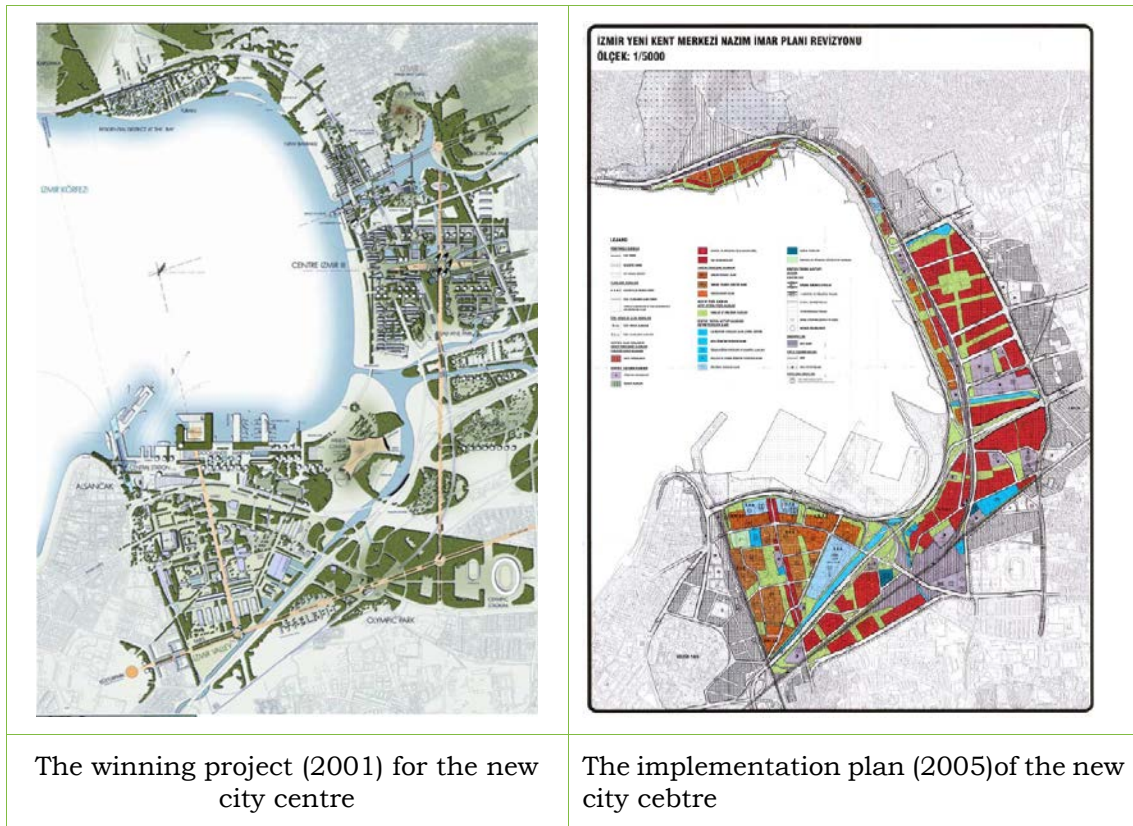
The new city centre plan (2003): In 2001, the Greater Municipality of İzmir decided to organize an international urban design competition for the redevelopment of the backside of Alsancak Port, as a new centre of the city (Figure 4.11). A German architect Jochen Brandi won the competition with his project (Figure 4.12), which was widely known as the “Third İzmir Project”. Since then designing a new city centre in this declining urban area (ranging from the backside of the Alsancak Port towards the Karşıyaka District and including 538 hectares of urban space) has become a flagship urban regeneration project to attract capital through a new central business district, commerce and consumption based activities, luxury and gated residents, shopping malls ...etc. The New City Centre Development Plan (Figure 4.12) was approved in 2005 with the consensus of local government institutions, local capital (including investors and local business associations) holders and the chambers. New city centre development plan was introduced and presented to the public as “the crucial opportunity to regenerate the old industrial and storage-oriented use of this declining and abandoned urban area” (İYKMNİP, 2010). The project also announced to public as “a viable basis to provide new urban images, flagship urban design and regeneration projects to make İzmir an internationally competitive word city”. It was also stated that NCC area should become “a locomotive power of İzmir’s competitiveness and entrepreneurialism within the context of new global and local economic development dynamics.

Figure 4.11: Location of the new city centre of Izmir



Source: Anonymous online sources.

Figure 4.12: The winning project and the implementation plan for the new city centre of Izmir

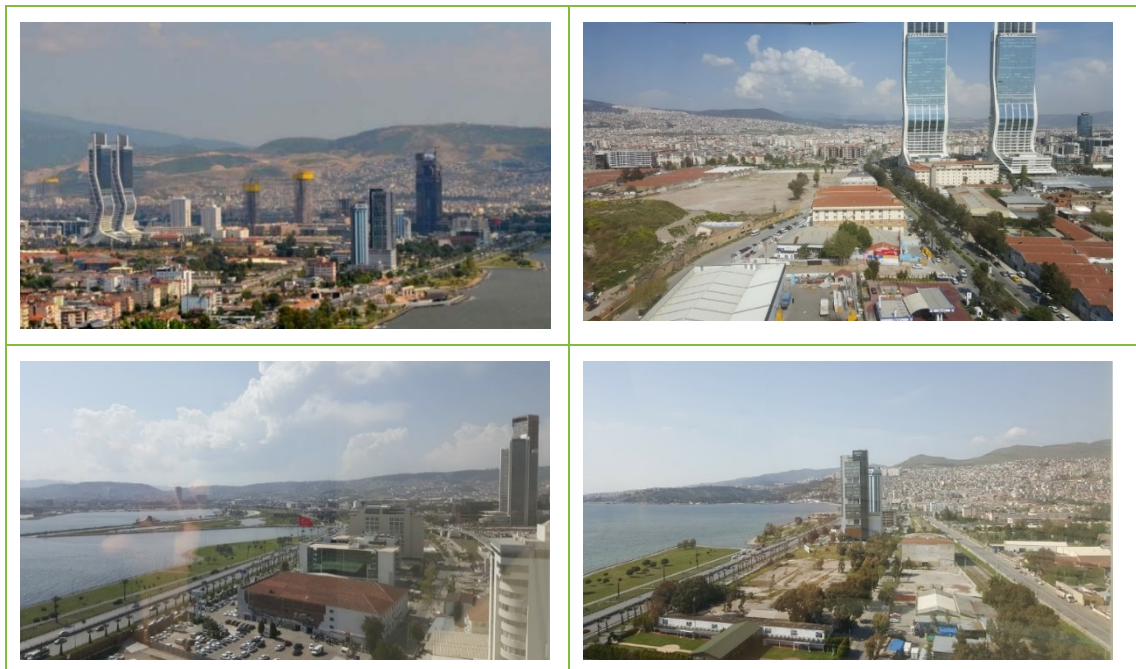


Source: Izmir Greater Municipality, 2016.

The Greater Municipality of Izmir played the key and central role in the production of such predominant discourses in the formation of NCC project (Penbecioğlu, 2012, p. 192, İYKMNP, 2010). The development of new city centre of İzmir is still in progress, and not yet completed.

Although the competition realized in 2001, the plan was started to be implemented in 2011. There were several reasons for slow progress in realizing that project. The first struggle was to achieve a consensus on decisions of the plan. It was prepared with the involvement of different stakeholders including investors, chambers and business associations. After 3 years of discussions, the first plan was prepared and approved in 2005. In 2009, the plan was cancelled because of the lack of geological surveys and reports. Implementation and development plans were prepared and approved by the district municipalities, and finally the project was started to be implemented in 2011. Finally, investors started to construct their particular projects in the planned area. Figure 4.13 gives several current views from the area.

Figure 4.13: Current views from the new city centre, 2017



Source: Velibeyoglu, K., personal archive, 2017.

Urban regeneration projects: Today, İzmir presents a wide variety of urban patterns in different locations. The first wave squatter settlements, which built-up on the periphery of core city in the 1960s, today remained at inner core of the city. These buildings have been mostly legalized by improvement plans during the past two decades, and this pattern still constitutes a significant percentage in the city.

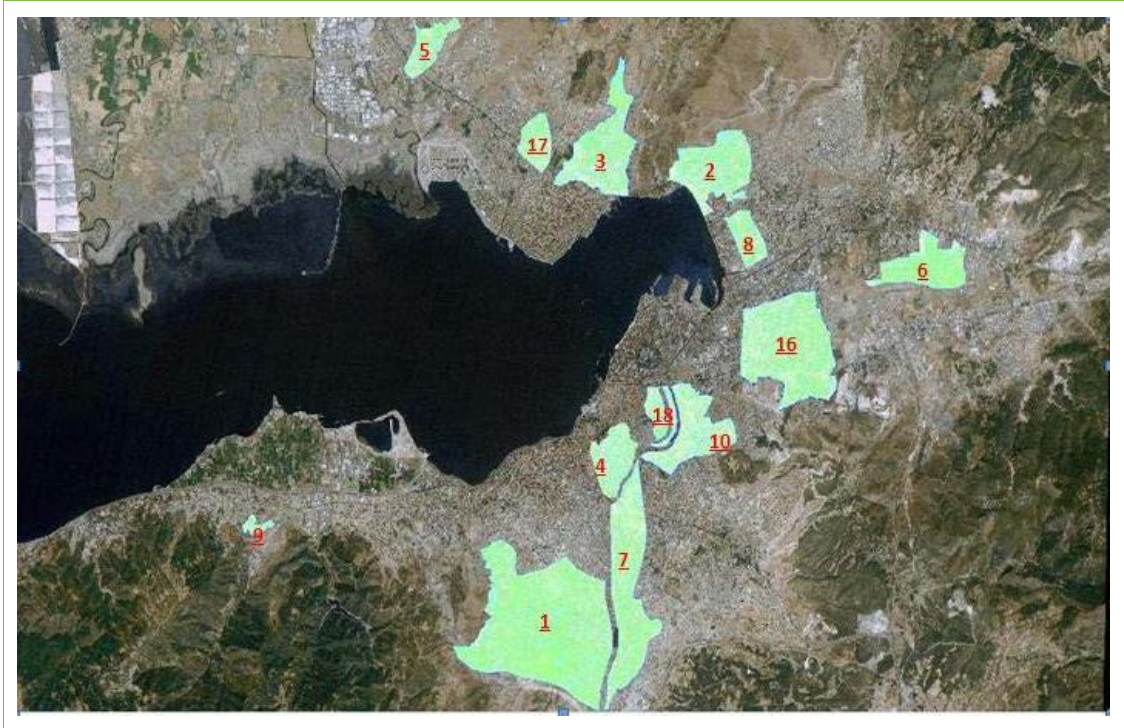
According to the study conducted by the Chamber of Civil Engineers, building quality in Izmir is 3% good, 52% intermediate, 45% weak-bad that warns about disaster risks in general. Regarding to this quality problem and risk for any disaster, “Improvement and Renewal Program Areas” in İzmir were determined in 1|25000 scale Land Use Plan approved in 2009. 4371 hectares of area were designated as “Improvement and Renewal Program Areas” in İzmir.

Figure 4.14 shows the designated “urban regeneration” areas within the core city. Figure 4.15 presents a sample view from one of these problematic areas to be renovated. Today, these regeneration projects are at the start-up phase, negotiation with the residents and with the other stakeholders have been continuing¹⁴.

One of the most essential and substantial aspect of these efforts is the participation of the residents affected from the projects. Izmir Metropolitan Municipality have been giving special importance to negotiation process with the stakeholders, considering the social aspects of the transformations as well as its spatial dimensions (Karatas and Kilic, 2015).

¹⁴ İzmir Metropolitan Municipality, 2017, URL: <https://www.izmir.bel.tr/Projeler/2/95/ara/tr>

Figure 4.14: Current urban regeneration areas



Source: Ministry of Environment and Urbanization, 2013, p:6.

Mass Housing Projects: Since 1985, large-scale housing projects have been conducted by local and national governments particularly on behalf of middle and low level income groups especially in large cities in Turkey. In Izmir case, Greater Municipality of Izmir in local scale, and Housing Development Administration of Turkey (TOKI) in national scale have produced large-scale, mostly with high-density housing for middle and low-income groups.

Today, private enterprises also have joined to large-scale housing production and targeted middle and high-level income groups. They are aiming to provide particularly prestigious and secured housing. While housing for middle-low income groups present standard prototype architectural characters with low quality urban life on the fringe areas, housing for upper income provide high quality privileged living standards with recreational facilities and shopping centres even within the core city.

Figure 4.15: Views from regeneration areas in Izmir



Source: Izmir Greater Municipality, 2016.

As an example for middle-low income groups housing, Uzundere urban transformation and development project is one of the current large-scale housing project of the Municipality. 35.000 units of housing will be constructed in 32 ha area. As shown in Figure 4.16, this area contains low quality urban environment in some parts. Project aims to provide better urban conditions for the residents as well as using vacant land within the urban core area. The project is prepared, some part of the region is cleared and the negotiation with the residents is still under progress (Izmir Greater Municipality of Izmir Webpage, 2016).

Figure 4.16: Uzundere urban transformation and development project



A current view from the project area

Source: Izmir Greater Municipality, 2016.

On the other hand, there is plenty of housing development for high-level income as mentioned before. One of the first examples of this prestigious housing development is Mavişehir (Figure 4.17). It is located at the northern cost of the core city and constructed in 1994. As shown in the pictures below, this area consists of high density housing blocks, commercial centres and green areas. There are currently lots of prestigious housing projects under construction as well as in start-up

phase that is a subject of another research separately (such as Folkart Life Bornova (830) Kavuklar Bornova (1198); Narova Bornova (1100); Menemen Pelikan (700)).

Figure 4.17: Mavisehir as a mass housing project



Source: Google Earth and anonymous online sources, 2016.

Transportation Projects: It is known that there is a strong relationship between transportation facilities and urban development pattern. Simply, taking long distance in a short period is highly affects the location for

residential areas. Transportation Master Plan of Izmir has approved in 2009. Currently, Izmir Great Municipality have been conducting transportation implementations. Main approach of the Transportation master plan is empowering public transportation within both the core city and its surroundings (with the outer districts).

Organizations: Several local organizations may give direction to urbanisation process in Izmir. These organizations are; Izmir Development Agency, Chamber of Urban Planners, Chamber of Architects, Chamber of Merchants and Craftsmen, and Aegean Regional Chamber of Industry. These organizations have been acting as stakeholders in decision-making and plan implementation processes.

Izmir Development Agency¹⁵ (IDA) is a regional development agency that acts as a public body setting forth a road map for regional development, providing financial support for the projects and investments in accordance with national development strategies. IDA carries out its activities within a concept of strategic planning and through a participatory approach, which assembles all related entities and institutions, non-governmental organizations, universities and the private sector¹⁶.

Local chambers such as Chamber of Urban Planners and Chamber of Architects have been playing active role during the planning and practicing processes. They are not only observing, but also participating to decision-making and plan preparing processes on behalf of providing

¹⁵ Development Agencies operate to accelerate regional development in accordance with the national development plans and programs, ensure the sustainability of regional development and to reduce the inter-regional and intra-regional developmental gaps with a view to enhance cooperation amongst the public sector, the private sector and the civil society, to ensure the proper and effective utilization of resources and to mobilize the local potential. URL: http://izka.org.tr/files/2014/izka_brochure.pdf

¹⁶ http://izka.org.tr/files/2014/izka_brochure.pdf.

public interest, and controlling the legacy of the plan implementations. TOKI (Governmental Mass Housing Administration) is a national scale governmental institution, founded in 1984, that aims to produce house for low and middle-income groups.

The new vision of TOKI within the scope of the programme of the government of the Republic of Turkey, is to realize the project target of one million housing units by the end of 2023. In this context, the TOKI administration carries on its own housing production activities throughout the country in view of priorities and needs such as; urban regeneration and slum transformation projects in cooperation with municipalities; social housing projects toward the middle and low income group (Isikkaya, 2016).

Figure 4.18 shows one of the social housing implementations of TOKI at the outer part of the core city, within the Izmir metropolitan area (on the agricultural site). TOKI is widely criticized as demolishing the morphological texture of the contemporary Turkish cities by producing low profiled, similar/look alike architecture and low quality urban social infrastructure. It has been criticized as having priority of producing more units, instead of producing better living urban environments (Isikkaya, 2016).

Figure 4.18: Social housing cases of TOKI in Tire - Izmir

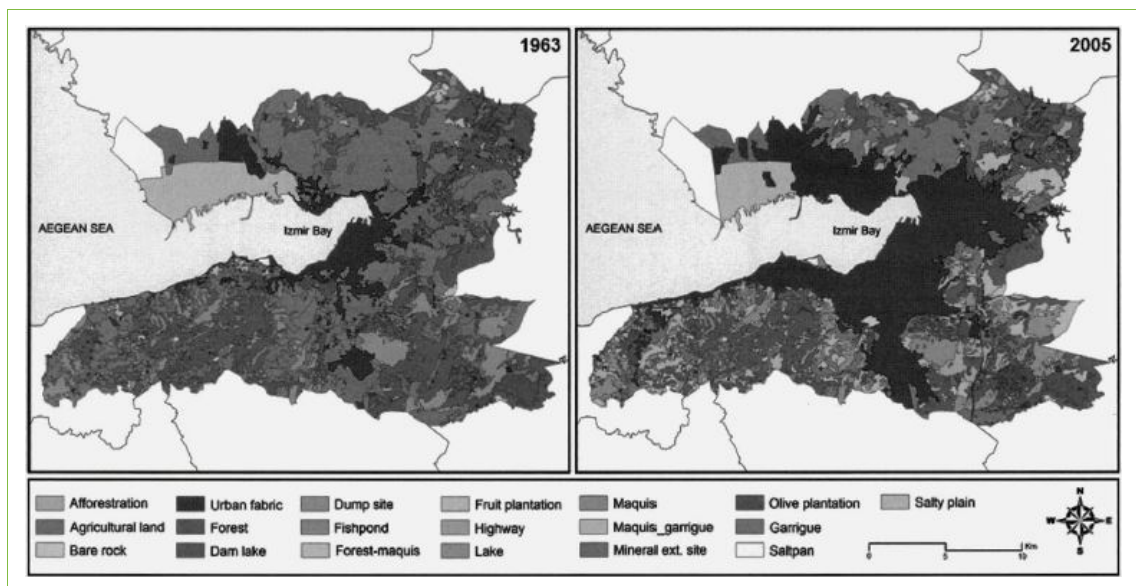


Source: Google Earth and anonymous online sources, 2016.

4.2. PREVIOUS STUDIES ON URBAN SPRAWL IN IZMIR

There are quite limited studies in Izmir on urban sprawl. Several recent studies (Hepcan et al, 2013; Özatağan and Eraydın, 2013; Oğuz, et al., 2010; Sonmez, 2009) may help to better understand its urbanization process. One of the latest study (Hepcan et al.; 2013) analyses the land use changes in İzmir between 1963- 2005 by using CORONA satellite images. The study area is the core city including 11 central districts. As shown in Figure 4.19 the expansion of urban fabric (the darkest zone) from 1963 to 2005 is quite visible.

Figure 4.19: Land use land cover maps of 1963 and 2005



Source: Hepcan et al.; 2013, p. 304.

Their study indicates mainly two significant alterations in Izmir urban area between 1963 and 2005, which are: (1) Expansion of built-up areas and loss of natural land uses (agriculture, forest etc.) and (2) Densification and unification in the central (core) city. According to the Hepcan et al. (2013), the proportion of built-up areas in 1963 was only 8% of total study area and predominant land use type was forest by 21%. By the end of 2005, the proportion of built-up areas increased to 29%. In spite of the 3% decrease, forest remained as the dominant land cover in

2005. Built-up areas expanded mainly towards maquis-garrigue lands, agricultural lands, and fruit plantation lands. Especially two districts (Buca and Bornova) have lost their agricultural lands by transforming largely to built-up areas. As seen in Figure 4.20, agricultural lands became patchy and scattered and they remained between built-up plots.

Figure 4.20: Examples of patchy and scattered agricultural land from Bornova and Buca districts in Izmir

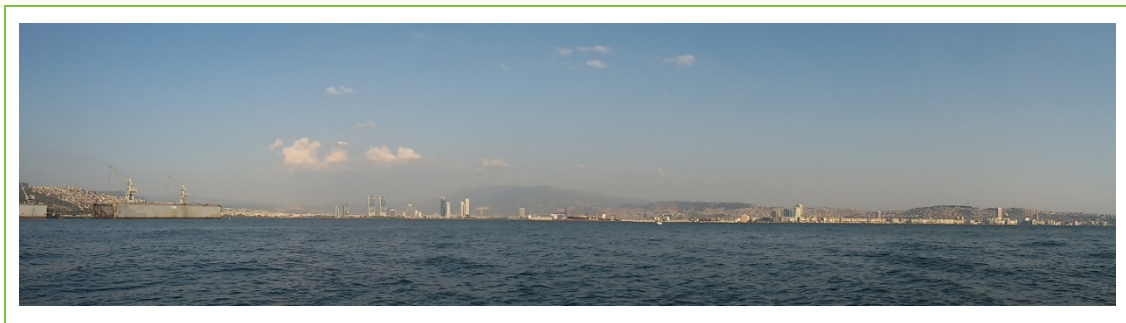


Source: Google Earth, 2016.

Hepcan et al. (2013) indicate another growth pattern as the reclamation of land from the sea along Izmir Bay (almost 370 ha) in order to gain additional land for building roads, urban parks, and housing. The study highlights that, built-up areas expanded primarily along the coastline of the Bay, parallel to the transportation network. More particularly, built-up areas spread in a linear pattern toward Urla District in the West, Karşıyaka District in the north, and Güzelbahçe in the south.

On the other hand, urban landscape of 1960s was characterized by low-density residential areas with one or two storey gardened houses. Hepcan et al. (2013) highlight that; low-density residential character was mostly replaced by high density mixed uses during that forty-year period. Today, urban fabric became more congested especially within and around the central districts, which are Konak and Alsancak, named Central Business Districts (CBD). As seen in the Figure 4.21 below, the silhouette of Izmir is changing by high-rise buildings. Other districts surrounding the CBD had expanded in their periphery and constituted a large, unified urban core during this period.

Figure 4.21: View of the central business districts of Izmir



Source: personal archive, 2016.

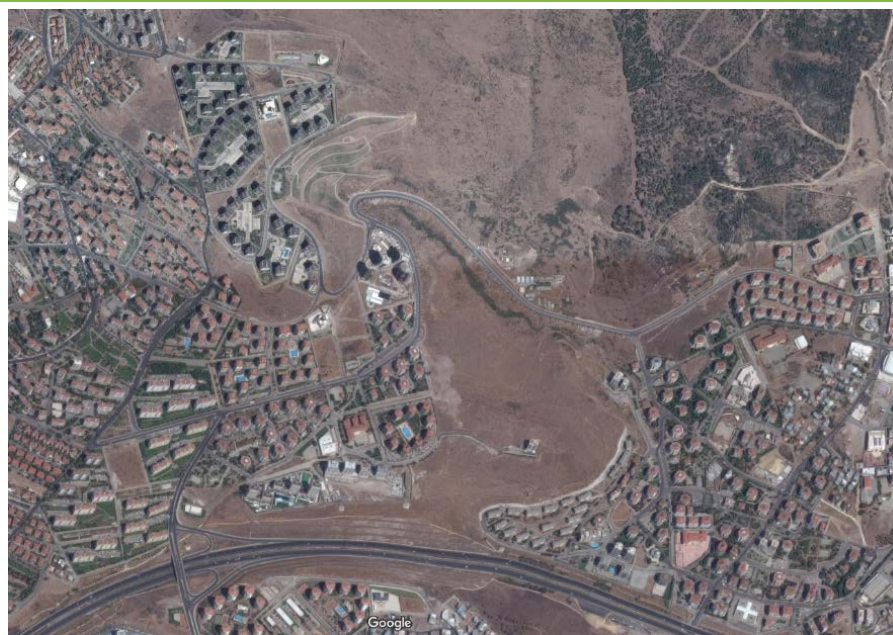
Urban development had occurred in a pattern of high density mixed use on the outside of the center too. In addition to natural population growth, İzmir had received immigrants from eastern cities of the country, and the population had reached almost its triple during that period. In addition to squatter housing developments, increasing demand on housing substantially supplied by planned mass housing in Gaziemir, Balçova,

Karşıyaka, Buca, and Bornova Districts (Hepcan et al., 2013). Figure 4.22 shows the high density residential developments on the peripheries of Bornova and Karşıyaka Districts as examples.

Figure 4.22: Views form high density residential developments in Izmir



Bornova district (EVKA-4)



Karşıyaka district

Source: Google Earth, 2016.

According to Hepcan et al. (2013), “urban sprawl occurred primarily in the form of high-density expansion of the urban areas” contrary to widely known sprawl patterns in the cities of the western countries, which are low-density. That means, although the expansion was high-density, the city was no longer compact at the beginning of 2000s.

Karadağ (2000; cited in Hepcan et al., 2013) summarized the major driving forces of urban growth in Izmir as follows; (1) establishment of a railway network among different districts; (2) allocation of several industrial zones, especially in Karşıyaka - Çiğli the north axis; and (3) construction of the İzmir International Airport on the east axis.

Sönmez (2009, 2001), Altınçekiç and Göksu (1995) examine Izmir by using the concept of suburbanization and discuss the urban transformations of Izmir in a more theoretical perspective. For instance, Sönmez (2009, 2001) states that suburbanization of Izmir goes back to the 19th century when it initiated to integrate to the World trade and industrial capitalism. First residential settlements of Bornova, Karşıyaka, and Buca Districts were emerged during that period. From the beginning of 1980s, suburbanization was shaped by macro-economic changes. With respect to the economic changes, Altınçekiç and Göksu (1995) emphasize the role of capital in the spatial transformation process by giving that example: there was a boom in private investments in İzmir at the beginning of in 1990s, with almost half of the private investments were realized in housing sector. Sönmez (2001) also states that, at the end of 1990s, there were 17 shopping centers which became part of the metropolitan city of Izmir. Together with housing investments, shopping centers have been the most visible signs of local and foreign investment flow of the city after 1990s.

There are also several studies that examine urban development patterns of Izmir by using the concept of urban shrinkage (Özatağan and Eraydın, 2013; Oğuz, et al., 2010). Main argument of these studies is: Izmir, as a

city-region, experiences both growth and shrinkage at the same time. That means, some urban areas in its periphery have grown and become part of the metropolitan area, and some others have declined or lost significance. Concerning this argument, Oğuz et al. (2010) analyze Urla District particularly, which is a coastal peripheral district of Izmir on the west. Main finding of the study indicate that majority of housing stock have been using as a second home (vacation houses), and just 21% of the total stock is being used permanently. Low density, aged, single-family housing pattern is the striking character of the district and these are considered as the signals of urban shrinkage.

While Oğuz et al. (2010) focus on a peripheral coastal district of Izmir metropolitan area in search of the signs of urban shrinkage; Özatağan and Eraydın (2013; p: 1027) focus on inner city. Emphasizing the increasing population growth of metropolitan İzmir¹⁷ as a whole, they draw attention to the pattern of population growth, which indicates a clear shift from the urban core towards settlements in its periphery. They argue that, *“government policies and strategies aimed at enhancing the development of peripheral areas that have led to shrinkage of the metropolitan core”*.

Özatağan and Eraydın (2013) found a correlation between population and employment growth in the periphery during the period 1990-2000, parallel with the expansion on manufacturing and service sectors in the inner periphery. In addition to expansion, manufacturing sector had been moved out from the inner core by plan decisions during that period. The study examines the sectoral distribution of employment change within 1990-2000 period and found a decrease in total employment in the

¹⁷ *“Izmir is a growing metropolitan region, having increased from a population of 2.8 million in 1990 to 3.6 million in 2000, and further to 4.5 million in 2008, indicating a population boom in the most recent decade”* (Özatağan and Eraydın, 2013 p.1032.)

metropolitan core, which is 45%. Özatağan and Eraydın (2013; p: 1038) explain this situation as the spatial configuration of economic activity; which means that “*new projects have been directed towards peripheral areas and the capital that have been invested in the metropolitan area started to moved out to various settlements in the periphery*”. They suggest that, İzmir, as a fast-growing metropolitan city, is experiencing this kind of shrinkage (on population and employment) for the first time in its recent history. İzmir is experiencing process of growth, concentration, dispersion, and shrinkage together.

The study analyzes the role of governmental policies and strategies on shrinking process of İzmir by focusing on three policy fields particularly: industry, transportation, and housing. The study discusses that since 1990, 17 new organized industrial zones have been established in İzmir Metropolitan region and they were encouraged by central government incentives. Likewise, majority of the public investments were made in the transport and communication sectors (establishment of new motorway, railway as well as upgrading of existing routes etc.). The study also highlights that mass housing acts of the Government (1981 and 1984) for low and middle-income groups played significant role on housing development in the periphery.

4.3. CONCLUDING REMARKS

Main evaluation points for the case of Izmir Metropolitan area can be summarized as following:

- The 1973 Izmir Development Plan, which is the first comprehensive master plan approach the city faced, was one of the important factors exposing urban growth after 1970s. The plan determined development areas in the form of north-south and east-west corridors. Semikler-Aliaga axis at north and Karabaglar-Cumaovasi (Menderes) axis at South were proposed for industrial

development. At the western corridor, which includes Narlıdere, Urla and Seferihisar Districts, tourism and secondary housing development were proposed (Oğuz, et al. 2010).

- Large-scale mass housing and commercial investments have been reconfigured the urban structure from the begging of 1980s. Especially after 1990s, master plans proposed several mass housing areas on the periphery of the city, which had catalysed speed up later development in the surrounding of these areas (Sönmez, 2009; Altınçekiç and Göksu, 1995; Özatağan and Eraydın, 2013).
- The natural population increase together with high amount of migrated population created high demand for jobs and houses, which made urban expansion inevitable. Transportation investments have been playing crucial role in raising the attractiveness of the periphery settlements and had directed the expansion or development of built-up areas (Hepcan et al, 2013; Özatağan and Eraydın, 2013). Construction of Cesme Highway in 1994 increased the accessibility of the settlements on the western axis and promoted the urban development in Karaburun Peninsula especially in Cesme, Urla district. Core districts at that axis such as Narlıdere, Guzelbahce also expanded.
- Agricultural areas (especially in Bornova and Buca Districts) replaced by built-up areas, causing patchy and scattered agricultural land patterns remaining within the newly urbanized zones (Hepcan et al, 2013). With high-density expansion of the built-up areas, sprawl of İzmir is different from the American and European sprawling cities (Hepcan et al., 2013).
- Between 1963 and 2005 there was not a significant decrease on forest land which can be explained substantially by the efficiency of the National Forest Protection Law in İzmir case (Hepcan et al, 2013).

- Izmir is known as one of the tourism destination with its coastal districts such as Çeşme, Karaburun, Seferihisar Districts on the west; Foça and Dikili on the north, Selçuk and Seferihisar on the south axis. These touristic Districts have been transformed after 1980s presenting low-density second-home (vacation housing) developments (Hepcan et al, 2013; Oğuz, et al. 2010).
- Local governments did not react to the emergence of squatter settlements and their sheltering/housing needs had been ignored. In other words, neither the local governments did intent to solve their sheltering problems, nor prevent them from building in their own those illegal houses. Over the years, large squatter neighbourhoods had gained legal status by means of spatial (improvement) plans. In this way, squatter settlements became one of the dominant character in urban pattern of Izmir.
- Additionally, unlike western countries, İzmir is lack of non-governmental organizations tries, which are founded for preventing urban sprawl. In Izmir case, although chambers of professions have a crucial role and acting as advocators of public interest, they cannot resist against the state-level political pressure in many cases.
- Urban planning practice in Turkey can be criticized as being ignored about environmental issues, managing landscape change, and developing ecologically sustainable growth strategies in general (Hepcan et al. 2013).

As a conclusion, Izmir as the third most populous and the second most densely settled metropolitan city of the country, has been witnessing uncontrolled and rapid growth both in its population and in built-up areas. Figure 4.23 to Figure 4.29 show several parts of the built environment from the high-density metropolitan core. In addition to this, Izmir has been facing with substantial spatial expansion towards its periphery, because of mass housing, squatter settlements, large

industrial parks (zones), large-scale commercial centres, and improvements on transportation facilities.

As stated previously, the term urban sprawl refers to “the physical pattern of low-density expansion of large urban areas, under market conditions, mainly into the surrounding agricultural areas” (EEA, 2016). This definition of sprawl is made in the light of cases of western cities, which shows different characteristics, as well as different reasons. As European Environment Agency states (EEA, 2016), urban sprawl may have differing causes and consequences in different regions and regulatory contexts.

Therefore, it should be noted that, as the dynamics of urbanization processes in developing world different from those in developed countries, dimension and character of sprawl might show significant dissimilarities. It is expected that, spatial analysis of Izmir Metropolitan area is crucial in terms of finding out/ identifying these differences, and discussing the main drivers behind it.

Figure 4.23: Views from Izmir metropolitan core – Hatay and Göztepe



Göztepe



Hatay

Source: Izmir Metropolitan Municipality, 2017

Figure 4.24: Views from Izmir metropolitan core – CBD and Konak square



CBD and Konak



Konak square

Source: Izmir Metropolitan Municipality, 2017

Figure 4.25: Views from Izmir metropolitan core – Konak and Alsancak



Konak and Alsancak



Cumhuriyet (Republic) square

Source: Izmir Metropolitan Municipality, 2017

Figure 4.26: Views from Izmir metropolitan core – new CBD and Izmir port



New CBD



New CBD and Izmir Port

Source: Izmir Metropolitan Municipality, 2017

Figure 4.27: Views from Izmir metropolitan core – International fair (Alsancak)



Izmir International Fair area



Izmir International Fair area

Source: Izmir Metropolitan Municipality, 2017

Figure 4.28: Views from Izmir metropolitan core – northern coast I



Bostanlı



Karşıyaka

Source: Izmir Metropolitan Municipality, 2017

Figure 4.29: Views from Izmir metropolitan core – northern coast II



Bostanlı



Bostanlı

Source: Izmir Metropolitan Municipality, 2017

CHAPTER 5. EMPIRICAL ANALYSIS OF URBAN SPRAWL IN IZMIR

This chapter consists of five main sections. The first section explains the study area, the data and the methodology used for the analysis. The second section analyzes the spatial distribution of the population, population density as well as the change along the time. In the third section, a spatial analysis, which explores expansion of built-up areas in Izmir, is established by comparing different periods. In the fourth section, land use intensity or built-up areas per inhabitant are analyzed as a combined analysis of population and the built-up areas. In the fifth section, the outcomes of the analysis are discussed in conjunction with the urbanization policies, plans, socio-cultural and economic dynamics and the institutional interventions realized in Izmir metropolitan area. This concluding part, focuses more to the periods of the analysis by discussing the spatial dynamics (such as plans, and policies both national and local levels) that shaped the distribution of population and built-up areas.

5.1. THE STUDY AREA, DATA AND METHODOLOGY

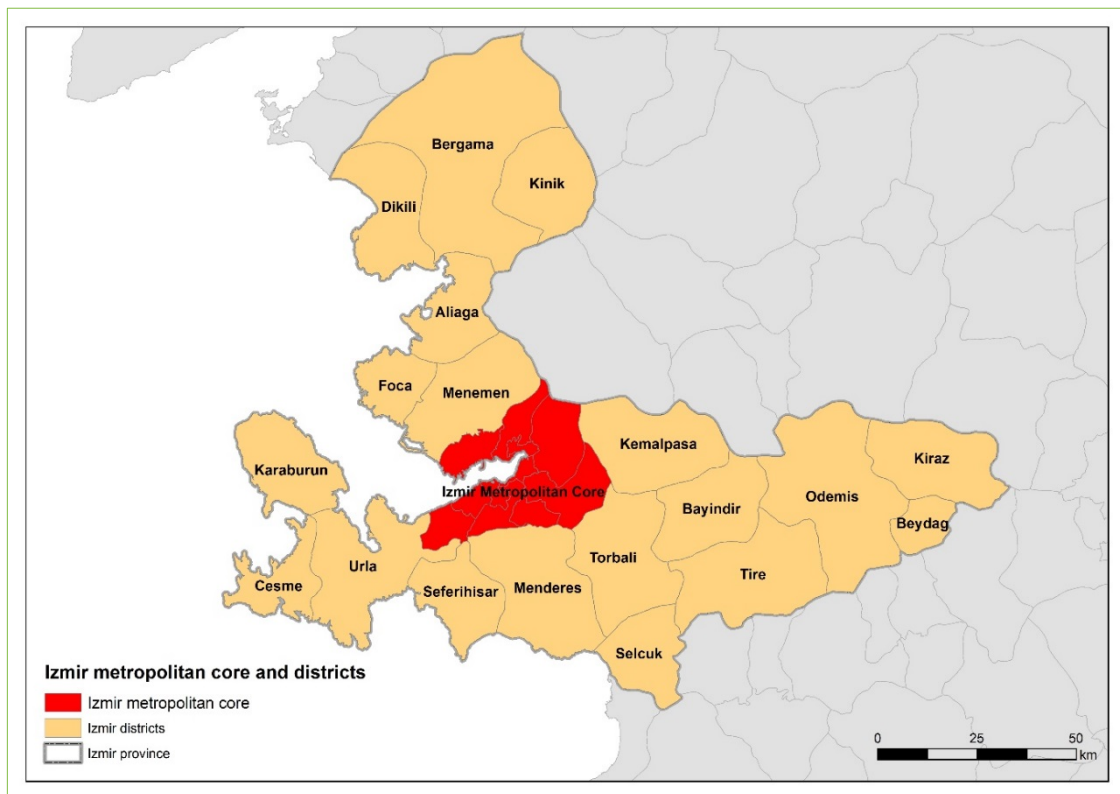
5.1.1. The Study Area

The study consists of all 30 districts within Izmir Metropolitan City (province) boundaries. Core city districts, in which present similar characteristics in their population and built-up distributions, have been handled together with the name of “Izmir Metropolitan Core”. This unification also made it possible to eliminate the conflicts on time series data arising from the frequent changes in boundaries of inner/core districts in the past years.

As indicated in Figure 5.1, the core consists of 11 districts, which are Konak, Karsiyaka, Gaziemir, Bornova, Balcova, Bayrakli, Buca,

Guzelbahce, Narlidere, Karabaglar, and Cigli. The rest of the province, the other 19 districts, have been handled separately to observe the sprawl in depth which are Aliğa, Bayındır, Bergama, Beydağ, Çeşme, Dikili, Foça, Karaburun, Kemalpaşa, Kınık, Kiraz, Menderes, Menemen, Ödemiş, Seferihisar, Selçuk, Tire, Torbalı, and Urla. Depending on the context, these 19 districts are also named as “non-core districts” in the analyses, particularly when all districts except those located in the core are mentioned.

Figure 5.1: The study area - districts of Izmir metropolitan area



5.1.2. The Data

Mainly two types of variable have been used for the analysis of spatial characteristics in Izmir: time series population and built-up areas data. The time series population data has been gathered from Turkish Statistical Institution (TUIK) for all the districts. The years 1975, 1990, 2000, and 2014 have been selected to be able to match population data with the available built-up data. Population analysis have realized

exploring the change particularly in three periods: 1975-1990, 1990-2000, and 2000-2014.

For the main data source of the analysis, the grid level built-up area information from the Global Human Settlement Layer (GHSL) database has been used. GHSL is a spatial database that recently developed and maintained by Pesaresi et al. (2015) and the Joint Research Centre of the European Commission. It is described as a new way to map, analyze, and monitor change in human settlements and the urbanization in the 21st century. As indicated in its website, the build-up database used in this study can be described in detail as follows together with the project that it was produced in (Joint Research Centre, 2017):

- The Global Human Settlement Layer (GHSL) project is supported by the European Commission, Joint Research Center and Directorate-General for Regional and Urban Policy. The GHSL produces new global spatial information, evidence-based analytics, and knowledge describing the human presence in the planet. The GHSL relies on the design and implementation of new spatial data mining technologies allowing to process automatically and extract analytics and knowledge from large amount of heterogeneous data including: global, fine-scale satellite image data streams, census data, and crowd sources or volunteering geographic information sources.
- The data contain a multitemporal information layer on built-up presence as derived from Landsat image collections (GLS1975, GLS1990, GLS2000, and ad-hoc Landsat 8 collection 2013/2014). The data have been produced by means of Global Human Settlement Layer methodology in 2015. The main product is the built-up area grid published in the production grid at high resolution, i.e. at around 30m in Spherical Mercator (EPSG:3857).

- The data are organised in several datasets. The main product (GHS_BUILT_LDSMT_GLOBE_R2015B) is a multitemporal built-up grid (built-up classes: 1975, 1990, 2000, 2014 epoch), which has been produced at high resolution (approx. 38m). This dataset has been used to derive additional layers per each epoch. All datasets are offered at high, middle and low resolution (approx. 38m in Spherical mercator, 250m in Mollweide and 1km in Mollweide, respectively). Each dataset is distributed in a compressed ZIP that contains TIF file with pyramids and documentation.

5.1.3. The Methodology

The method of the analysis is mainly based on the following indicators that explores the level of sprawl in Izmir metropolitan area:

- Analysis of population and population density together with its spatial distribution and growth,
- Analysis of built-up areas, land use and land-take intensity, in other words, analysis of built-up areas per inhabitant and land annually taken for built-up areas per inhabitant.

For all the above-mentioned indicators, the descriptive statistics have been presented throughout the chapter and almost all-empirical analysis were visualized with graphical and mapping expressions. Additionally, using the grid-based images for different periods, changes in population and built-up area in İzmir Metropolitan area have been demonstrated to evaluate the urbanization process empirically.

The analyses and mapping of the results have been handled using Geographical Information Systems techniques and special extensions to produce spatial statistics and analysis. Besides the changes in population and built-up areas, the level of urban sprawl have been evaluated using (change in) population density and land use intensity

(built-up areas per inhabitant) as selected sprawl indicators. Finally, the empirical results with these indicators have also been qualitatively linked with the spatial plans/policies and other socio-economic factors that shaped the urban area in İzmir.

The population density: Density is a term that refers to the relationship between a physical area and the number of people who live in or make use of that area. It is usually expressed as a ratio of population size or number of dwelling units, compared to area units (ULI, 2015). There are two type of population density measurement which are “gross” (population is divided by total geographical area) and “net” (population divided by certain land uses) in the literature. In the thesis, gross density is measured and mapped for each districts of Izmir in order to show which part of the city is developing densely and which part is developing with low density.

The land use intensity and land take intensity: One measure of urban development is the ‘land take’ (i.e. the amount of land converted into artificial or built-up areas) and the intensity of land used (i.e. the actual amount of artificial land / built-up areas per inhabitant) (European Commission, 2014).

If you have the population distribution and the built-up areas separately, then, “land use intensity” and “land take intensity” analysis can be established as a combined (population and built-up data) measurement technique in search of the level of urban sprawl. This is a relatively new concept, which was developed by the Joint Research Centre as one of the land use related indicators¹⁸. Lavallo et al. (2013) define “land take” as

¹⁸ For further information see Lavallo et al., 2013 “Land Use Related Indicators for Resource Efficiency”, JRC Scientific and Policy Reports, Report EUR 26083 EN.

the amount of agriculture, forest and semi-natural land taken by artificial land, while artificial areas or built-up areas are defined as urban fabric, industrial/commercial land uses and infrastructures/transport networks. In the same study, “land use intensity” is described as measuring the amount of artificial or built-up surfaces in m² per inhabitants. It refers to the level of intensity to which urban land is populated. While “land take” refers to the change in a particular time period, “land use intensity” refers to the situation at a particular time. Therefore, in this thesis, both of the two concepts are used depending on the aspect considered (whether change or stable situation). In short, these two indicators provides useful information on how efficient the land used for built-up areas including residential areas, economic activities, infrastructure etc...

5.2. ANALYSIS OF THE POPULATION DISTRIBUTION IN IZMIR

Mainly two aspects of the population are analyzed: Population change (distribution, growth), and density. As mentioned earlier population, data of the Turkish Statistic Institute (TSI) for the years 1975, 1990 and 2014 have been used for the analysis.

5.2.1. Population change and distribution

Izmir is the third most populated city in Turkey, after Istanbul and Ankara, with 1.3% annual population growth rate. According to Turkish Statistic Institute, the total population of Izmir is measured as 4.223.545 in 2016. Figure 5.2 presents the distribution of the population among the districts.

Spatial distribution of the population and its changing over the years present differences among the districts as well as through the time periods as seen in Table 5.1. There are several striking points in the table, which are the subjects of more elaborated analysis, and discussion in the

following part of this chapter. For example, while some districts are growing in their population in a particular period such as Torbali and Menemen, some others are declining such as Bayindir and Karaburun etc. It is obvious that over the last 40 years, the population of the metropolitan core have been growing faster than the rest of the province. In addition to this, the share of the core population is still increasing (Figure 5.3 and Figure 5.4). Apart from the metropolitan core, as of 2014, the most populated districts is Torbali while the least populated district is Karaburun.

Figure 5.2: Population of Izmir

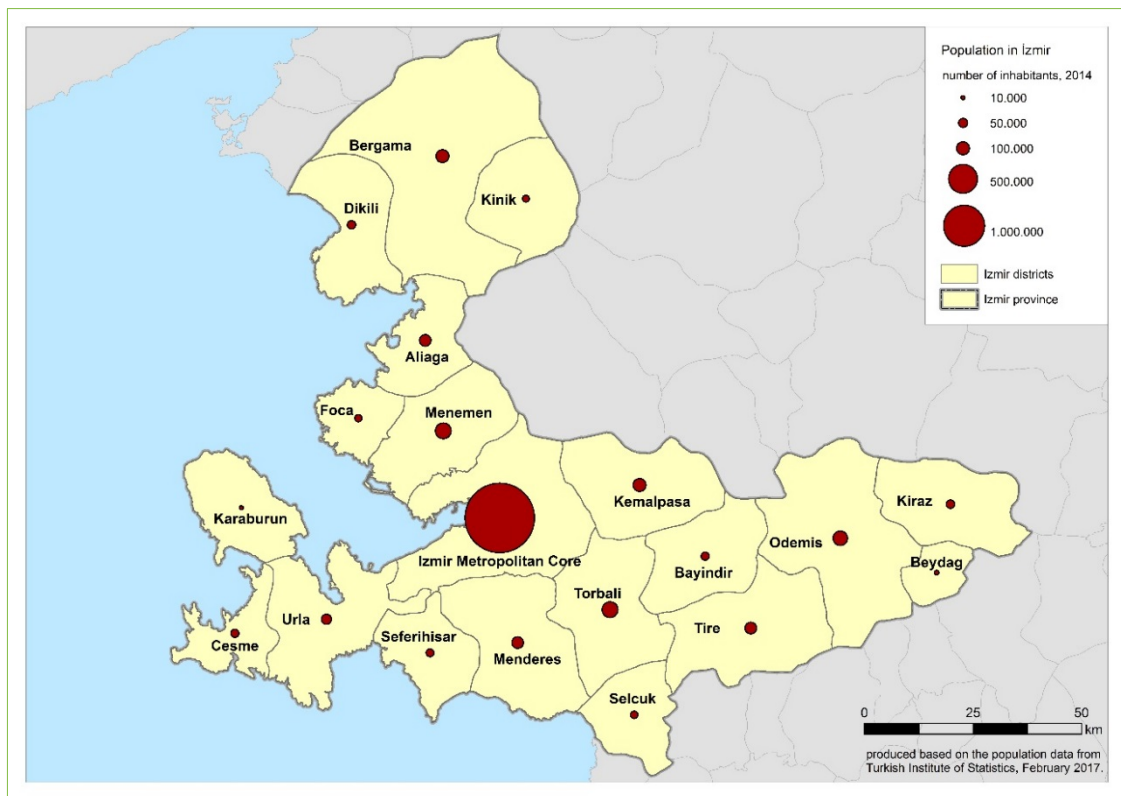


Figure 5.3 gives a general idea about the population change between 1975 and 2014 in basically three geographical levels, which are (1) metropolitan core consisting 11 central districts, (2) other districts which means the rest of the province; and total population of İzmir. It is clear that, there is a rapid population growth in metropolitan core during the period of 1975-1990 in parallel to the total population of İzmir

Metropolitan City. During that period, İzmir, particularly its metropolitan core, was a subject to mass migration from other cities and from its rural surroundings. As a result of this, the total population in Izmir province increased almost four times from 985 thousand to 4 million within the 40 years, from 1975 to 2014.

Table 5.1: Population changes between the periods of 1975, 1990, 2000 and 2014

Name of District	1975	Change % (75-90)	1990	Change % (90-00)	2000	Change % (00-14)	2014	Change % (75-14)
Aliağa	n.a.	n.a.	42150	35,7%	57192	45,8%	83366	n.a
Bayındır	45199	4,3%	47126	0,2%	47214	-14,6%	40310	-10,8 %
Bergama	90591	12,0%	101421	5,0%	106536	-4,4%	101813	12,4 %
Beydağ	n.a.	n.a.	14632	-3,3%	14147	-11,9%	12457	n.a
Çeşme	11580	154,4%	29463	26,8%	37372	5,0%	39243	238,9 %
Dikili	18842	23,2%	23219	29,7%	30115	39,5%	41999	122,9 %
Foça	13185	91,3%	25222	43,2%	36107	-16,9%	30002	127,5 %
Karaburun	6478	39,2%	9020	49,1%	13446	-29,7%	9456	46,0 %
Kemalpaşa	38706	44,9%	56075	30,4%	73114	36,3%	99626	157,4 %
Kınık	29129	29,1%	37617	-14,6%	32109	-12,6%	28072	-3,6 %
Kiraz	34729	18,8%	41247	8,9%	44910	-2,1%	43971	26,6 %
Menderes	n.a.	n.a.	53379	36,8%	73002	11,4%	81297	n.a
Menemen	68476	11,1%	76043	50,5%	114457	29,9%	148662	117,1 %
Ödemiş	123935	0,8%	124968	2,6%	128259	0,9%	129407	4,4 %
Seferihisar	11022	94,2%	21406	62,4%	34761	3,4%	35960	226,3 %
Selçuk	18998	44,0%	27353	22,8%	33594	5,0%	35281	85,7 %
Tire	67651	14,3%	77314	1,7%	78658	3,4%	81315	20,2 %
Torbali	56122	26,8%	71172	31,0%	93216	61,1%	150127	167,5 %
Urla	22774	55,7%	35467	38,9%	49269	20,1%	59166	159,8 %
Metropolitan Core	326159	446,5%	1782466	27,7%	2275388	25,8%	2863556	778,0 %
Noncore Districts (Total)	659392	39,0%	916284	20,0%	1099478	14,0%	1253544	90,1 %
İzmir (Total)	985551	173,8%	2698750	25,1%	3374866	22,0%	4117100	317,7 %

Source: Turkish Statistical Institute, population data for 1975, 1990, 2000, 2014.
(n.a. the data is not available)

Figure 5.3: Population changes between 1975 and 2014

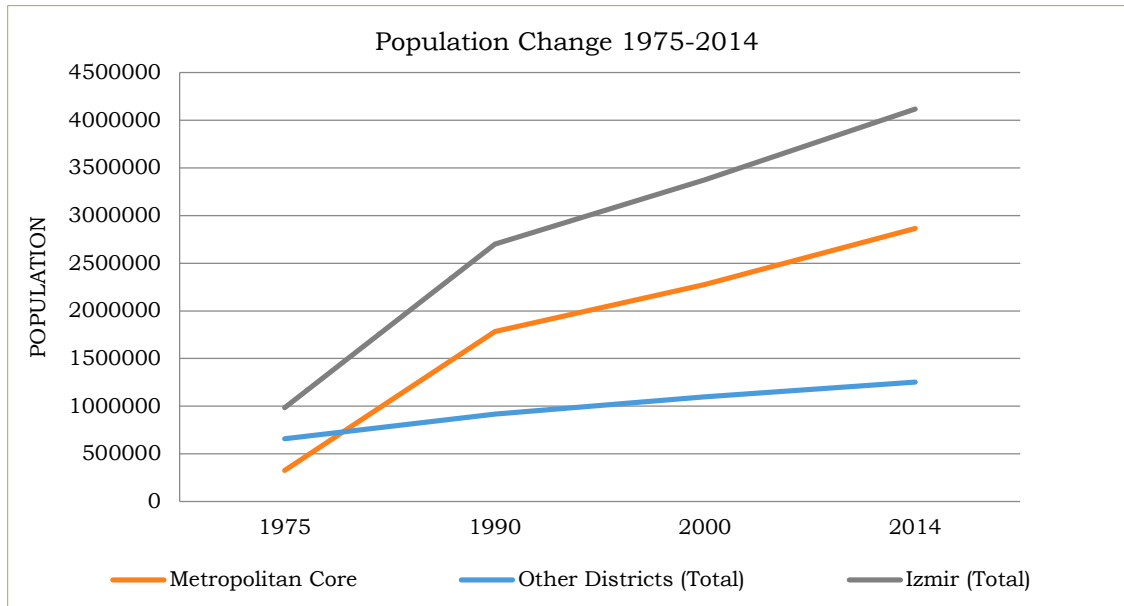
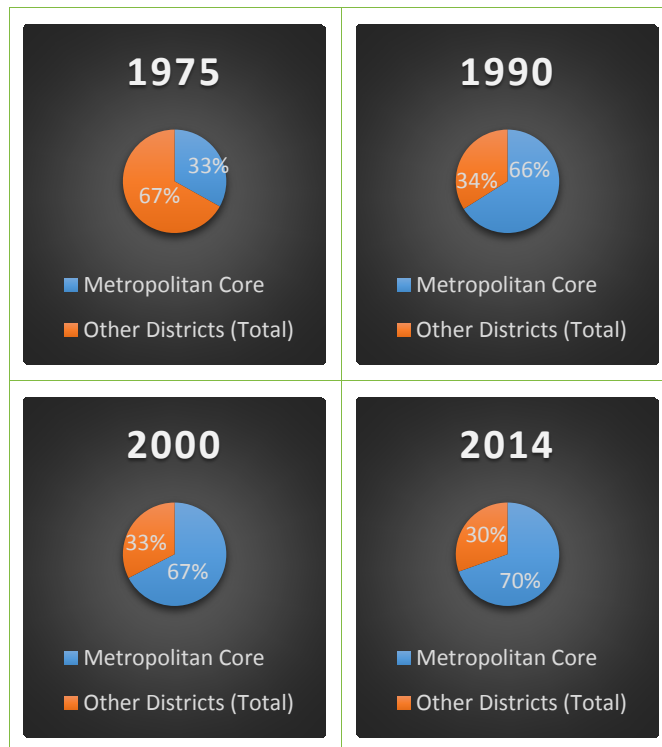


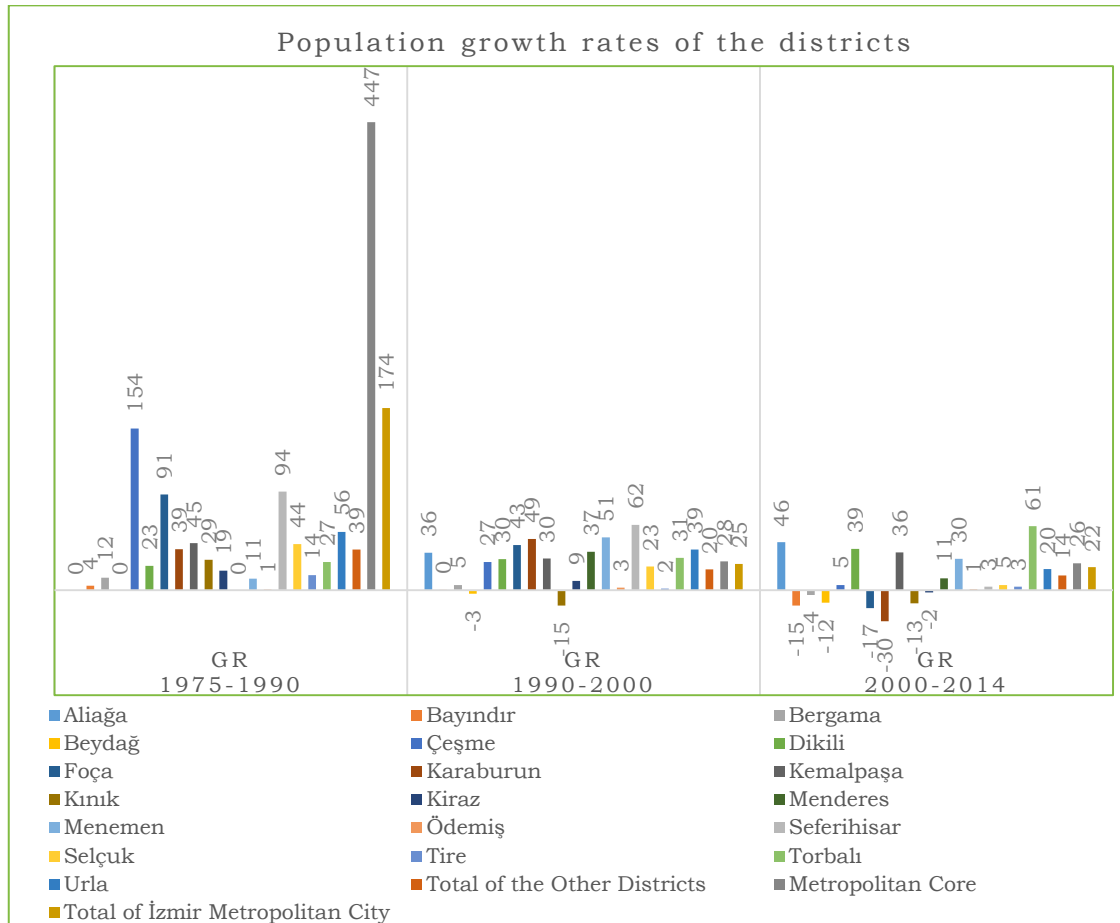
Figure 5.4: Periodical distribution of the population: core and noncore districts



Growth rates shown in Figure 5.5 explain the periodical dimension of population changes. For instance, growth rate of the metropolitan core was 447 % in the first period (1975-1990) while the whole city was growing with the rate of 174 %. Second period (1990-2000) could be characterized as growing the demand on coastal districts such as

Seferihisar (62 %), Karaburun (49 %), Foca (43%), Urla (39 %), Dikili (30 %), and Cesme (27 %).

Figure 5.5: Population growth rates by districts



Source: Generated from population census data, Turkish Statistical Institute, 1975, 1990, 2000, and 2014.

Growth rate of metropolitan core was lesser around 28 %, while the population of the whole city was growing by 25 % averagely at that period. There is a significant increase in growth rates on the north – south – east axis of the city during the third period (2000-2014). Since 2000, Menemen (30 %) – Aliaga (46 %) – Dikili (39%) cluster on the northern part and Torbali (61 %) and Kemalpaşa (36 %) districts on the southeast axis have higher average growth rate compared to the metropolitan core (26 %) and the whole city (22 %).

5.2.2. Population density

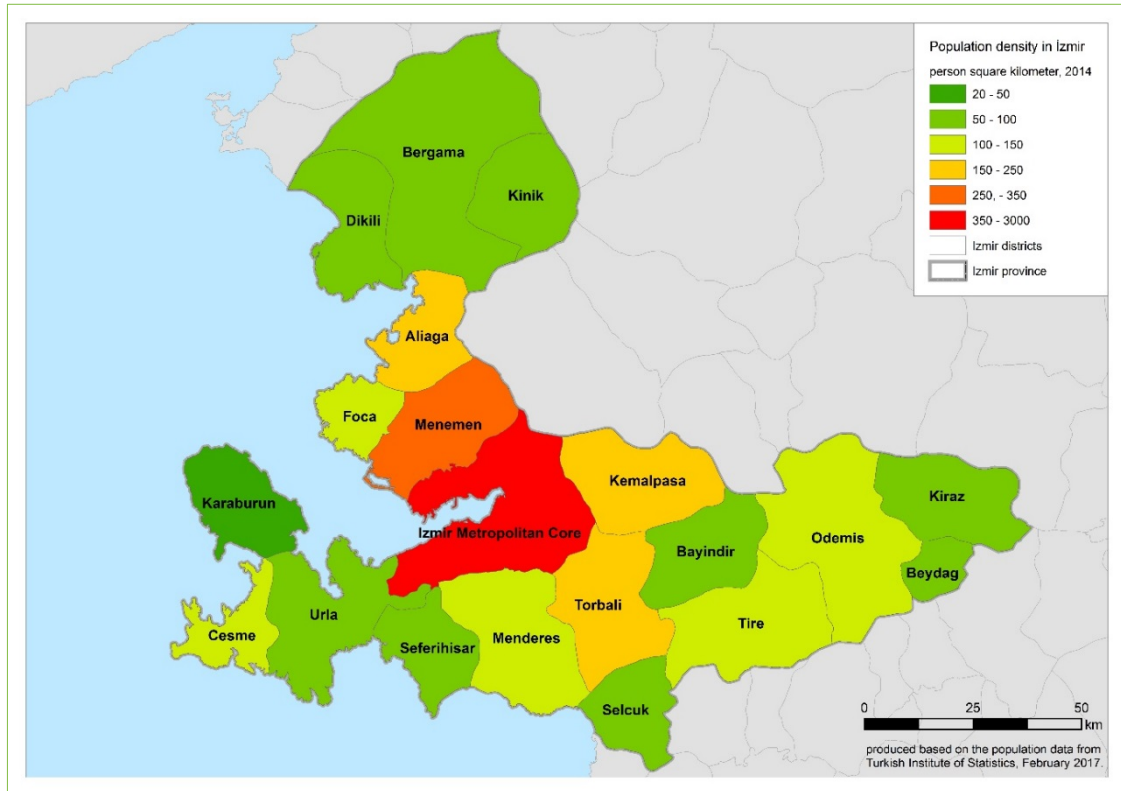
Izmir is third densest city of Turkey after Istanbul (2767 per/km²) and Kocaeli (477 per/km²) according to official declaration of Turkish statistical Institute in 2014. Population density is 342 persons per km², when the city is considered as a whole. The population density is significantly high in metropolitan core as seen in the Table 5.2 and Figure 5.6. It is also worth mentioning that the density of the metropolitan core increased nine times from 1975 to 2014, from 319 person/km² to 2797 person/km². On the other hand, population densities in non-core districts are relatively low when compared to the density in the core. Average population density in non-core districts increased only two times from 60 person/km² in 1975 to 114 person/km² in 2014. Figure 5.7 shows the population density gap between core and noncore districts.

Table 5.2: Distribution of population density in 1975, 1990, 2000 and 2014

Districts	Population density (person/km ²)			
	1975	1990	2000	2014
Aliağa	NA	108	147	214
Bayındır	88	92	92	79
Bergama	58	65	68	65
Beydağ	NA	88	85	75
Çeşme	41	104	132	139
Dikili	35	43	56	79
Foça	53	102	146	122
Karaburun	15	21	31	22
Kemalpaşa	61	88	114	156
Kınık	57	73	63	55
Kiraz	61	73	80	78
Menderes	NA	72	99	110
Menemen	119	132	199	259
Ödemiş	118	119	122	123
Seferihisar	30	58	94	97
Selçuk	53	76	93	98
Tire	91	105	106	110
Torbali	86	110	144	231
Urla	33	52	72	86
Metropolitan Core	319	1741	2223	2797
Other Districts (Total)	60	83	100	114
Izmir (Total)	82	224	280	342

Source: Generated using the population census data, Turkish Statistical Institute, 1975, 1990, 2000, and 2014.

Figure 5.6: Population density map of Izmir metropolitan area 2014



Moreover, density values of non-core districts are still below the average density of the whole city. As seen in Figure 5.8, the first tree most densely districts are Menemen, Torbali and Aliaga which are characterized mostly with various industrial developments and mass housing developments.

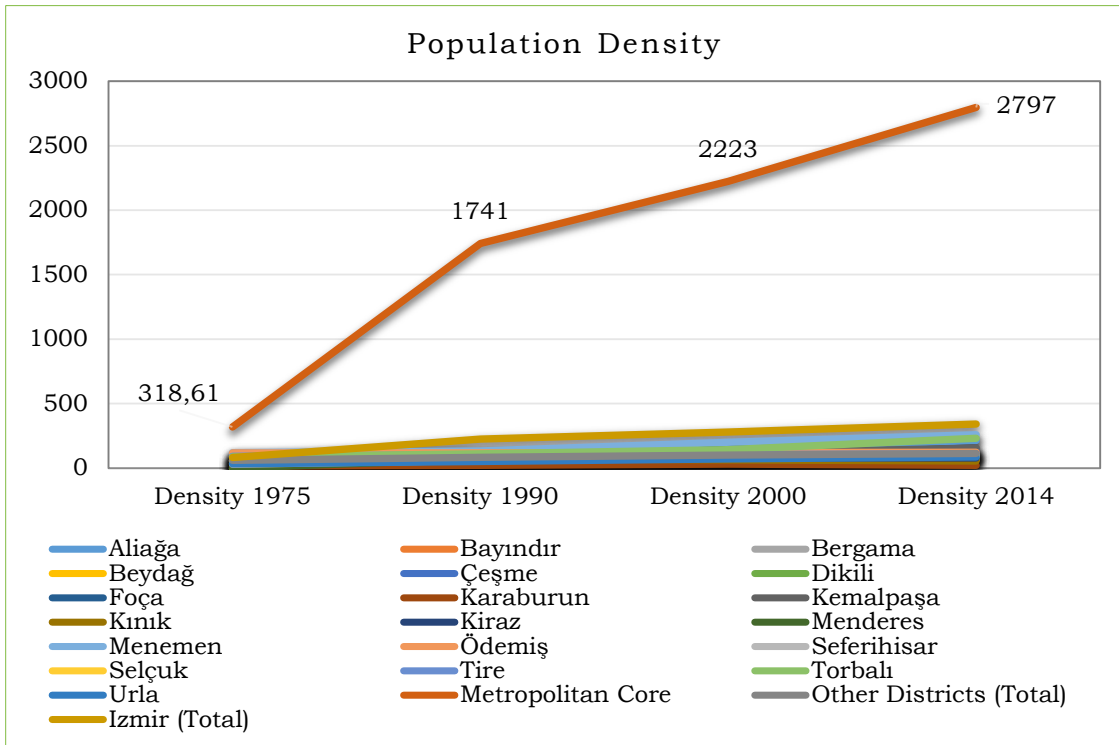
Among the non-core districts, Karaburun, Kinik, Bergama, and Dikili have the lowest population density in almost every period, which confirms their relatively higher rural structure. These districts are also located in a distance more than 50 km far from the metropolitan core.

5.3. ANALYSIS OF THE EXPANSION OF BUILT-UP AREAS

5.3.1. Main factors that shape urban development in Izmir

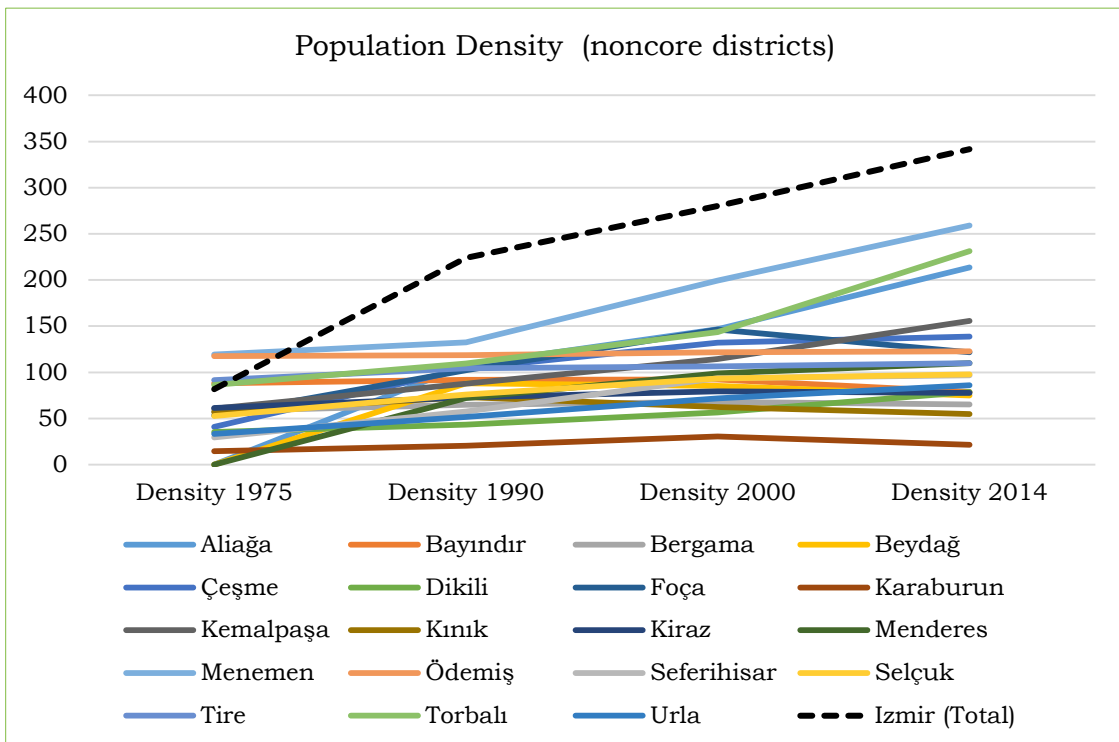
City of Izmir has been surrounded by natural thresholds like sloping lands, sea, agricultural and forestlands, which are limiting the expansion of existing core any longer.

Figure 5.7: Population densities in Izmir metropolitan city



Source: Generated using the population census data, Turkish Statistical Institute, 1975, 1990, 2000, and 2014.

Figure 5.8: Population densities in the noncore districts

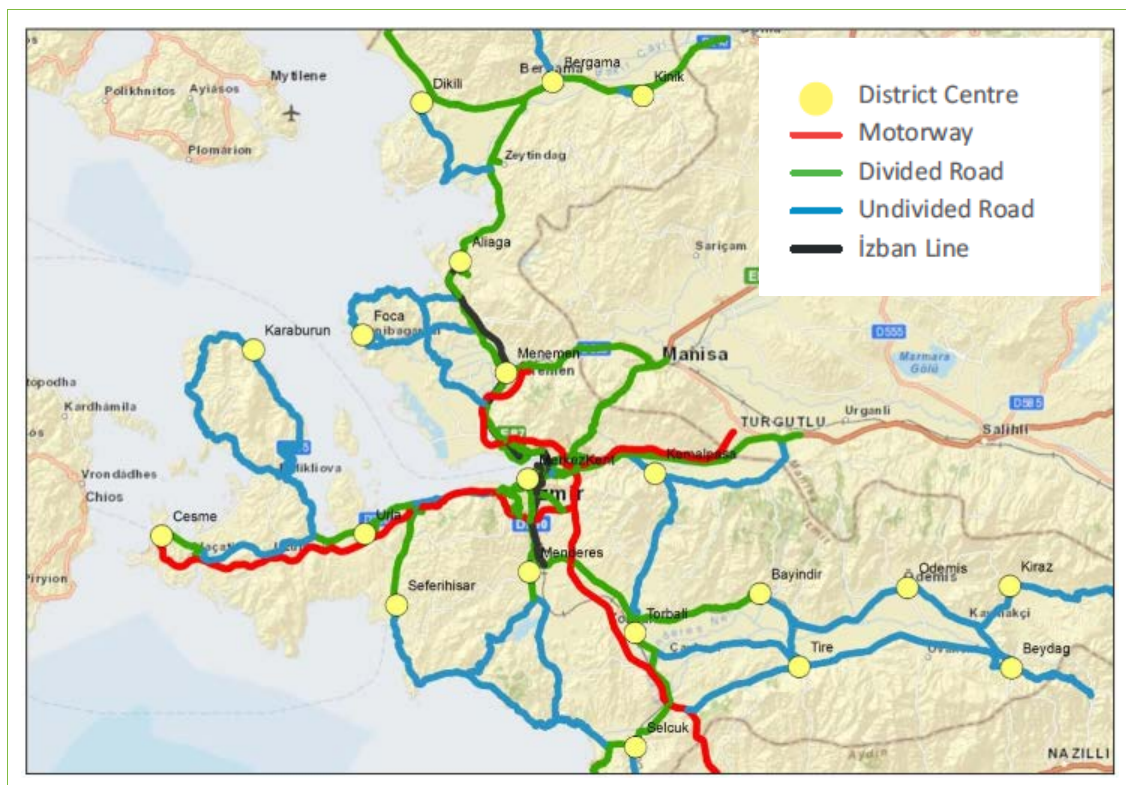


Source: Generated using the population census data, Turkish Statistical Institute, 1975, 1990, 2000, and 2014.

Considering these thresholds, the first comprehensive plan (1973) designated suitable axis for the new urban development and the first housing developments and small-middle scale industrial establishments had started to appear along these axis particularly on the main roads (Figure 5.9).

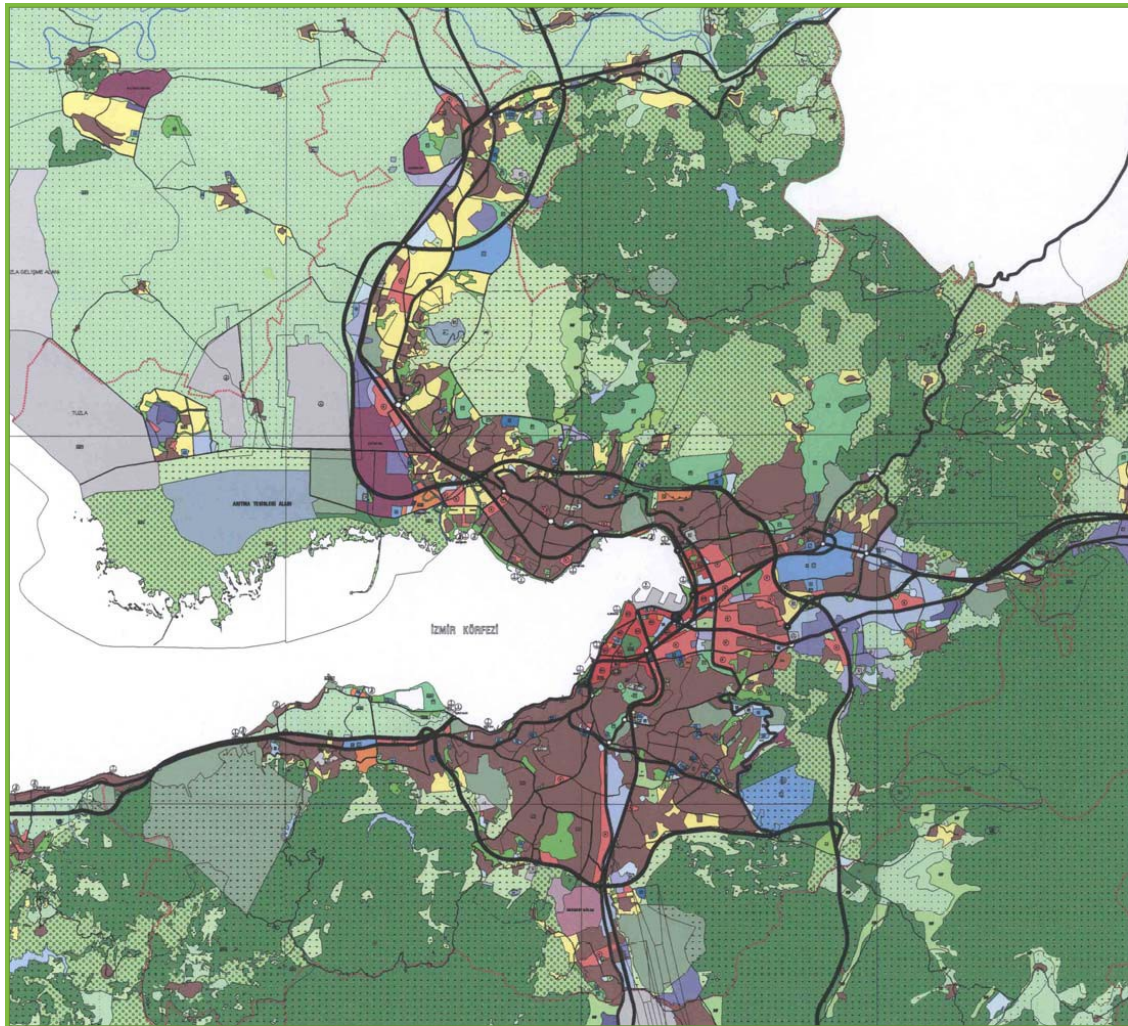
These axes are being encouraged for the new developments by the current 1/25000 Structure Plan which was prepared by Greater Municipality of Izmir and approved in 2012 (Figure 5.10). These development axes are simply Menemen-Aliaga axis on the north, Kemalpaşa Axis on the east, and Mederes-Torbali axis on the south and east. It should be noted that these axes are mostly overlapping with the agricultural plains, which provide physical passages for the continuous *expansion* of urban developments.

Figure 5.9: The main transportation network in Izmir



Source: Izmir Development Agency, 2013, p:48.

Figure 5.10: Structure plan of Izmir (1/25 000)



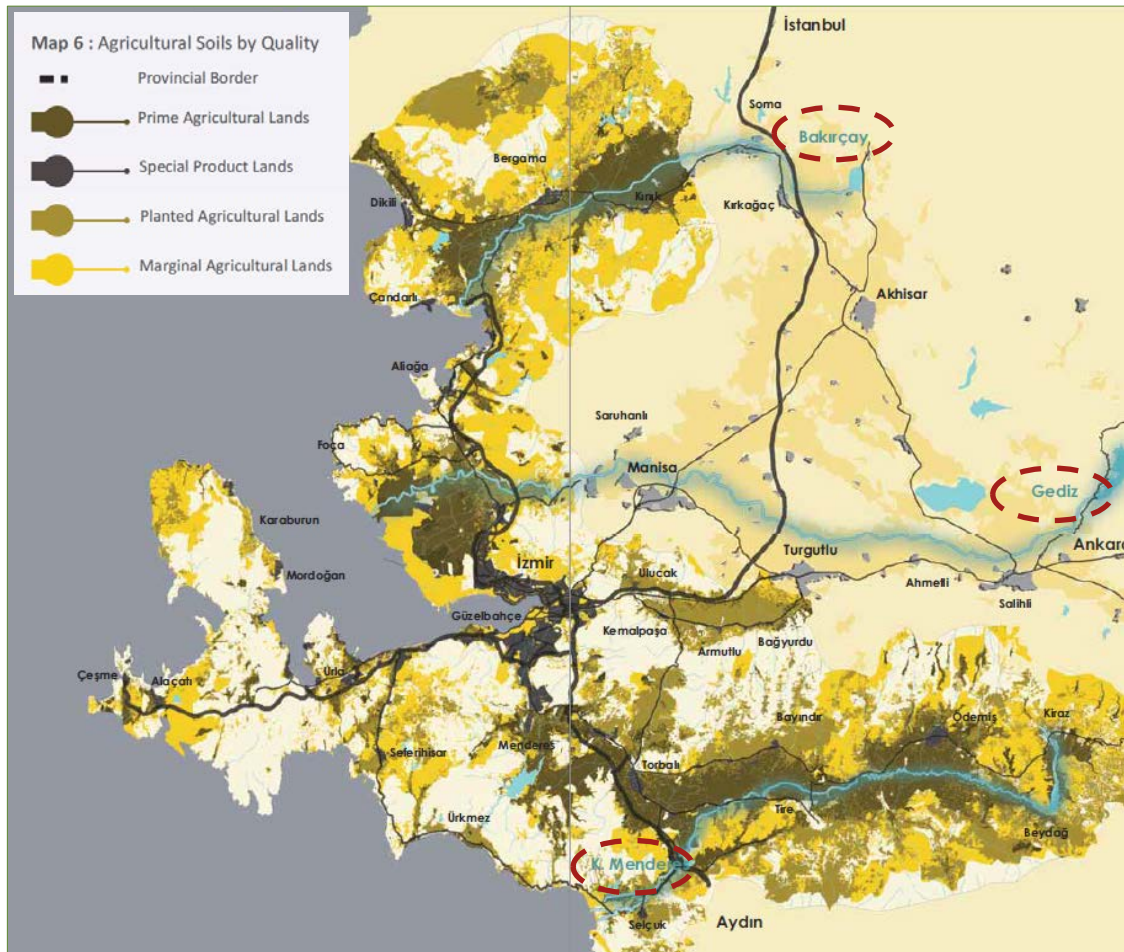
Source: Izmir Metropolitan Municipality, 2016.

According to Turkish Statistical Institute database, 28% of the total land of the province is currently designated as agricultural lands. There are three important agricultural plains, which are formed by the Bakircay, Gediz, and K. Menderes Rivers and their basins (Figure 5.11). Agricultural lands are under the pressure of the expansion of urban areas and are being polluted in some cases by the industrial activities (Izmir Development Agency, 2015)

On the other hand, transportation sector has the highest proportion within the public investments (37%) in Izmir. During the last decade, important transportation projects have been finished within the metropolitan area. Particularly, the motorway and railway (Izban line)

investments have increased the accessibility and connectivity of the core city. Therefore, the number of core city commuters have increased in the surrounding cities (Izmir Development Agency, 2015). That means, improvements in transportation facilities had also affected the preferences of residents while they are selecting a location to live.

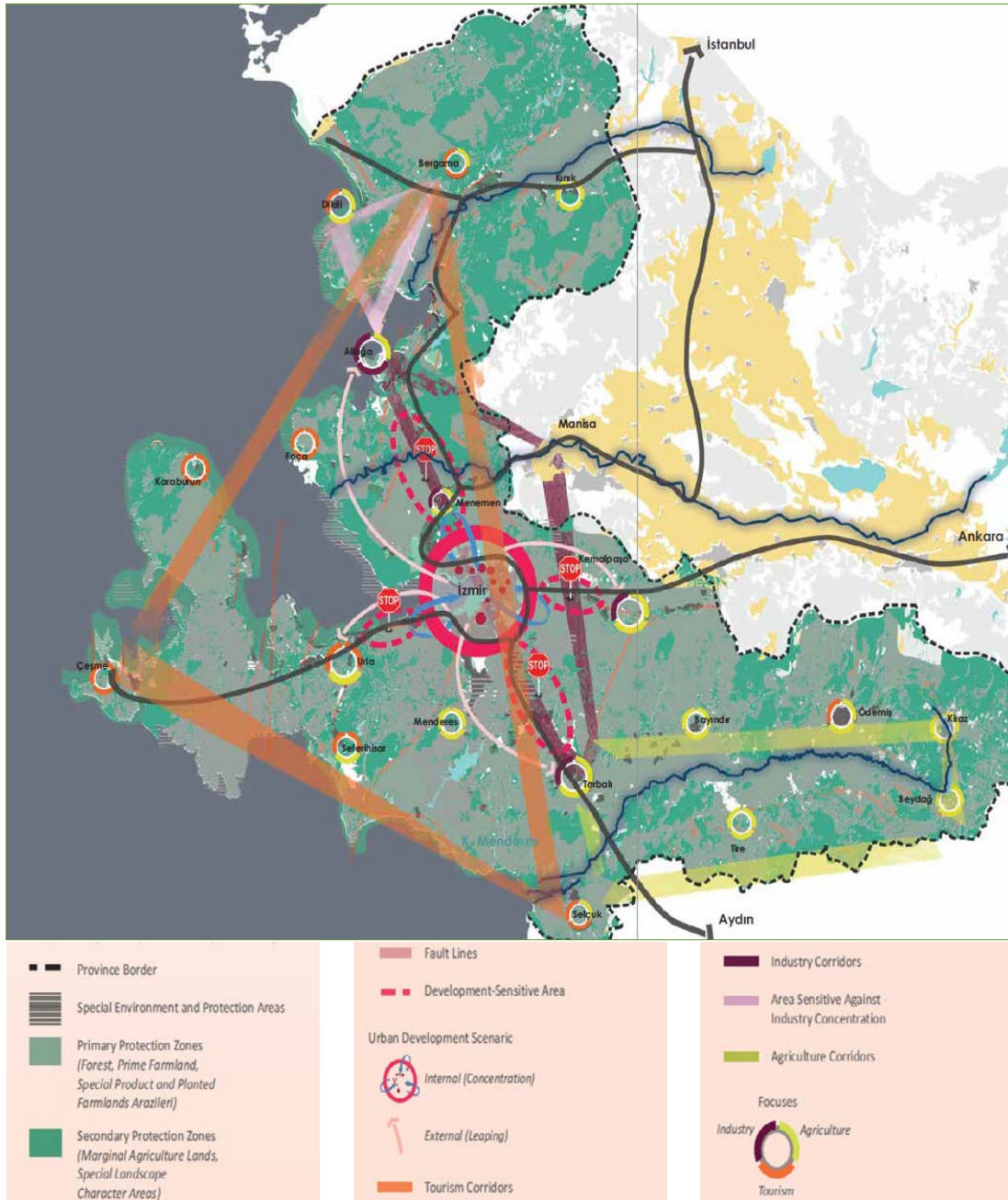
Figure 5.11: River basins and agricultural lands



Source: Izmir Development Agency, 2015, p:83.

Regional Spatial Development Diagram (Figure 5.12) presents a comprehensive look to Izmir Metropolitan City, which was prepared by Izmir Development Agency (2015). The diagram emphasizes the important tourism destinations (Bergama, Cesme, Selcuk triangle), sensitive areas in terms of urban and industrial developments, main agriculture corridors, and environmentally protection zones.

Figure 5.12: Regional spatial development diagram



Source: Izmir Development Agency, 2015; p: 191.

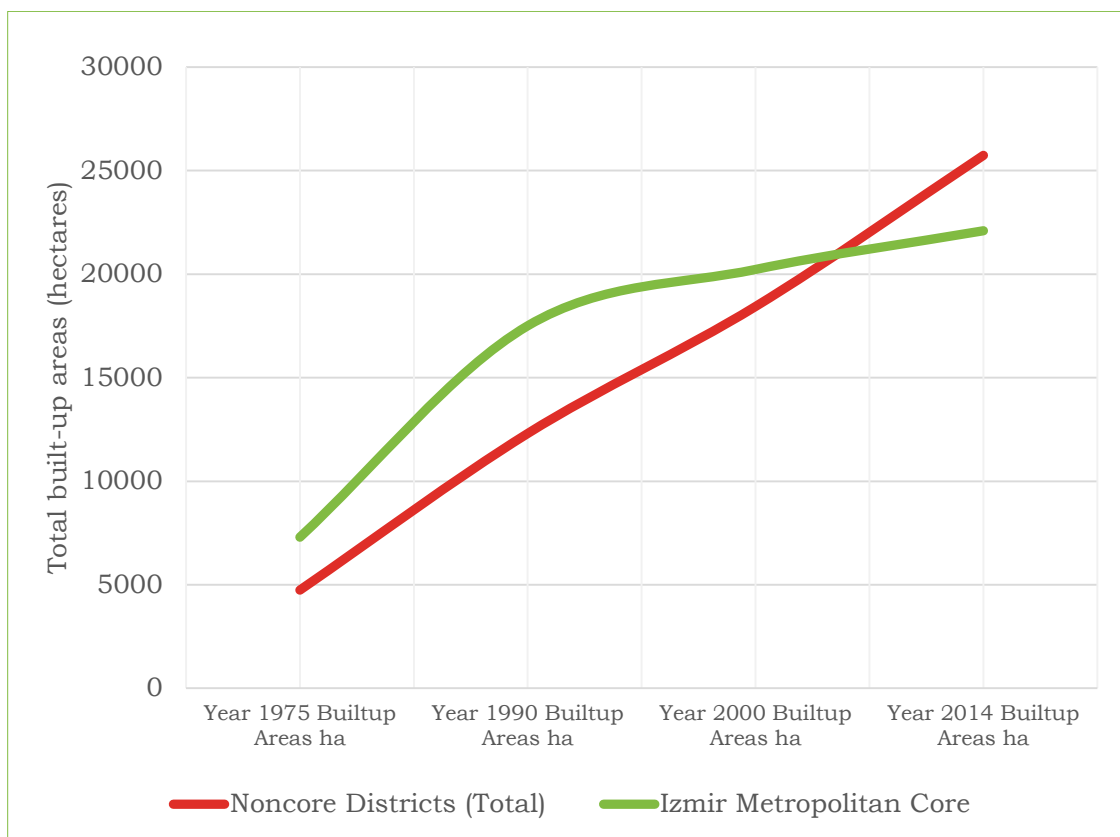
5.3.2. Periodical analysis of urban development in Izmir – change in built-up areas between 1975 and 2014

The brief introduction given above make easier to comprehend and evaluate the spatial development and urban expansion in Izmir. The expansion of built-up areas has been analyzed using the built-up data of GHSL (Global Human Settlement Layer) database, which have recently

produced, by the European Commission Joint Research Center (EC JRC) as mentioned before. The Figures and maps has been produced based on the GHSL built-up data and it shows the periodical development of built-up areas between the periods of 1) up-to-1975, 2) 1975-1990, 3) 1990-2000 and 4) 2000-2014.

As seen in Figure 5.13, which shows the change in the total built-up areas comparatively in metropolitan core and the rest of city, total amount of built-up areas had increased rapidly from 1975 to 2000, but then the rate has slowed down through to a stable stage. On the other hand, the line that shows the change in built-up areas of the non-core districts has been still growing linearly. That means, urban core has almost reached its limits on the one hand, and there have been growing development tendencies outside of the core districts on the other.

Figure 5.13: Change in built-up areas in Izmir, between 1975 and 2014



It is obvious from the Figure 5.14 and Figure 5.15, which demonstrates spatial development of built-areas in four periods from 1975 to 2014, the core city, have been expanded like an oil drop. It has almost reached its physical limitations and capacity. The core city of Izmir is highly concentrated in terms of population and built-up areas, and the general tendencies for new developments have been expanding through the directions from core to the north, south, east and the west axes as seen in the Figure 5.14 and Figure 5.15.

Figure 5.16 and Figure 5.17 show the results of a focused analysis of the non-core districts excluding the core city. In Figure 5.16, a ranking has applied from the largest district to smallest in terms of the current total built-up areas, while in Figure 5.17 the non-core districts have been ranked from most expanded to least according to their built-up areas from 1975 to 2014. This might help us better understanding the dynamics of urban development in the districts of Izmir.

As indicated in Figure 5.16, the first three largest districts, Menemen, Aliaga, and Torbali are well-known and encouraged zones of Izmir in terms of industrial developments. They have been expanded (Figure 5.17) more than four times in their built-up areas from 1975 to 2014.

Menemen district is the largest one among them and has been expanded almost four times in built-up areas during the last 40 years. Its proximity to Izmir is the main factor behind this growth. Having high level accessibility and being located at one of the main urban development corridors of Izmir (northern development axis in the plans since 1973) are the main factors that has shaped the development in Menemen.

Figure 5.14: Periodical development of built-up areas in Izmir metropolitan city (1975-1990-2000-2014)

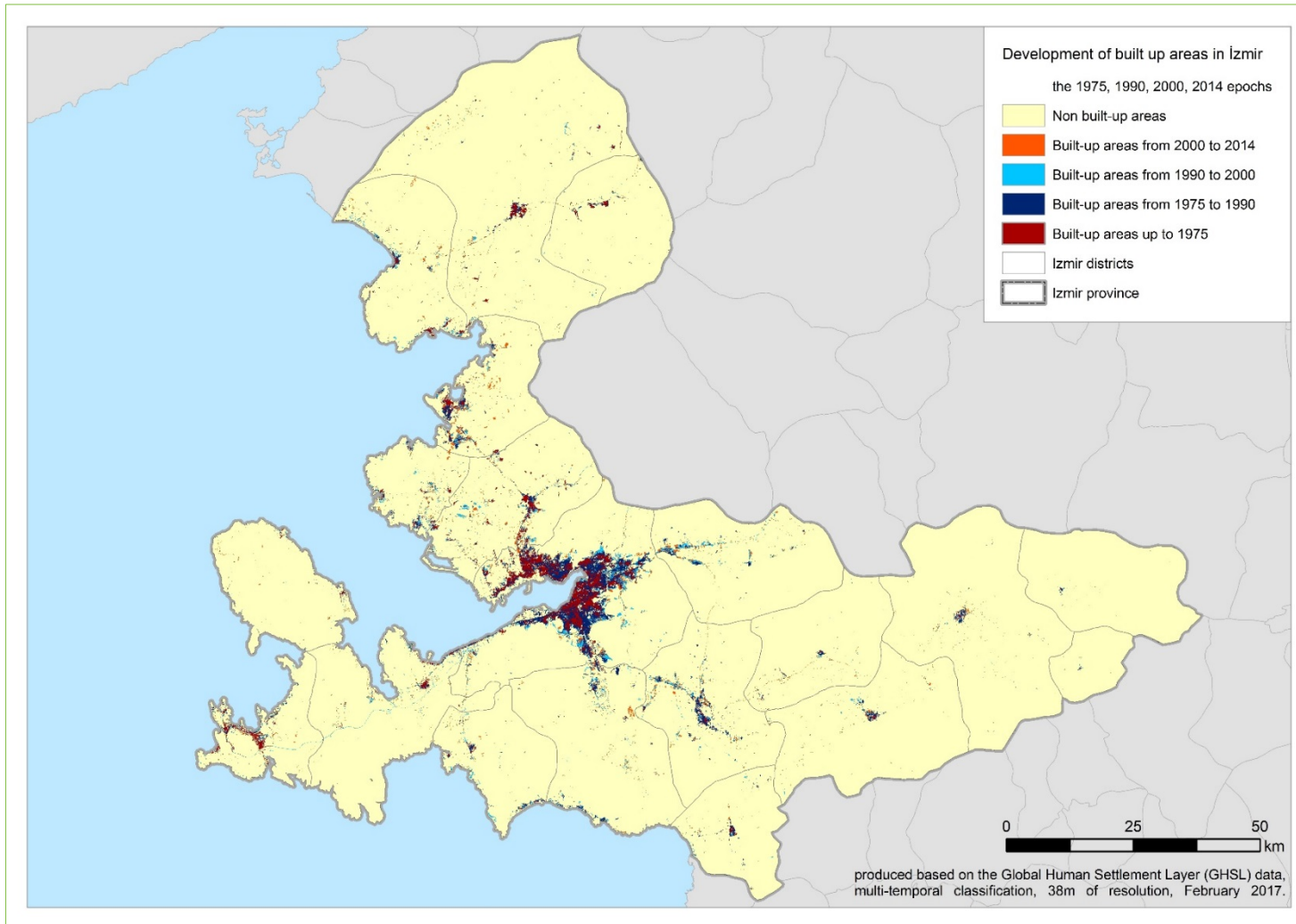


Figure 5.15: Periodical development of built-up areas in Izmir metropolitan core and its surroundings (1975-1990-2000-2014)

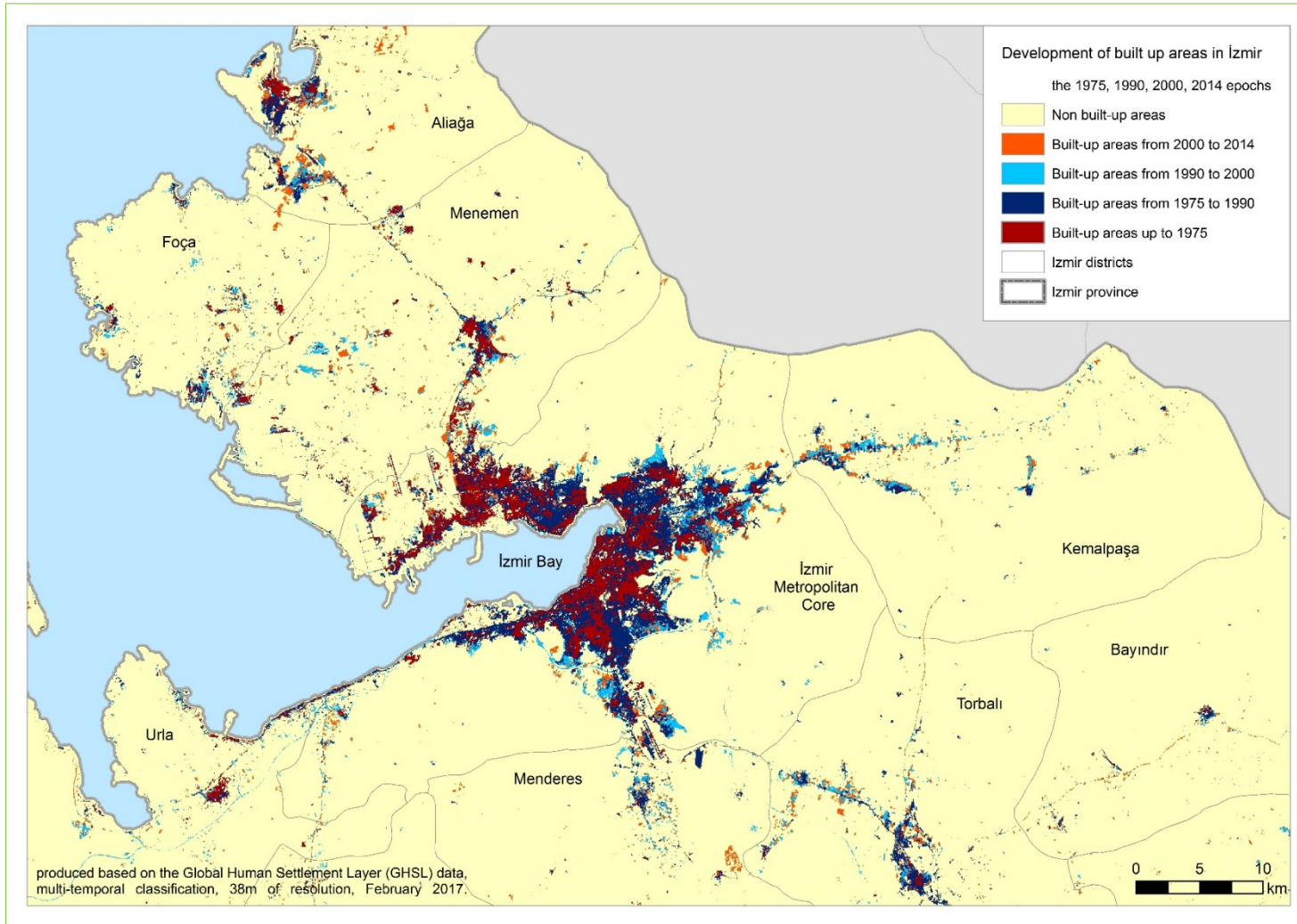


Figure 5.16: Built-up areas of non-core districts

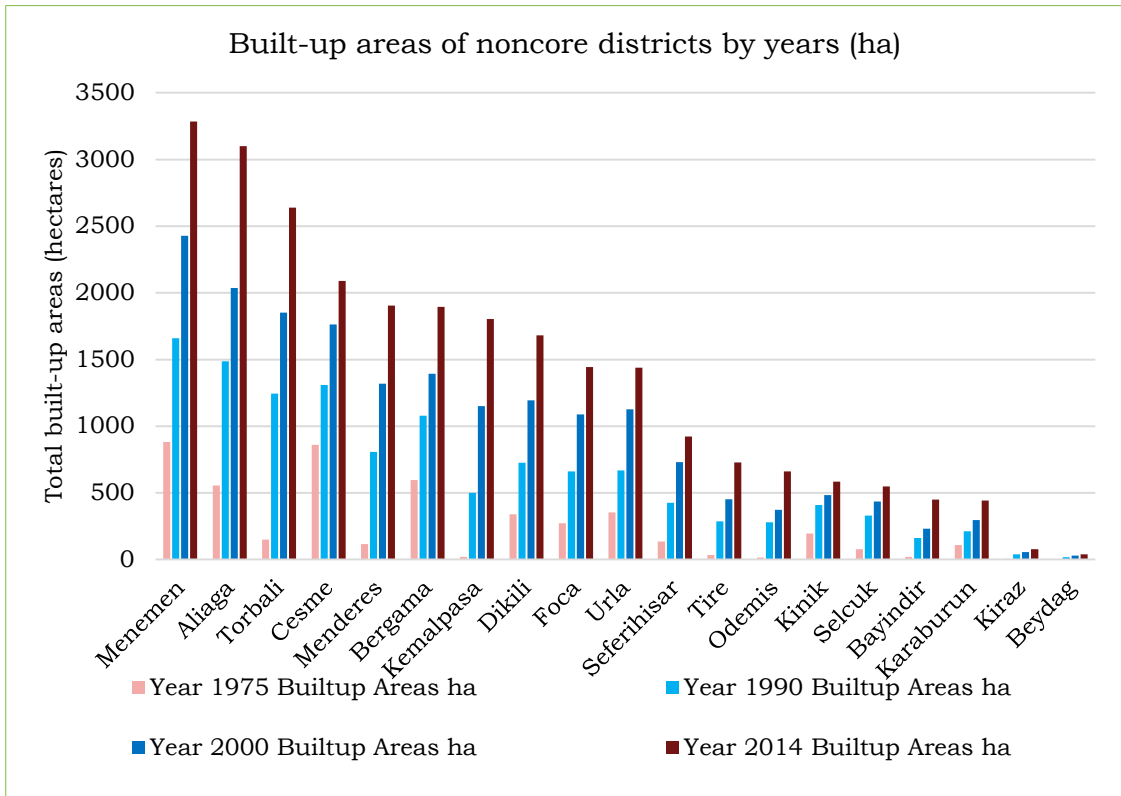
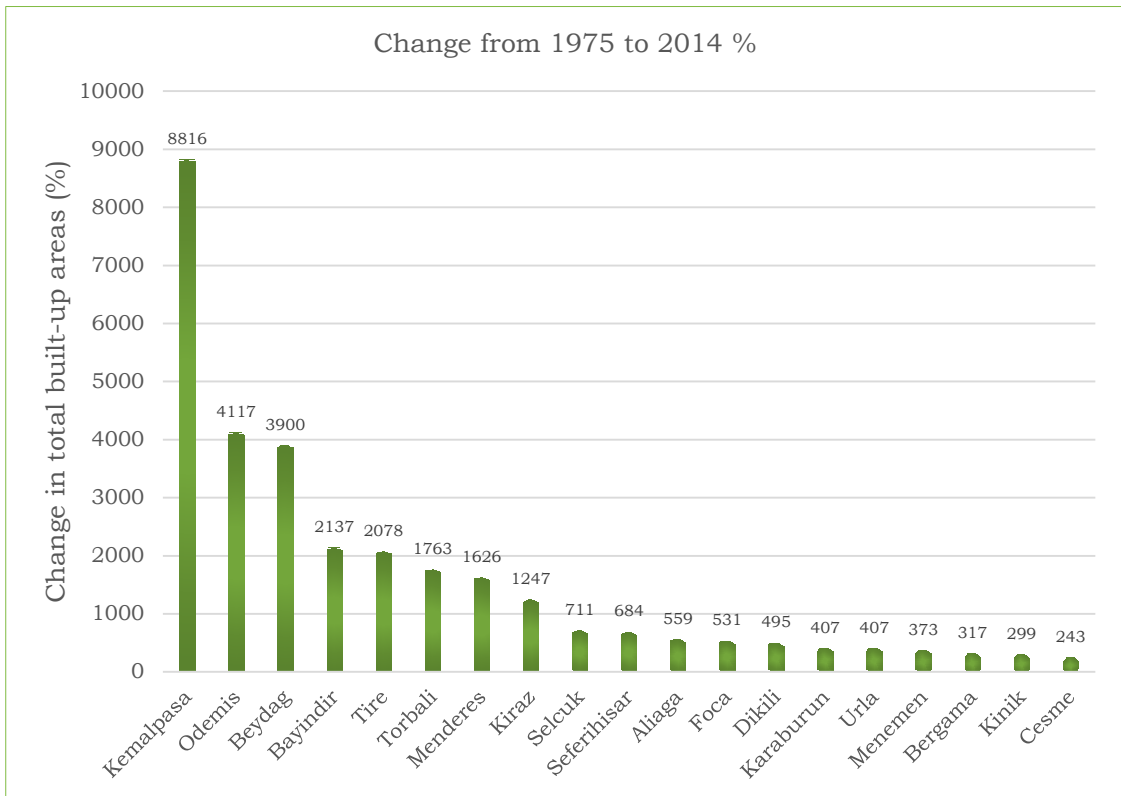


Figure 5.17: Change in total built-up areas in noncore districts from 1975 to 2014



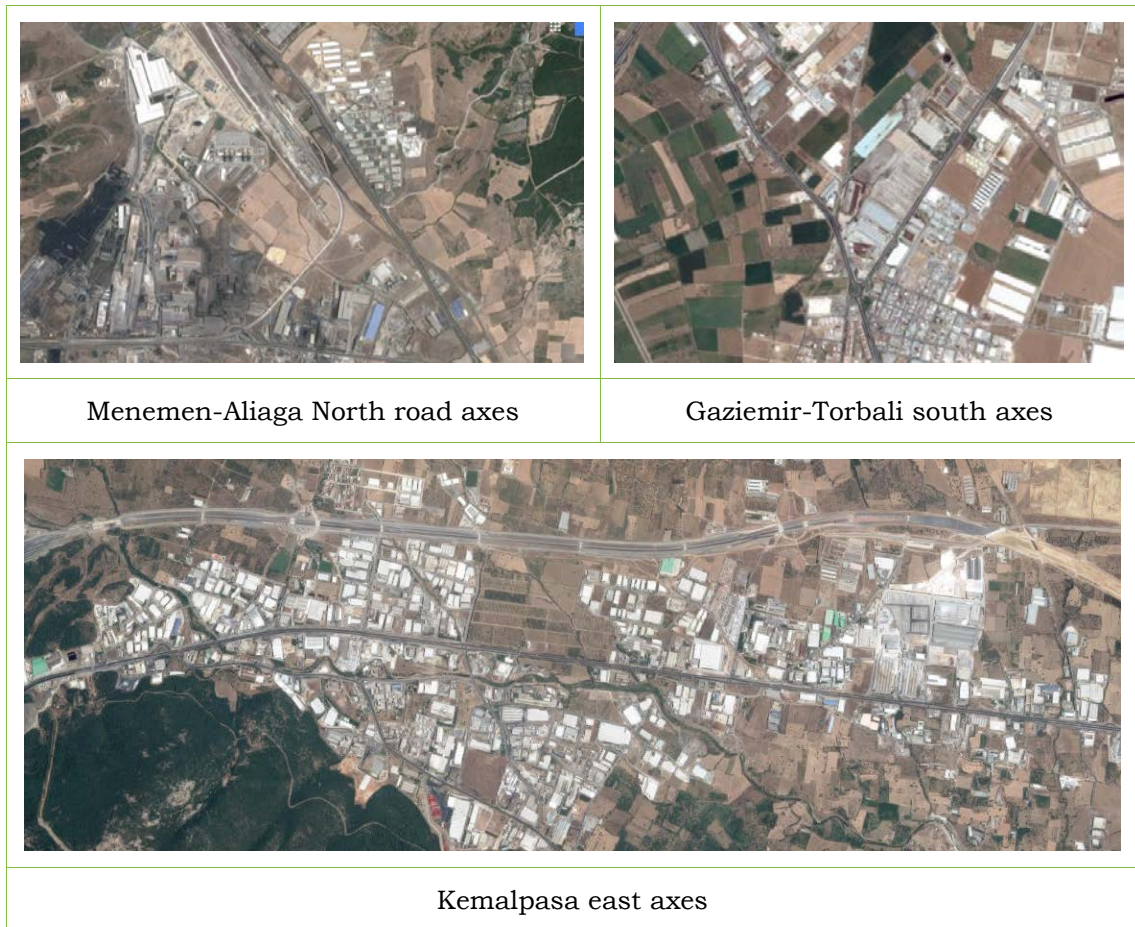
Aliaga is the second largest district, and it has been expanded more than 5 times in its built-up areas during last 40 years. Economic activities in the district are the most important reason behind its growth. The economy of Aliaga, which was based on agriculture until early 60's, has gained an industrial character after 1970's as the town was declared as "heavy industrial zone" according to the state development plans in 1961. (Aliaga Chamber of Commerce, 2017).

Torbali, as the third largest district of Izmir, was a small village during 1970s with only 150 hectares of built-up areas; however, it has reached 2640 hectares today by growing 18 times in the last 40 years. There are several reasons behind this rapid growth in Torbali, which are being close to the core city, and located on the main transportation axis (Izmir-Aydin Motorway), and having agriculturally productive lands (reason of the development of food industry). It should be noted that, Torbali is located in another important transportation axis, which has been proposed as "southern urban development axis" in the city plans since 1973.

Figure 5.17 shows that the most dramatic expansion occurred in Kemalpaşa District, it has expanded 88 times in its built-up areas during last 40 years. Until 1970s, Kemalpaşa was a very small village, and the main economic sector was agriculture. Due to its location, at a 29 km distance to the core city, and close the Izmir- Ankara highway, Kemalpaşa has become an attractive place in terms of industrial investors and housing developments. Today it is the seventh largest noncore district of Izmir (Figure 5.16).

Figure 5.18 gives several views of partial strip industrial developments from these industrial districts located at the main transportation axes of Izmir.

Figure 5.18: Strip development of industry in the main axis of Izmir



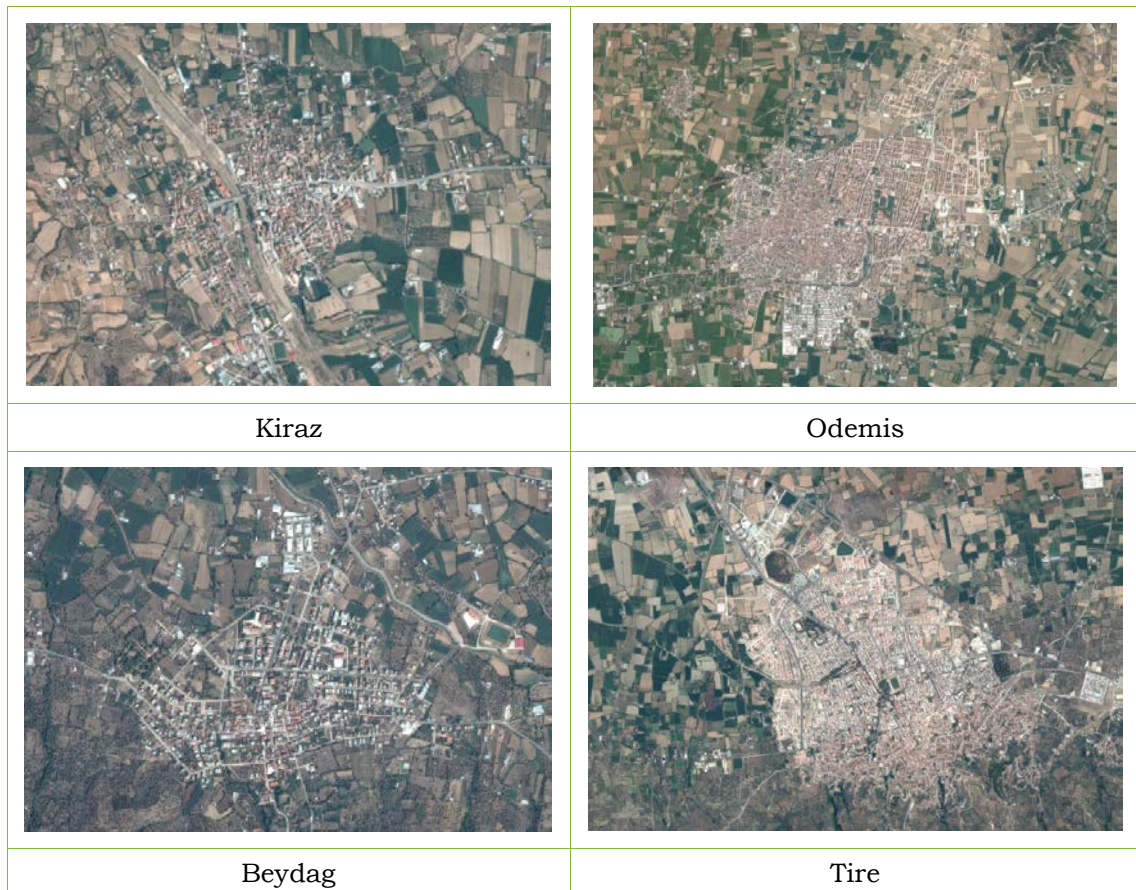
Source: Google Earth, 2017.

Finally, the last six districts in the Figure 5.16, Kinik, Selçuk, Bayındır, Karaburun, Kiraz, and Beydağ, are the smallest non-core districts of Izmir in terms of their built-up areas. Although these settlements are ranked as “smallest” according to their built-up areas, more or less, they have expanded spatially during last 40 years as well (Figure 5.17). These districts are located at the very edge of the Izmir province, which may be stated that out of the influence area of the core city.

Furthermore, their economies have been still depending mostly on the agriculture and stock farming. For instance, urban core of Kiraz is surrounded by fruitful agricultural lands and its inhabitants are working in agriculture stock farming sector. Beydağ is located on the K. Menderes River Basin on the southern east edge of Izmir Province. This is district

also surrounded by large agricultural lands and the main economic activities are agriculture and stock farming like Kiraz District. That is why agricultural land is preserved by the inhabitants of this district. Figure 5.19 gives several views from these rural-like smallest districts of Izmir, which are surrounded by agricultural lands.

Figure 5.19: Settlement patterns in the rural districts of Izmir



Source: Google Earth, 2017.

5.4. LAND USE INTENSITY ANALYSIS

In that section, two aspects of land use intensity was examined by using built-up areas and population data together. At the first step, change in built-up areas per inhabitant for each districts was analyzed for each time period. This analysis provide useful information about which district is expanding in its built-up areas more than its population. If the area (m^2) per inhabitant increases by years it means that the settlement is

expanding spatially more than needed. If the value decreases by years it means that the settlement is not expanding, instead it is getting dense in population within the built/up areas.

As the second step, we will calculate the average annual land take per inhabitant for each district. Lower degree of average annual land take means the land available for built-up areas has already been taken in the past, and there are lower alternation from non-built-up areas to built-up areas. This analysis gives a scale of districts from low to high degree of land take annually.

5.4.1. Change in built-up areas per inhabitant

Change in built-up areas per inhabitant was measured by dividing population into built-up area separately for each district. These calculations was repeated for each time period in order to see how it changes in time. The results of this calculation was given in the Table 5.3, and the latest (2014) values were mapped as in the Figure 5.20 and Figure 5.21 in order to see how the situation is spatially distributed.

It is quite obvious that (Figure 5.20 and Figure 5.21) quantity of built-up areas per inhabitant have been decreasing in core districts while it has been increasing in noncore districts contrarily. It means that land has been consuming more in the noncore districts than the core.

The value of built-up area per inhabitant in the core districts had decreased significantly/sharply after 1975, which also refers to the period of mass population migration that the core had received from rural regions in that time.

Although average value of the whole Izmir Metropolitan Area decreased in 1990s, it was observed that the value has started to increase again since 1990s. It means that, land consume is increasing Izmir Metropolitan Area as a whole.

Table 5.3: Built-up areas per inhabitant (m²) in 1975 -1990 – 2000 - 2014

DISTRICTS	Built-up areas per inhabitant (m ²)			
	1975	1990	2000	2014
Aliaga	NA	353	356	372
Bayindir	5	34	49	111
Bergama	66	106	131	186
Beydag	NA	12	21	32
Cesme	743	444	472	532
Dikili	180	312	396	400
Foca	206	262	301	481
Karaburun	168	236	221	469
Kemalpasa	5	89	157	181
Kinik	67	109	151	208
Kiraz	2	10	13	18
Menderes	NA	151	181	234
Menemen	129	218	212	221
Odemis	1	22	29	51
Seferihisar	122	199	210	257
Selcuk	41	120	130	155
Tire	5	37	58	90
Torbali	27	175	199	176
Urla	155	188	229	243
Noncore Districts (Total)	72	134	168	205
Metropolitan Core	224	98	89	77
Izmir (Total)	122	110	115	116

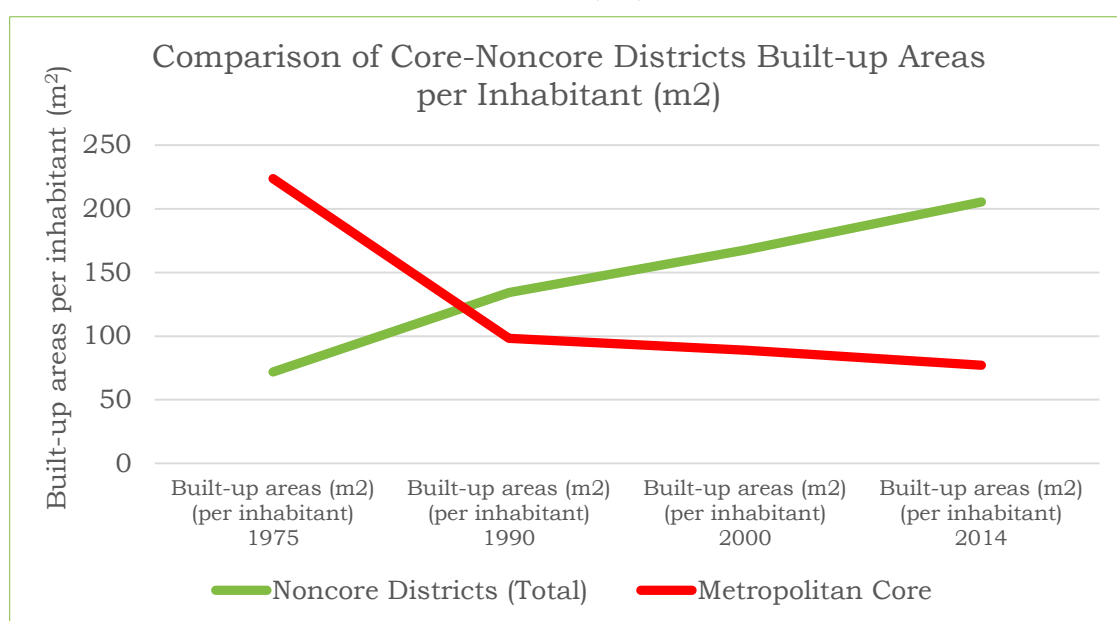
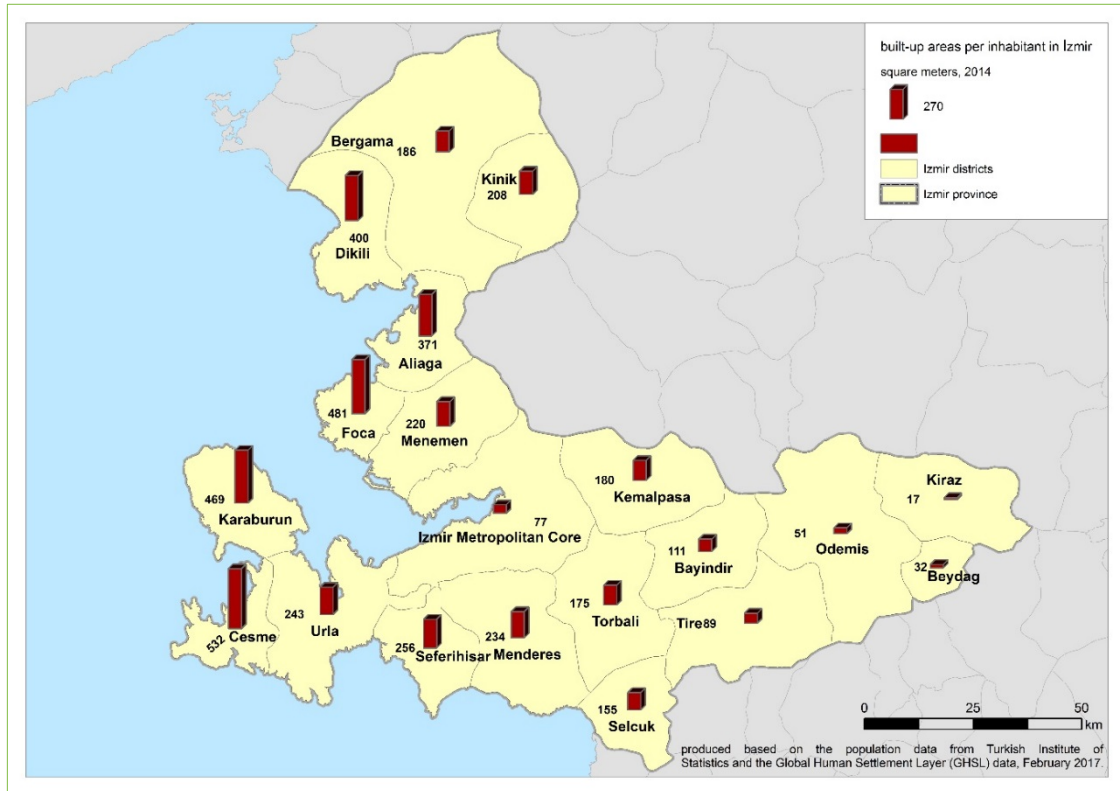
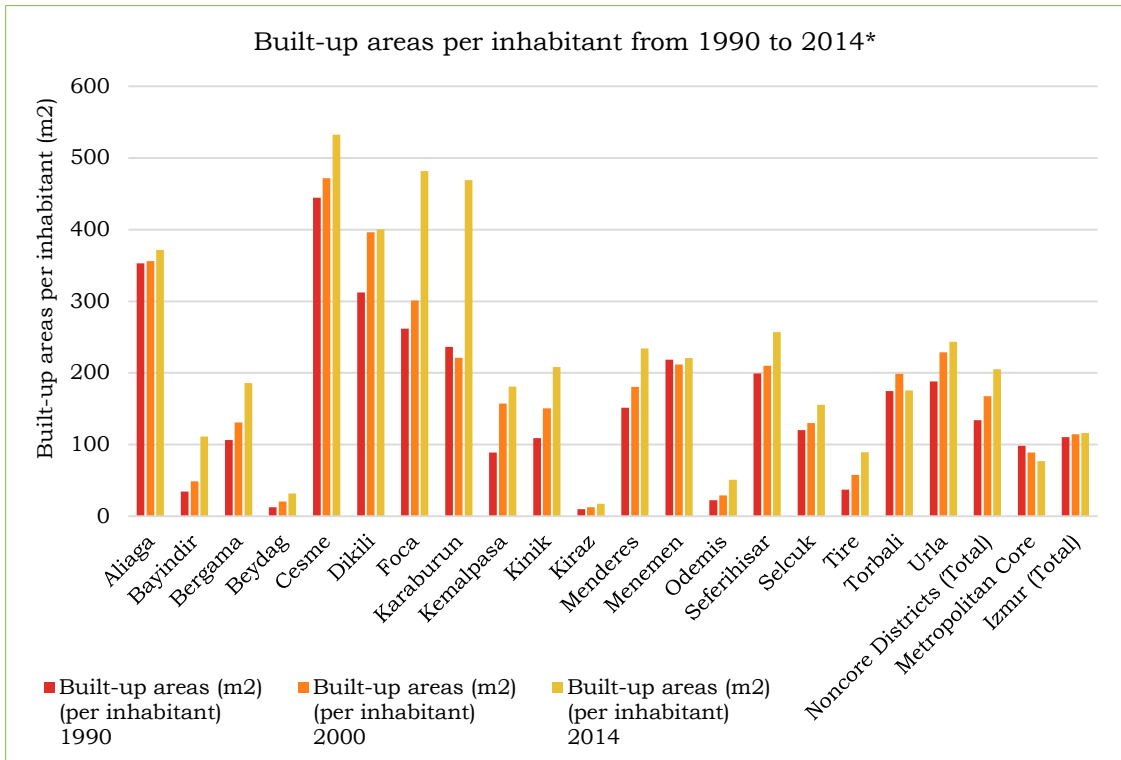
Figure 5.20: Built-up areas per inhabitant (m²) by years - core vs. noncore districts

Figure 5.21: Spatial distribution of built-up areas per inhabitant (m^2) in 2014

As indicated in Figure 5.22 that, coastal districts have been consuming land more than the other noncore districts. Starting from the north, Dikili, Aliaga, Foca, Karaburun, and Cesme have high value of built-up area per person in comparison to those which are located at the eastern edge of the Izmir province like Kiraz, Beydag, and Odemis.

Main reason behind the high levels of land consumption in coastal districts can be explained by the trend of second home developments, as well as other tourism related developments. As mentioned before, second home developments constitute one of the main development patterns of these districts, which are used only during the summer time, and left empty during the rest of the year. Figure 5.23 gives some pictures showing that fragmented low-density second home developments in Çeşme.

Figure 5.22: Built-up areas per inhabitant (m²) from 1990 to 2014



*Because of missing population values of Aliaga, Beydag, and Menderes in 1975, the analysis starts from 1990.

Figure 5.23: An overview of urban development in Cesme District



Source: left - <http://www.cesmecity.com/>, 2016; top right - Durkan, A. personal archive; bottom right - Cesme Municipality, Gulderen, 2007.

Figure 5.24 gives a rank of the districts for each period in terms of their built-up areas per inhabitant. The most and the least intensely land consuming districts could be observed easily from the Figure. As mentioned before, Cesme, as one of the most touristic district located at the Aegean coast, have been the most land consuming district per person in all periods.

On the other hand, there are several districts like Kiraz, Odemis, and Beydag, which have lower value than the core district. It does not mean that these districts are denser than the core. These lower values are highly correlated with their rural character where there have been suffering substantially lack of urban services and urban infrastructures as well.

5.4.2. Annual land taken for built-up areas per inhabitant

As mentioned before, “land take” refers to the change in a particular time period, quantity of land consumed by human activities, or simply quantity of land converted from natural land to artificial land. In general terms, land take analysis provides useful information on how efficient the land used for built-up areas. In this part of the analysis, land take was measured annually in order to observe how efficient the land is used in the districts of Izmir.

The Table 5.4 gives the values of land annually taken for built-up areas per inhabitant for each districts in different periods. First period covers the data from 1975 to 2014, second period covers the data from 1990 to 2014, and the last period gives the results of the measurement from 2000 to 2014. Measuring the values of built-up areas per inhabitant separately enables us to observe changes whether they have been decreasing or increasing in time.

Figure 5.24: Periodical comparisons and ranking of the districts based on built-up areas per inhabitant

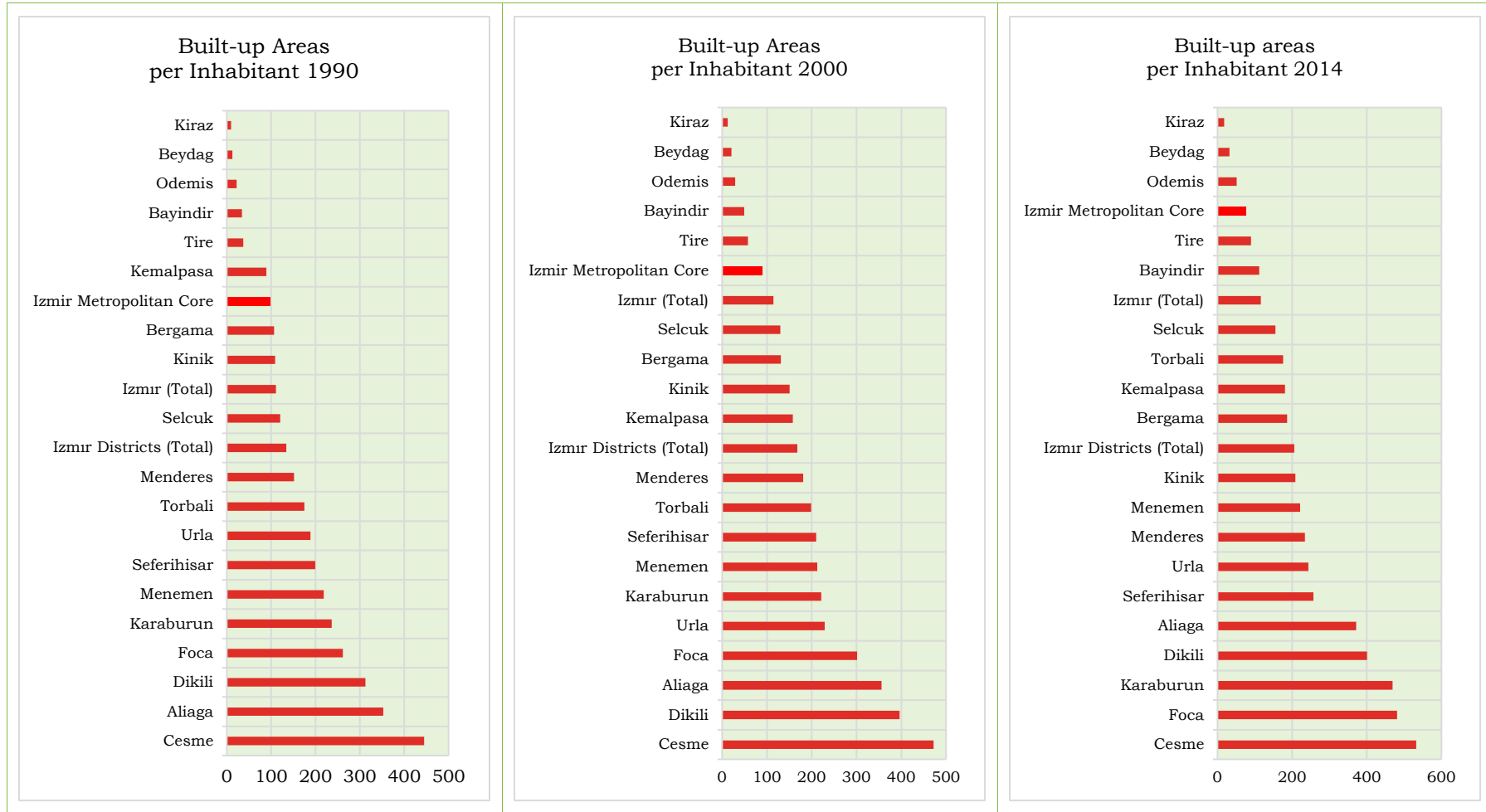


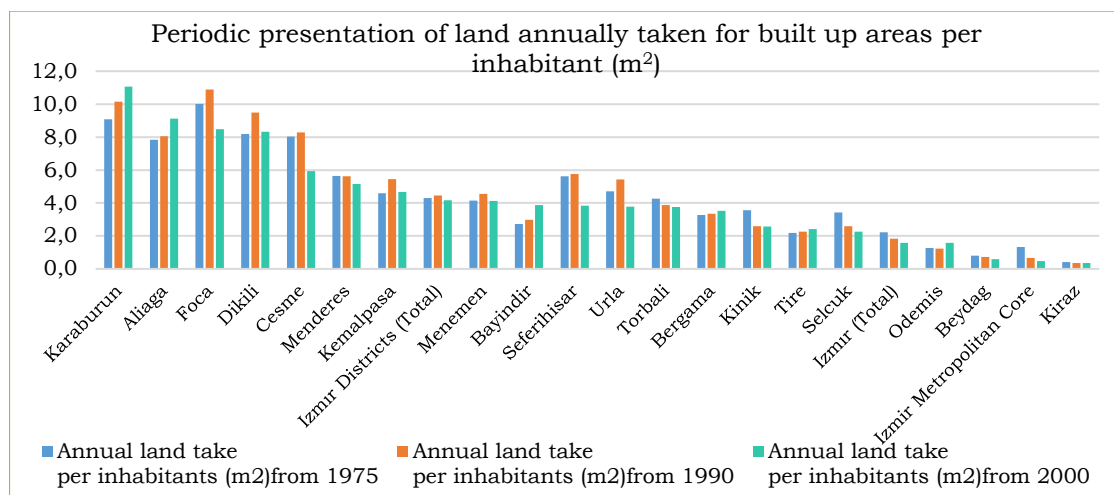
Table 5.4: Land annually taken for built-up areas per inhabitant

DISTRICTS	Land annually taken for built-up areas per inhabitant (m ²)		
	1975	1990	2000
Aliaga	7.8	8.1	9.1
Bayindir	2.7	3.0	3.9
Bergama	3.3	3.3	3.5
Beydag	0.8	0.7	0.6
Cesme	8.0	8.3	5.9
Dikili	8.2	9.5	8.3
Foca	10.0	10.9	8.5
Karaburun	9.1	10.1	11.1
Kemalpasa	4.6	5.4	4.7
Kinik	3.6	2.6	2.6
Kiraz	0.4	0.4	0.4
Menderes	5.6	5.6	5.2
Menemen	4.1	4.6	4.1
Odemis	1.3	1.2	1.6
Seferihisar	5.6	5.8	3.8
Selcuk	3.4	2.6	2.3
Tire	2.2	2.3	2.4
Torbali	4.3	3.9	3.7
Urla	4.7	5.4	3.8
Izmir Districts (Total)	4.3	4.5	4.2
Izmir Metropolitan Core	1.3	0.7	0.5
Izmir (Total)	2.2	1.8	1.6

The results of “land annually taken for built-up areas per inhabitant” is quite similar with the results of that built-up land per inhabitant. The highest values were observed again in the coastal districts, which are, Karaburun, Aliaga, Foca, Dikili, Cesme, and the lowest values were observed in the core and the distant district like Kiraz, Beydag, and Odemis (Figure 5.25).

Figure 5.26 shows the situation clearly by ranking the districts according to their values of land annually taken for built-up areas per inhabitant. Core Districts and several distant districts have been expanding less than the others have.

Figure 5.25: Periodic presentation of land annually taken for built up areas per inhabitant



5.5. PERIODIC ANALYSIS OF SPATIAL DEVELOPMENTS WITH LINK TO SOCIO-ECONOMIC POLICIES

The primary objective of this analysis is to explore the spatial patterns and developments of built-up areas Izmir case, particularly in search of evidence for urban sprawl. The analysis has been achieved by using two types of datasets, built-up areas and population data belong to the years 1975, 1990, 2000, and 2014. In this part, the results/outcomes of the analysis are discussed in conjunction with the urbanization policies, plans, socio-cultural and economic dynamics as well as the institutional interventions realized in Izmir metropolitan area.

It is worth to begin with the highlighting of the place/position of Izmir among other largest cities of Turkey and among several European cities, which are similar in their scale. Current population of Turkey is almost 80 million and 73 % percent of the population live in urban areas, while it was 32 % in 1960s (World Bank Statistics, 2015). Izmir is the third most populated city in Turkey after Istanbul and Ankara, and currently it has 4.225.000 inhabitants, which constitutes almost 5 % of the country's population (Turkish Statistical Institute). Table 5.5 shows the population and population densities of five largest cities of Turkey.

Figure 5.26: Periodical comparisons and ranking of the districts based on land annually taken for built-up areas per inhabitants

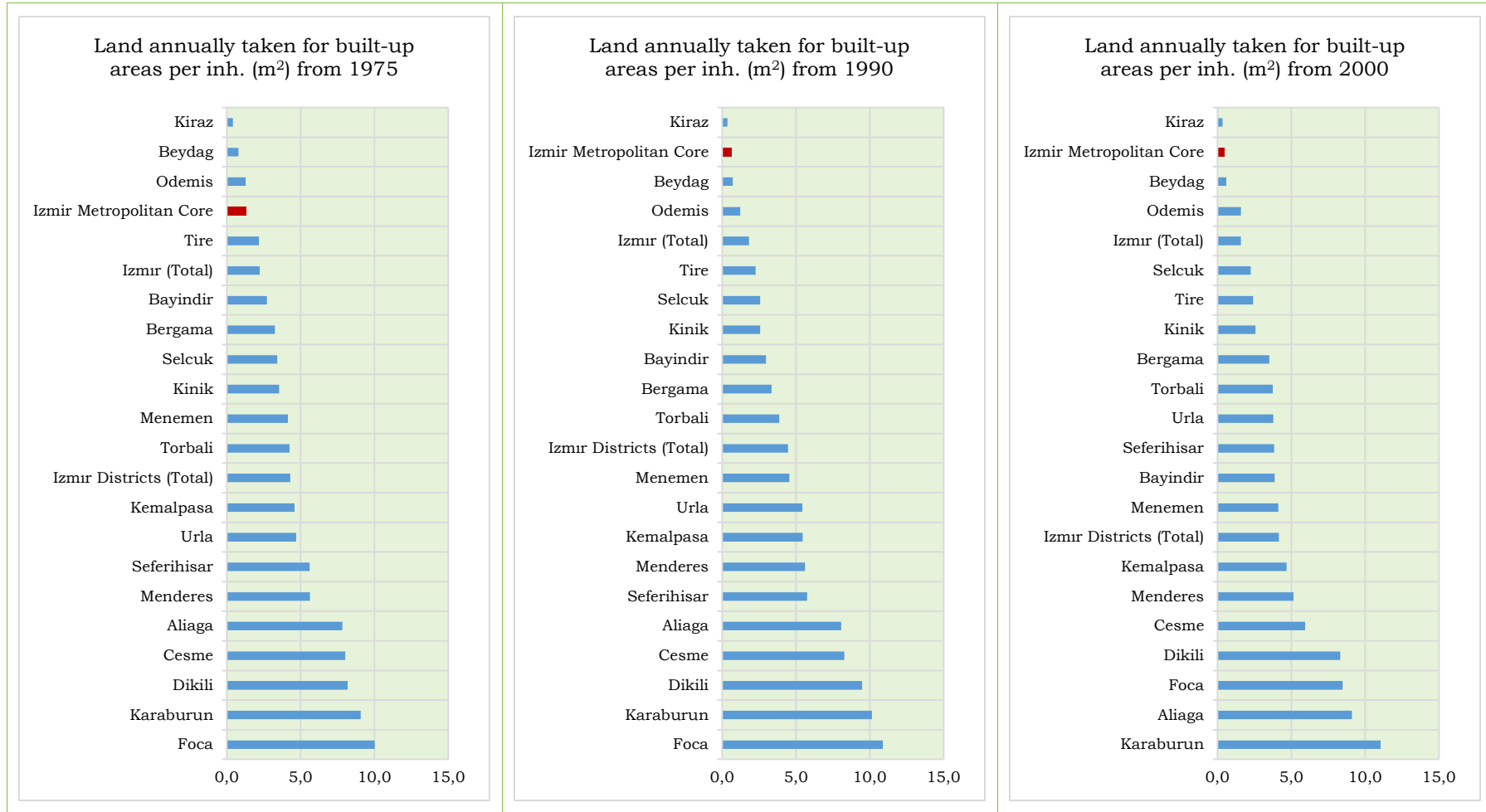


Table 5.5: Populations of the four largest metropolitan cities in Turkey (2014)

City	Population	Population density (km ²)
Istanbul	14.377.018	2706
Ankara	5.150.072	202
Izmir	4.223.545	342
Bursa	2.787.539	256
Kocaeli	1.722.795	476

Source: Turkish Statistical Institute Database (TSI), 2017.

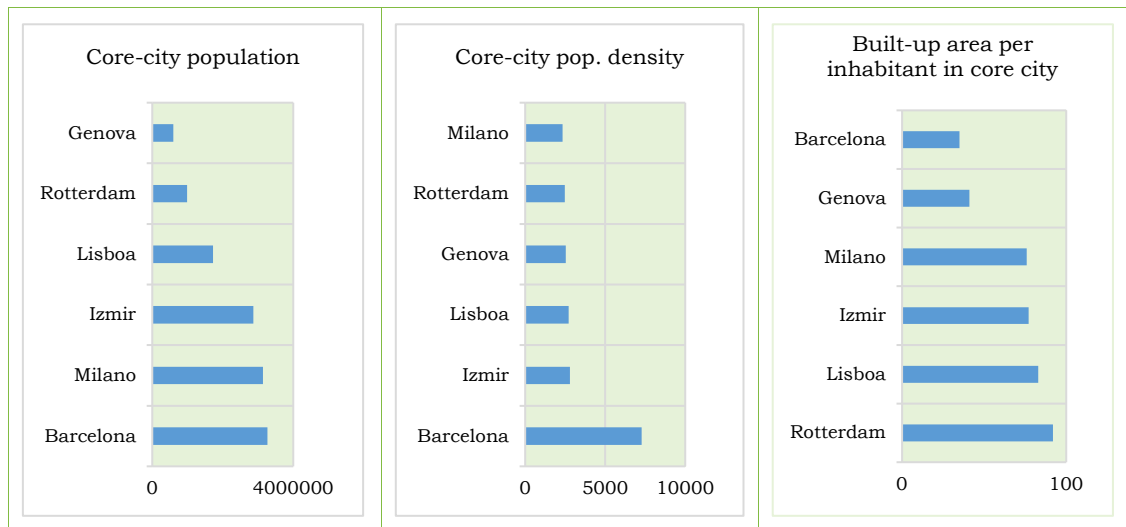
In comparison with the several European cities, which are at the similar scale relatively, izmir has similar population density in its core districts, except Barcelona. Barcelona, Milano, and Izmir have almost same population in their core, but the value of built-up area per inhabitant in Barcelona is half of those in Milano and Izmir. That means the core of Barcelona is denser than the other city cores. Table 5.6 gives several examples selected among European cities to make comparisons with Izmir. Figure 5.27 ranks these cities according to their populations, population densities in their core, and amounts of built-up area per inhabitants.

Table 5.6: Population and densities of similar cities from Europe

City	Core-city population	Core-city population density (km ²)	Built-up area per inhabitant in core city (m ²)
Barcelona	3269849	7273	35
Milano	3139394	2332	76
Izmir	2863556	2797	77
Lisbon	1727159	2707	83
Rotterdam	984082	2481	92
Genova	600231	2533	41

Source: European Commission, The Urban Data Platform, (<http://urban.jrc.ec.europa.eu>), 2017.

Figure 5.27: Comparing Izmir with similar cities from Europe



Source: European Commission, The Urban Data Platform, (<http://urban.jrc.ec.europa.eu>), 2017.

Regarding to the analysis of the thesis, it would be more efficient to evaluate time periods separately in order to identify what is the determinant behind the changes occurred in spatial structure of Izmir Metropolitan area. Because, every period has its own social, economic, and political dynamics, spatial structures are transformed or reconfigured according to that periodically changing factors.

5.5.1. The 1975-1990 Period

After the second world war, import –substituted industrialization regime had become dominant in Turkey. During the period between 1960 and 1980, import-substituted regime of capital accumulation had shaped the local economy and it became the main dynamic behind the processes of industrial development, increasing migration and rapid urbanization. Until 1980s, industrialization were depending on investment goods and production technology imported from developed countries, and industrial products were manufactured and finished in Turkish factories (Penbecioglu, 2012). Under these circumstances, Izmir had started to transform as one of the growing city of Turkey with state-led industrial investments. On the north axis of Izmir, in Aliaga District, two large scale heavy industry were established; Aliaga Oil Refinery (in 1972), and Izmir

Iron and Steel Industry Company (in 1975). Just after the establishment of these industrial areas, Aliaga port was constructed in 1977. Consequently, Aliaga axis became an attractive and growing zone on the north of Izmir Metropolitan area.

During that period, Izmir had witnessed a mass migration from rural to the metropolitan area, with an excessive job demand, more than the employment supply of the sector in that period. This situation result in rising informal sector as well as informal settlements within the urban area. During that period, İzmir Metropolitan Planning Bureau had prepared first Rational Comprehensive Plan of Izmir (1973) which was providing long-term, strategic and holistic solutions for the development of İzmir. It was also proposing a linear form along north/south axis and it was restricting the developments towards agricultural plains on the eastern axis of the city.

However, this plan was required to prepare sub-scale plans (implementation plans) and the delay of the preparation of these sub-scale plans led to impromptu use of the previous plan (Penbecioglu, 2012). That means, planning practices was realized with partial plans, and plan revisions, and the urban development pattern had started to depart from the objectives of that comprehensive plan. In consideration of these circumstances as mentioned above, the results of the empirical analysis¹⁹ for the 1975-1990 period are given as follows:

- The biggest jump in population change had occurred in the core area within the period of 1975-1990, that the population increased almost four times (Figure 5.28), and the population density

¹⁹ 1975-year population data is not available for Aliaga, Menderes and Beydag, so population-based measurements could not be computed for these districts in 1975

increased from 319 per/km² to 1741 per/km² (Figure 5.29). This radical change can be explained with the population movement from rural to urban areas and acceleration squatter settlement developments of especially on the public properties, agricultural or forestlands, which were close to the central business district.

- As mentioned before, this period İzmir experienced a mass migration from rural settlements and eastern regions similar with the other big cities such as İstanbul and Ankara. Newcomers were settled to the inner periphery areas of that period in order to be close to their workplaces that located in the city center. Squatter settlements of those newcomers in the inner peripheries of that period were expanded rapidly in addition to its own urbanization processes. The
- Figure 5.30 presents the change in built-up areas at the end of the period.
- During that period, built-up areas in the entire metropolitan city had increased from 12 thousand hectares to 30 thousand hectares, almost 2.5 times. The total increase is measured as 18 thousand hectares in the city, and 10 thousand hectares of this increase had occurred in the core, while the rest of it, 8 thousand hectares increase had occurred in non-core districts in total.
- Another important finding belong to that period was high population growth (higher than 50%) especially in coastal districts such as Çeşme, Seferihisar, and Urla on the west axis; and Foça on the north axis. That was because of the new trend of having a secondary house on coastal districts of middle-high level income groups living especially in the center of İzmir. As seen in the Figure 5.31, the values of built-up areas per inhabitant are at higher levels in these coastal districts, that means, they were consuming the land less efficiently in that time period.

Figure 5.28: Change in population between 1975 and 1990

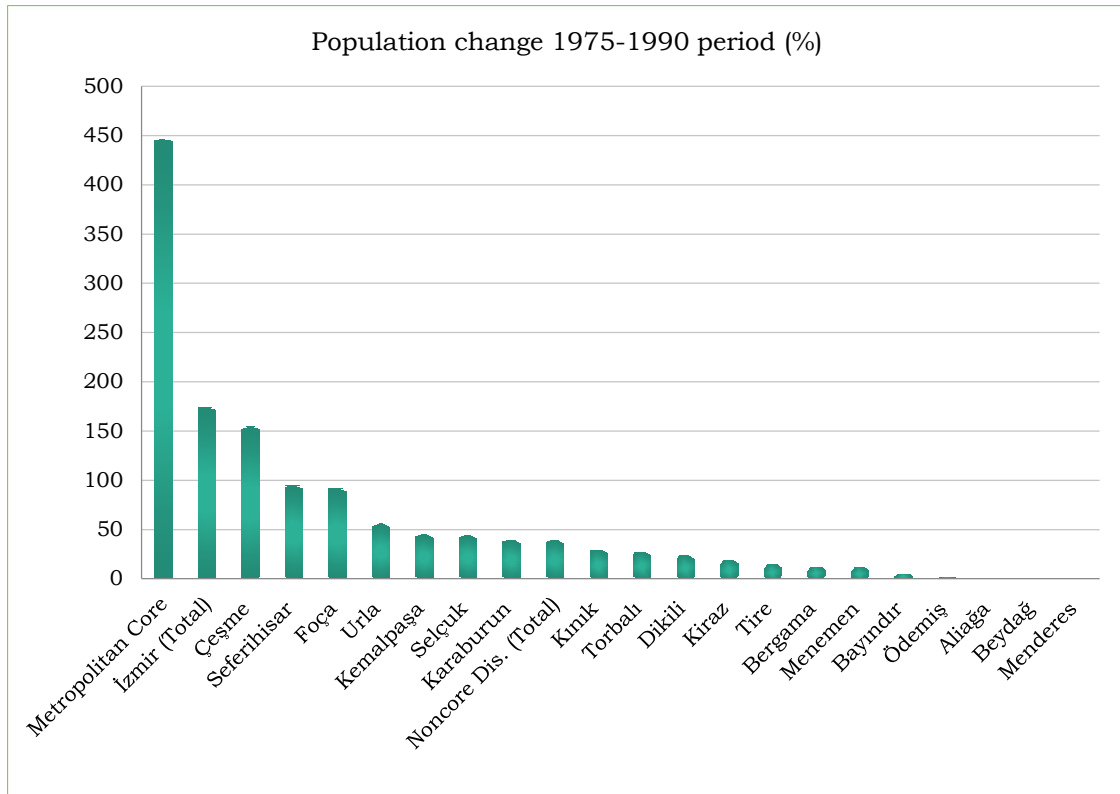


Figure 5.29: Change in population density between 1975 and 1990

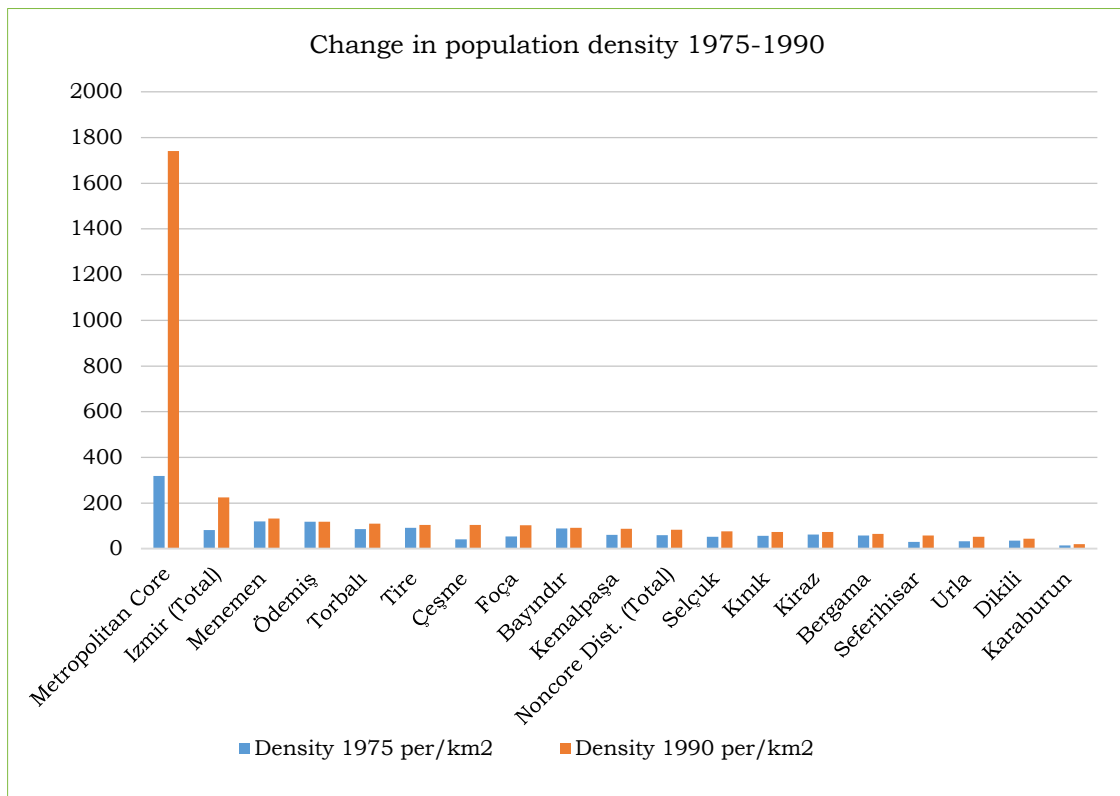


Figure 5.30: Change in total built-up areas between 1975 and 1990

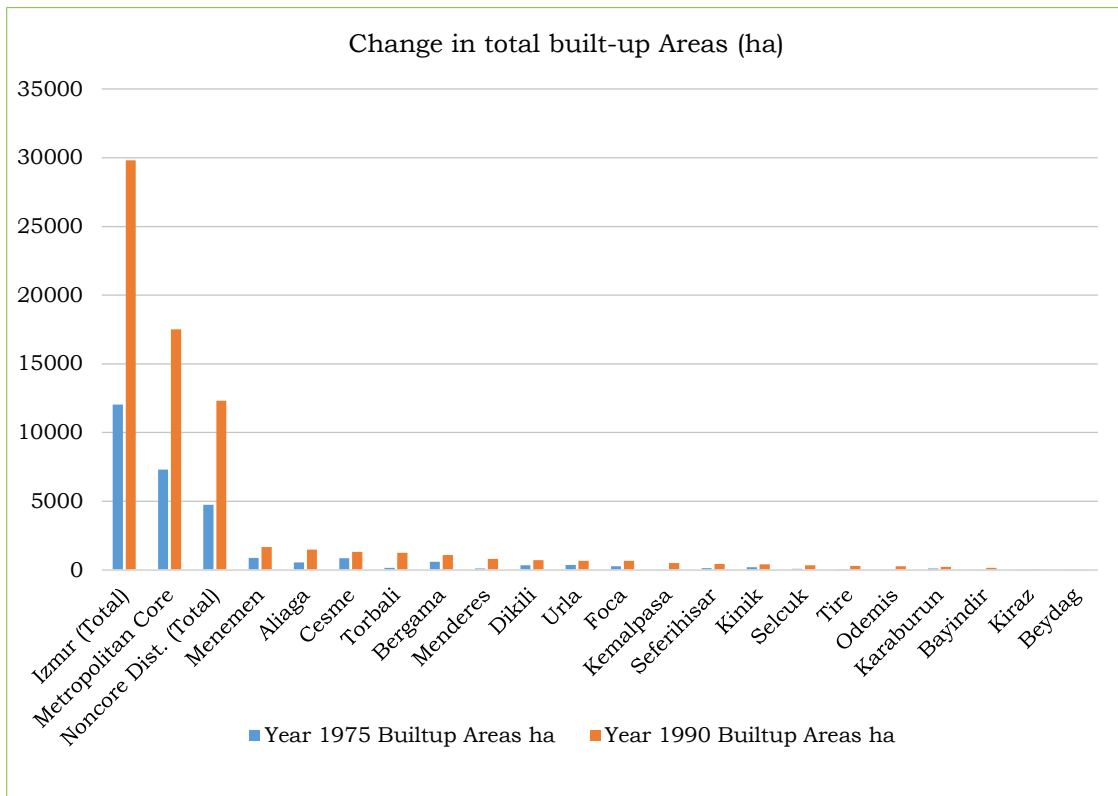
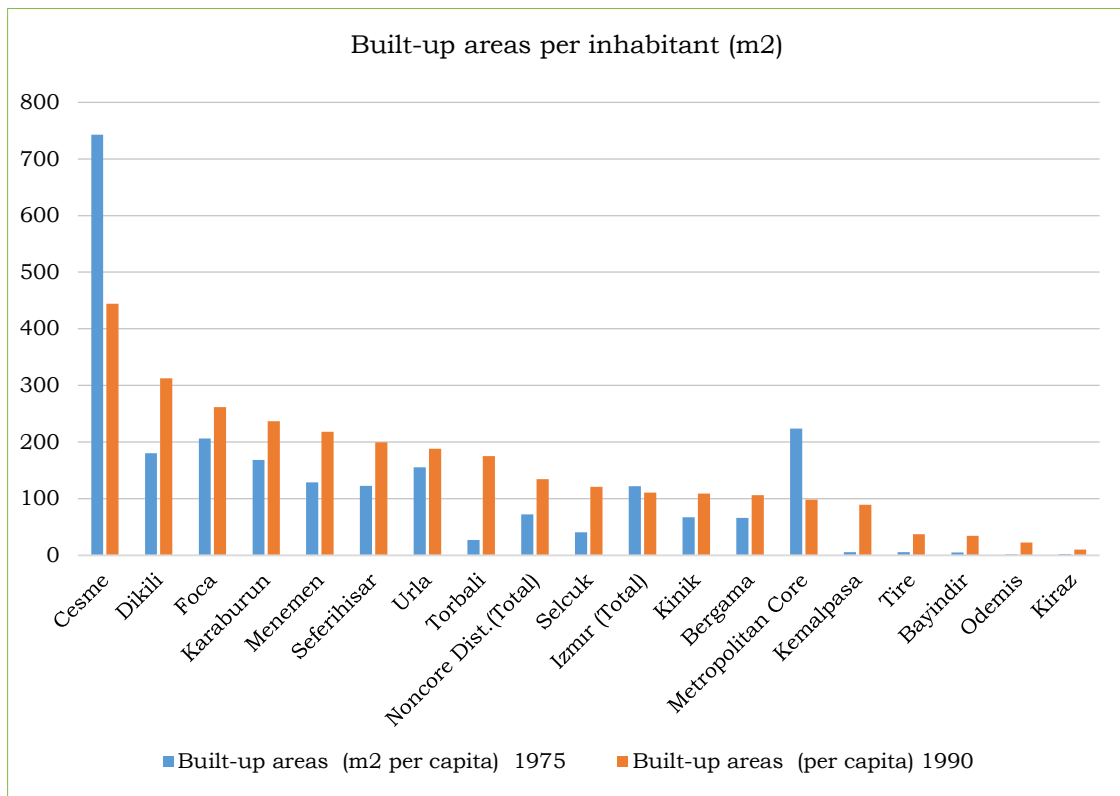


Figure 5.31: Change in built-up areas per inhabitant between 1975-1990



5.5.2. The 1990-2000 Period

After 1980s, neo-liberalization had started to dominate political and economic structure of the country. This dominant economy had continued to reconfigure urban areas and the main discourse was “attraction of investment” and the “enhancement of competitiveness” (Penbecioglu, 2012), which has still been playing a key role in shaping urban areas. The main developments in this period can be explained as follows:

- In 1987, Izmir Adnan Menderes international Airport was built in the southern axes of the city, within the borders of Gaziemir District. 1990s is the period that the city had extended on its periphery almost towards every directions (Guner, 2006) and mass housing projects had implemented particularly on the northern and eastern periphery of the core city. Aegean Free Zone had constructed as a large-scale industrial (trade) project during that period (Figure 5.32). Cesme Highway was opened in 1994 that have increased the accessibility of western axis of Izmir. In 1992, a new state university (Iztech) was founded in Urla Districts on the west.
- After construction of Cesme Highway, one of the major transportation project of Izmir in that period, the settlements located on the west (like Urla, Seferihisar, and Karaburun), as well as Cesme, had started to become attractive in terms of new urban developments. Cesme has become one of the most important tourism destinations in Turkey attracting both national and international tourists. In addition to touristic accommodation developments, Cesme have been the subject of secondary house developments especially after opening the Cesme Highway.
- Although its population did not changed significantly (Figure 5.33) 26 % during that period, Çeşme was still the first district in the rank in terms of built-up areas per inhabitant (Figure 5.36). The value of built-up area per inhabitant in Çeşme is the highest one

among the other districts, which means the land is not used efficiently, in other words, land is consumed more than the actual needs. According to Çeşme Municipality database (Gulderen, 2007), the number of secondary houses was around 1.950 in 1970s, it increased almost four times and reached to almost 10.000 in 1990s.

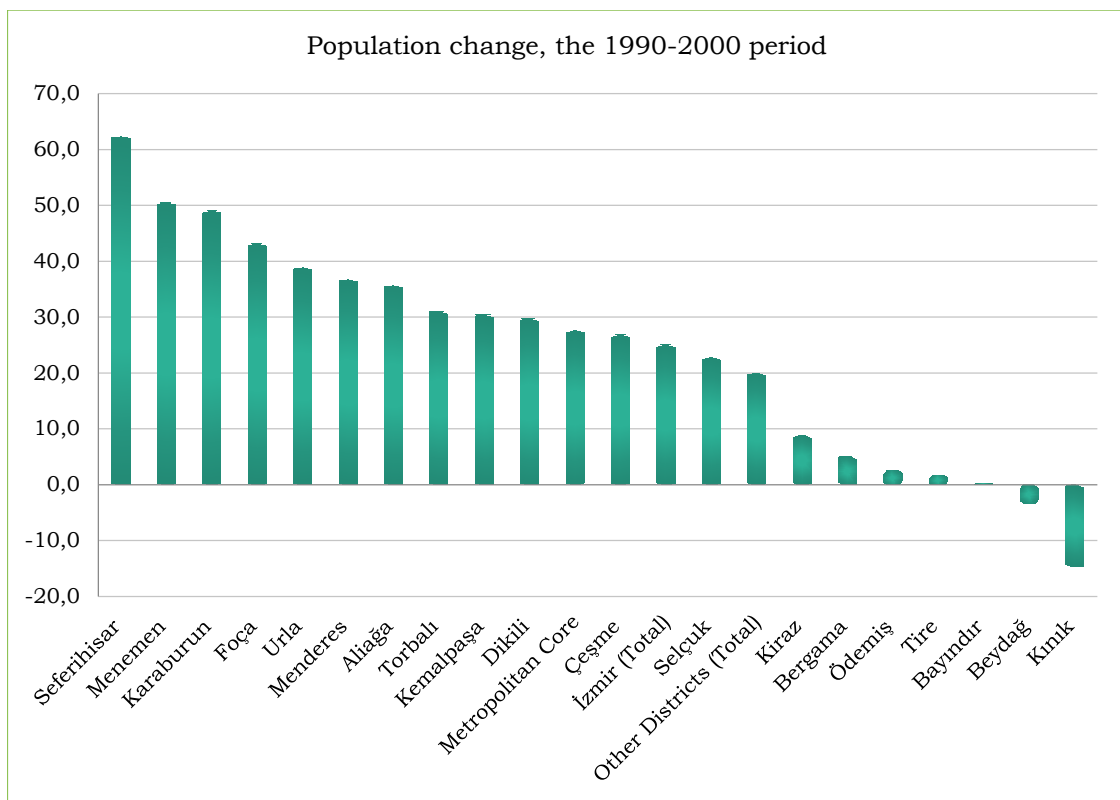
Figure 5.32: New developments during 1990s



- During that period, growth rate of the population in metropolitan core was 27,7 % and it ranked as 11th on the graph (Figure 5.33). That means, there were 10 districts raised on the rank in terms of their growth rates. Coastal districts such as Seferihisar, Karaburun, Foça, Urla, continued to grow because of their tourism potentials.
- On the other hand, population of Menemen, Menderes, Aliğa, Torbalı and Kemalpaşa Districts increased due to the large-scale industrial and housing investments. As mentioned in the previous chapter, the first comprehensive metropolitan plan of İzmir,

approved in 1973, was proposing a linear development in the north south axis. Particularly; a heavy industrial development on the North - Aliğa axis, and agriculture-based industrial development on the south-Torbali axis. This period indicates the results of the suburbanization of economic activities particularly industry sector which had catalyzed the mass housing developments and commercial sector together.

Figure 5.33: Change in population between 1990-2000



On the other hand, there are several districts, which have lost their population such as Beydağ and Kınık; and relatively stable ones such as Bergama, Ödemiş, Tire, Bayındır Districts. These Districts are far from the core, and they had retained their rural character.

Figure 5.34: Change in population density between 1990 and 2000

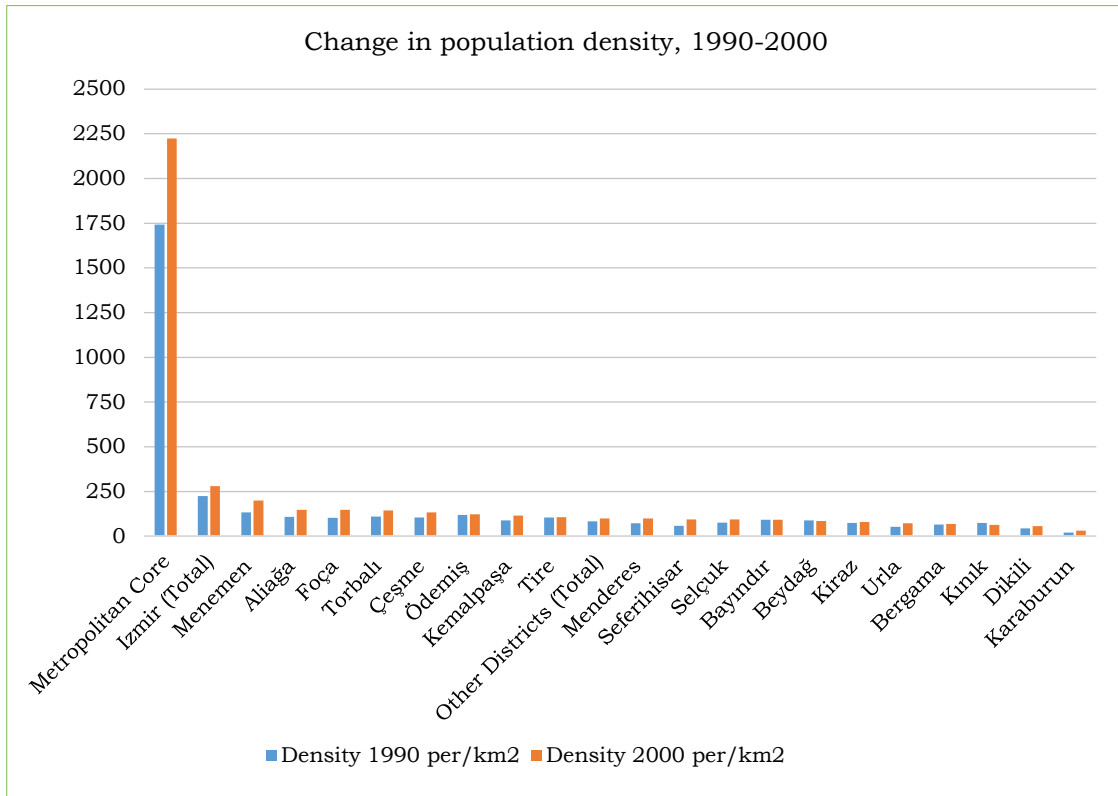


Figure 5.35: Change in total built-up areas between 1990 and 2000

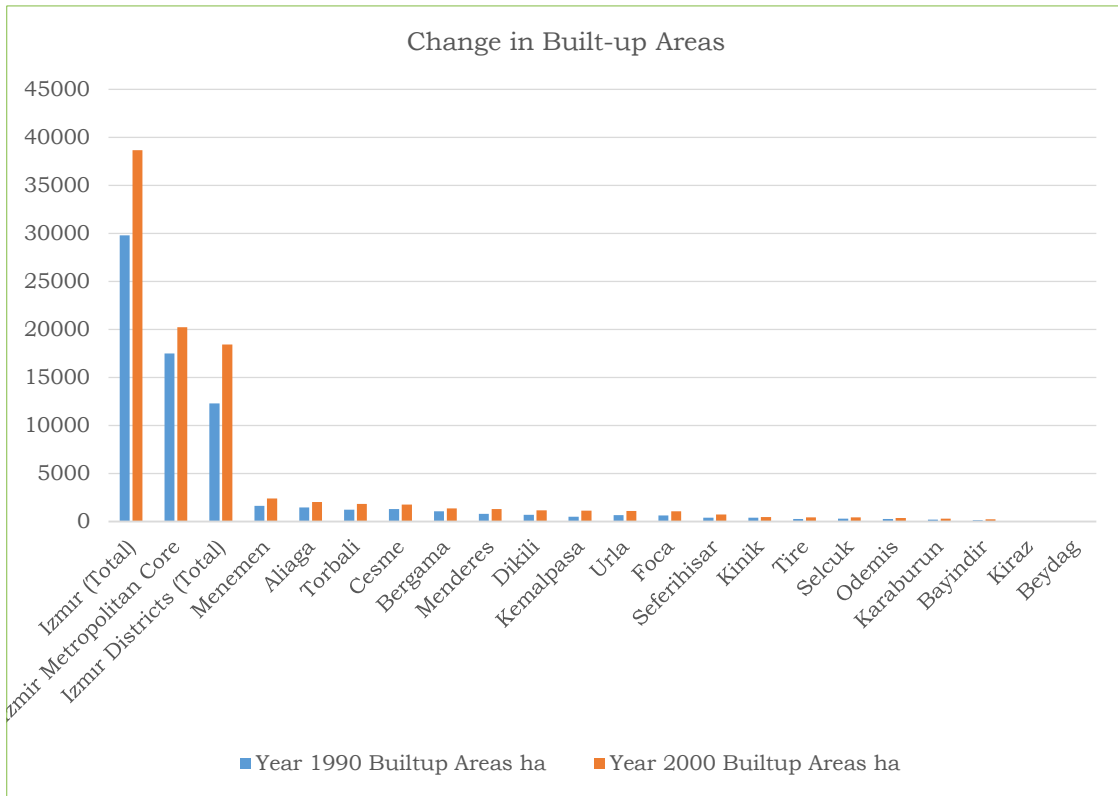
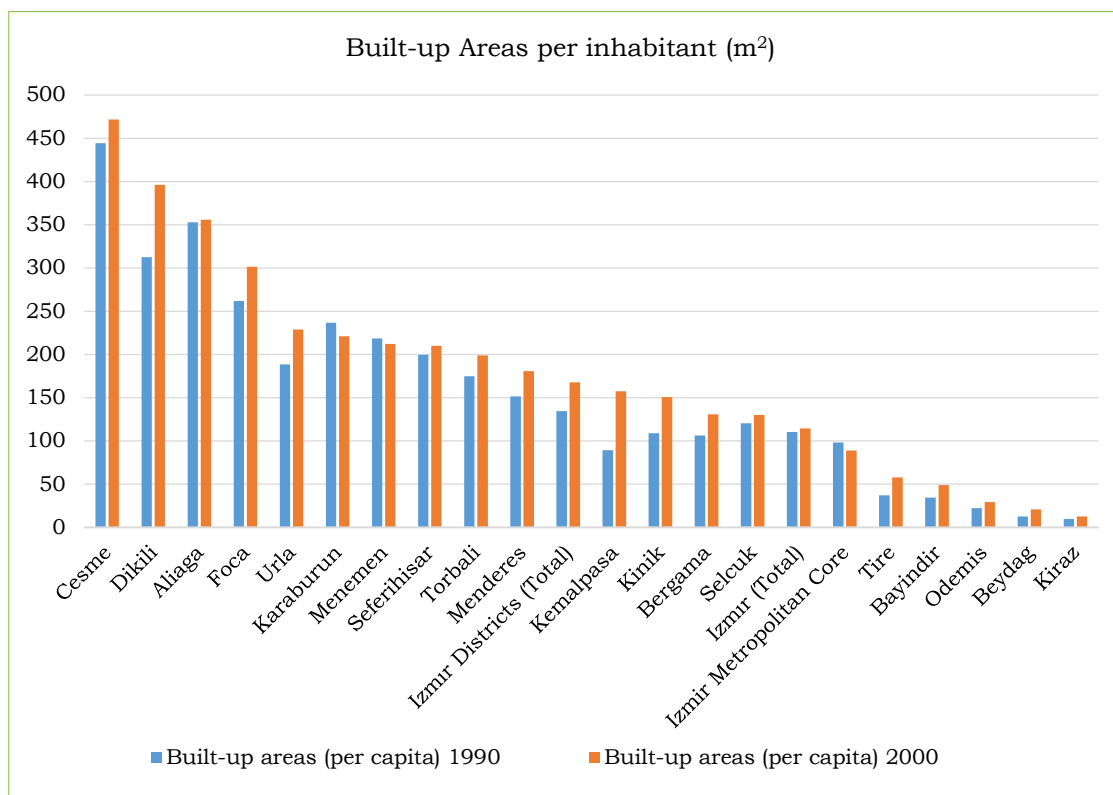


Figure 5.36: Change in built-up areas per inhabitant between 1990-2000



5.5.3. The 2000-2014 Period

This period, since 2000, is characterized with the increasing role of urban entrepreneurialism, privatization of public land and services as the roll-out-phase of neo-liberalization. In this continuing process, urban areas have been witnessing large-scale mega projects, urban regenerations and profit-oriented new developments (Penbecioglu, 2012).

Greater Municipality of Izmir prepared and approved İzmir Urban Region Development Plan in 2007. This plan also proposes (supporting the previous plan proposals) development axis as Menemen-Menderes north-south axis, and Bornova-Narlidere east-west axis. According to that plan, agricultural basins and protected natural areas that surrounding the city limit the urban development by constituting a greenbelt (IKNIP, 2007). However, as Penbecioglu (2012, p:176) states “the co-existence of different upper-scale plans for İzmir, their conflicting plan decisions and the lack of coordination, continuity and unity amongst different upper-

scale plans make even difficult to implement strategic spatial development decisions of İzmir Urban Region Development Plan”.

After a brief explanation of the political and economic circumstances as mentioned briefly above, the results of the empirical analysis became clearer in Izmir case as summarized as follows:

- Population growth analysis (Figure 5.37) for the last period shows that several districts are still continuing to grow in higher degree than the metropolitan core; which are Torbalı and Menderes on the southern axis, Kemalpaşa on the east axis, Menemen, Aliğa and Dikili on the north axis. These axes are the industry-based development axis as mentioned earlier.
- Today Izmir has 13 Organized Industrial Zones (OIZ) which 5 of them was established during 1990s, and 6 new organized industry zones have been established after the year 2000. There are also two OIZ that are still in progress. Three of these 6 new industrial zones are located within the boundary of Torbali and Menderes Districts on the south, one is located on the eastern periphery of metropolitan core (Buca), one is located on eastern corridor (in Kemalpaşa), and the last one is established on the northern axis in Menemen.
- This period could be named as the implementation period of early industrial development decision of the national government. They all have strategic locations in terms of being close to transportation facilities such as airport, harbor, and main roads. However, these settlements have been developing on the important agricultural basins that constituting a risk of loss of agricultural land as well as pollution generated by industrial activities. Figure 5.37, Figure 5.38, Figure 5.39 and Figure 5.40, give the results of the periodic analysis of the population and built-up areas between 2000 and 2014.

Figure 5.37: Change in population between 2000 and 2014

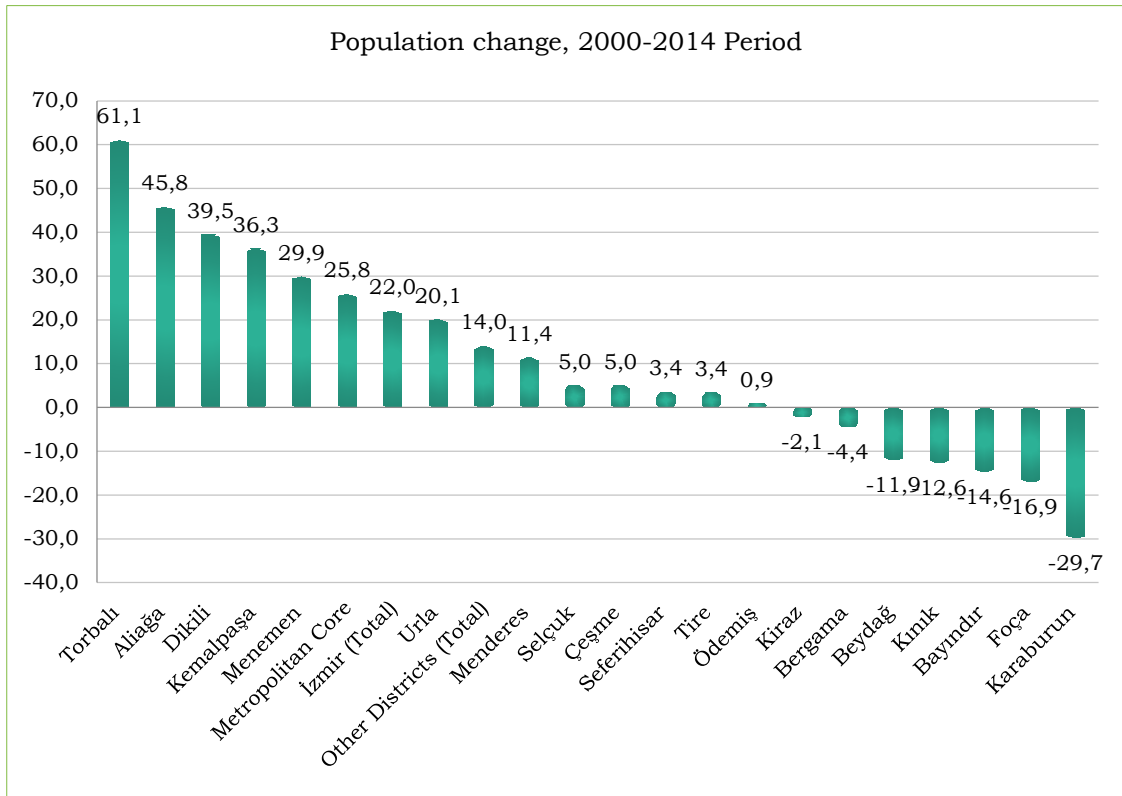


Figure 5.38: Change in population density between 2000 and 2014

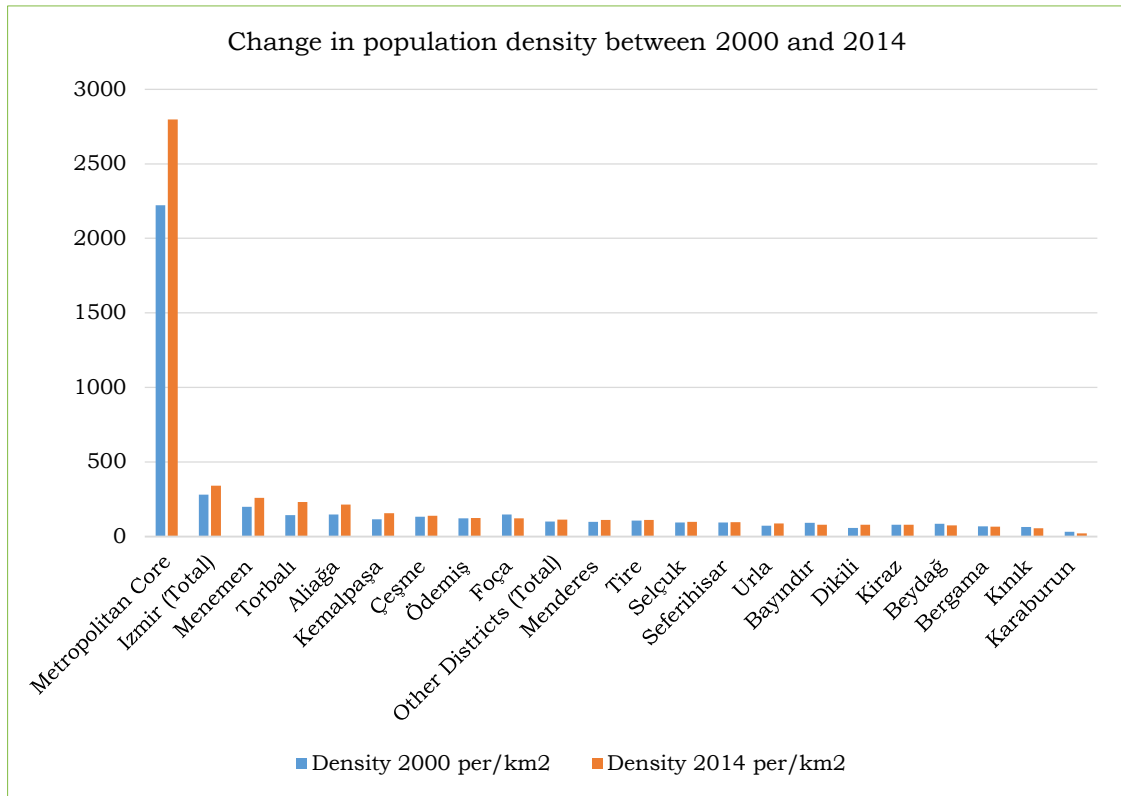


Figure 5.39: Change in built-up Area between 2000 and 2014

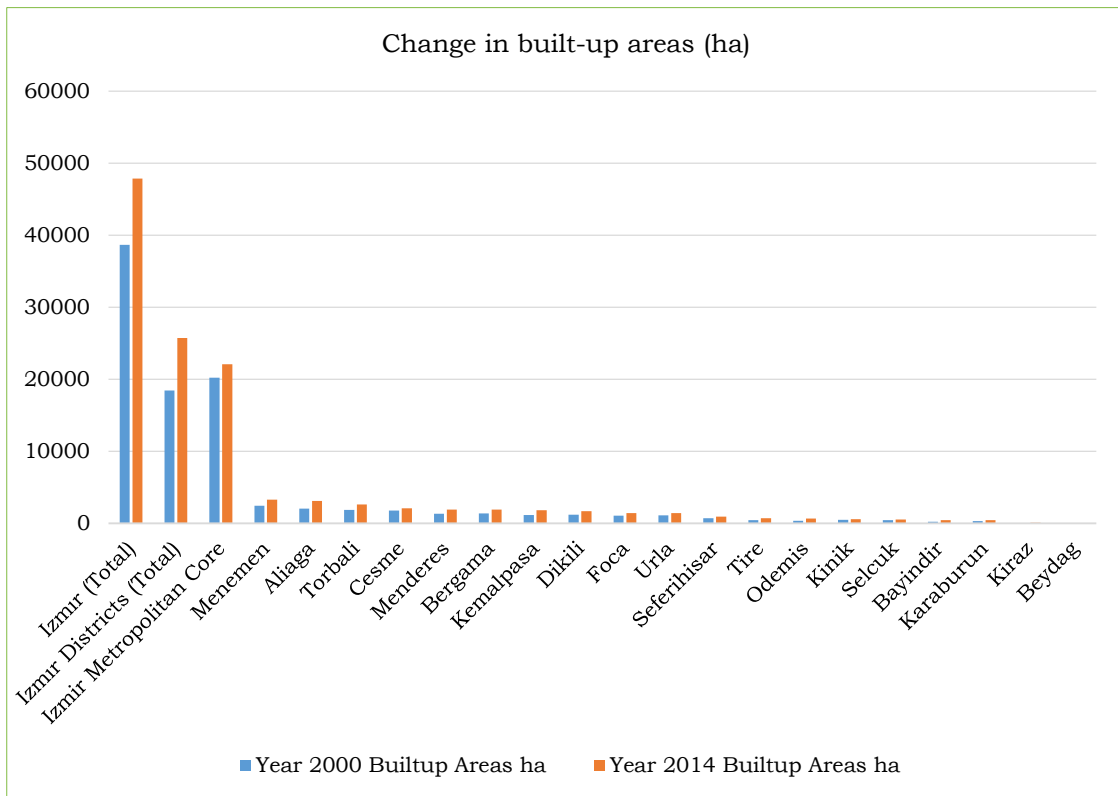
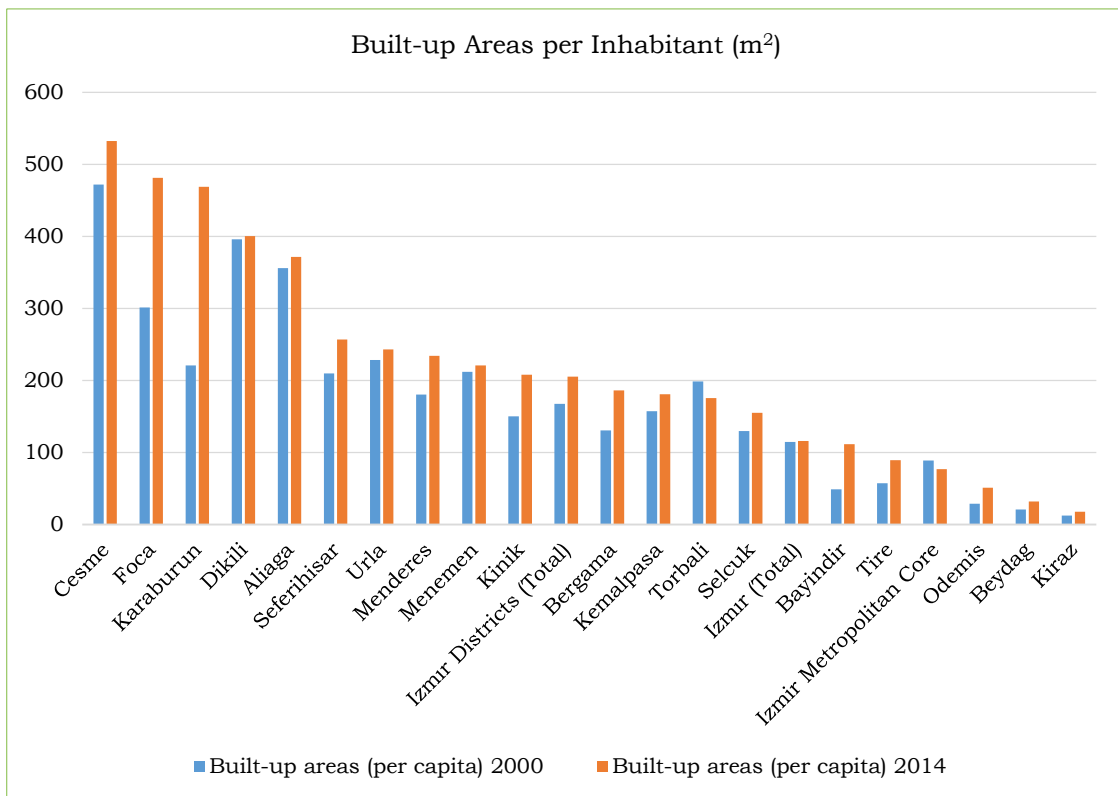


Figure 5.40: Change in land use intensity between 2000 and 2014



- Since 2007, Turkish Statistical Institute started to take a census by using address based population registration system. Due to this methodological change of population census in 2007, the graph in Figure 5.37 indicates dramatic decreases in several districts, which are touristic destinations. Seasonal changes of the population in these districts as Foça and Karaburun lead to this dramatic decrease on census data.
- Similarly, Çeşme and Seferihisar Districts seem as they slowdown in population growth rates. On the other hand, there is a group of districts which are Beydağ, Kınık, Bayındır, and Bergama, where their population have been decreasing compared to the previous period.

5.6. CONCLUDING REMARKS FOR THE EMPRICAL ANALYSIS

In this chapter, Izmir Metropolitan City was handled as a case study and analyzed in search of sprawl indications in its built-up areas. Population and built-up data were analyzed for the years 1975, 1990, 2000, and 2014. As the first stage of the analysis, change, density, and the distribution of the population were investigated among the districts within the specified time period.

As the second stage of the analysis, change and spatial distribution of built-up areas were investigated. As important indicators of urban sprawl, built-up areas per inhabitant, and annual land taken for the built-up areas per inhabitant were measured and investigated for every district of Izmir. All these analysis were evaluated and discussed regarding to the time periods and in conjunction with the urbanization policies, plans, socio-cultural and economic dynamics and the institutional interventions realized in Izmir metropolitan area. Main findings of the analysis can be given as follows:

- It is evident that, the core and the non-core districts of Izmir differentiate in their population change and population density dynamics as well as the structure of the built-up areas and the built-up per inhabitant.
- Metropolitan core of Izmir is dense both in population and in built-up areas. Density decreases by the distance to the city centre gradually, from core towards the edges of the province.
- Today, urban sprawl is not valid for the current pattern of the core city with its intense use of land. However, it is a development pattern in the surrounding and coastal non-core districts. Since the 2000s, several districts such as Cesme, Urla and Foca are experiencing urban sprawl in Izmir.
- The urban development patterns in non-core districts can also be distinguished as industry-based developments, coastal or tourism based developments and agriculture-based remote districts.
- It is also observed that large-scale investments such as highways, airports and organized industrial zones have played crucial role in shaping the current urban structure of Izmir.

CHAPTER 6. SPRAWL MANAGEMENT STRATEGIES FOR IZMIR CASE

Urban sprawl management strategies take their roots from the growth management discipline. As Mandelker (1999) states urban growth management efforts began in 1960s to provide new techniques for managing rapid and uncontrolled growth of urban areas. Since then a wide range of strategies have been developed and applied in various geographical scales to manage urban sprawl. However, these strategies have still been under discussion in urban studies literature. Although there are contradictive results on effectiveness of various sprawl strategies, it is still possible to choose some strategies from the previously applied cases.

In a broader sense, management of urban development have been one of the most crucial tasks especially for rapidly growing metropolitan regions. Although the efforts goes back to 1960s in developed countries, the concept of urban sprawl management is relatively new in developing countries. Therefore, this study have been structured as reviewing at first the good cases on sprawl management efforts from the cities of developed countries, and then proposing and discussing the adaptability of some strategies to the case of Izmir Metropolitan City in Turkey. The results of the empirical analysis for urban growth and sprawl in Izmir, given in Chapter 5, provide an important basis for the suggestion of appropriate sprawl management strategy for Izmir.

Empirical analysis showed that, Izmir metropolitan area has been growing in various ways depending on several reasons such as distance to urban core, planning decisions and regulations, basic economic activities, etc. Apart from the urban core; which is the densest part of the city; northern, southern, and eastern axis have been growing both densely and dispersedly depending on the proximity to the core city and

with the existence of industrial areas. It is observed that, coastal districts have been experiencing low-density dispersed urban development more than the rest of the metropolitan area. On the other hand, agriculture-based remote districts have been threatening their surrounding agricultural lands by newly emerging residential and industrial developments.

In this chapter, urban sprawl management strategies, which are selected among the good practices in developed countries, are discussed with their adoption principles to Izmir. When suggesting strategies, this grouping of three different urban development patterns are taken separately as below:

- Main urban development axis (based on rapid urbanization and industrial developments)
- Coastal districts (based on tourism developments)
- Remote-rural districts (based on agriculture)

High-density core districts of Izmir has been taken out of consideration in order to be able to focus more on sprawling parts of the city and to limit the scope of the thesis. However, as worldwide good cases indicated, urban core and its periphery are highly interrelated urban parts that any planning intervention taken on the core would respond itself in its periphery in various forms (e.g. sprawl). That is why particular planning approaches such as compact city and smart city movements focus mainly on urban core in order to deal with sprawl developments on the periphery.

As it was mentioned previously that, national, international and local non-governmental organizations together with institutions play important role in almost all phases of urban developments. Consequently, before recommending and discussing the possible urban management strategies for Izmir case, it might be better to evaluate

organizational and institutional formations in Izmir and make several recommendations considering sprawl management.

6.1. RECOMMENDATIONS ON ORGANIZATIONAL AND INSTITUTIONAL STRUCTURES

As it was mentioned before, national, international and local level non-governmental organizations have been playing an important role regarding to sustainable development of urban areas. Literature on this field showed that, for the last two decades, sustainability related issues have been one of the most important topics of the organizations like European Environment Agency, European Commission and etc.

Those organizations, which have been dealing with urban sprawl and urban sustainability issues, consider cities as the main resource of many environmental problems such as loss of natural lands, excessive consumption of energy, and pollution etc. Regarding to urban sprawl, there have been a general consensus on its undesirable, harmful, and negative impacts on natural environment. So their common challenge could be summarized as to control sprawling type of developments and mitigate their undesired outcomes in order to achieve more sustainable future for both natural environment and urban areas.

For this objective, some of the previously mentioned international organizations (e.g. European Commission), set sustainability criteria, and provide funding to local governments and urban scale innovative projects to contribute local efforts. Turkey, as a non-European but a candidate country, has been taken very limited advantages of European Union funding since 1999. In the meantime, Turkey has been benefited from the findings of technical research of the Organization for Economic Cooperation and Development (OECD) as the member country. This brief review of the current situation shows that, Turkey needs to be involved more in the network of these type of international organizations in order

to take advantages of both financial and instrumental support to its sustainability related urban and environmental projects. For instance, currently, World Bank have been evaluating the application of Turkish Government to provide funding to a project named “Sustainable Cities”²⁰, which also includes an objective to address sprawl as a part of sustainability achievements in metropolitan cities in Turkey.

Although there have been several national non-governmental organizations dealing with environmental issues in Turkey, no one has been challenging directly with the urban sprawl related problems. However, it could be stated that the planning tradition in Turkey has been playing an important role in preserving natural areas such as agricultural, forest, wetlands etc., in general. Upper scale master plans set zones for the future urban development and describe particular norms to preserve natural areas. These upper scale plans have been succeeded to preserve large majority of natural areas, but due to some reasons, these preservation norms sometimes could be violated or ignored in practice.

These type of law breakings are generally because of the arbitrary plan revisions, on the one hand; conflicts, lack of good communication, coordination or negotiation between the institutions, which are responsible for plan preparation and implementation processes on the other hand. Conservative approach of upper scale plans may be evaluated as a strength aspect of the plan-preparing phase, however, this institutional disorder converts it to a weakness of planning praxis, which then results in loss of natural environment or waste use of land.

²⁰ For further information about the project, the document is available in: <http://documents.worldbank.org/curated/en/106251490529634571/Turkey-SUSTAINABLE-CITIES-P128605-Implementation-Status-Results-Report-Sequence-01>

Therefore, in order to avoid undesired results of urban development, this kind of conflicts, incoordination, and arbitrary treatments should be eliminated.

Local organizations play crucial role in promoting sustainable urban development policies and their implementations at local scale. They increase awareness and sensitivity of residents on conservation and improvement of urban and environmental values/assets; they act as mediators, advocators between local governments (policy-makers) and residents.

They establish a bridge providing residents opportunities to participate decision-making processes related to future of their community. Some local organizations (like Sustainable Calgary and Ontario Smart Growth Network) also produce information about sustainable living principles, policies and practices, they conduct research and write reports about sustainability issues and organize educational forums and workshops. These kind of local efforts are quite important in achieving desired goals together with the local stakeholders (such as inhabitants, local investors etc.).

In the local scale, namely in Izmir, there used to be several “basin associations”²¹ challenging with the preservation of the natural values of the basins while encouraging the economic development of the rural districts and villages located in the basins of Izmir Metropolitan City. These associations were consist of the district municipalities and used to have an objective to provide communication, collaboration, and coordination between the local governments as well. However, these local organizations have disappeared in 2014; after the boundaries of Izmir Greater Metropolitan Municipality was extended to its province

²¹ “Environment and Infrastructure Association of K. Menderes Basin”

boundaries. These rural districts remained within the boundaries of Izmir Greater Metropolitan Municipality service areas and tied to it after 2014.

On the other hand, chamber of urban planners, chamber of architects and chamber of engineers have been already playing a key role in effecting decision-making and plan implementation processes in Izmir Case. They have been providing technical contribution, monitoring the plan implementations and taking action when they see unlawful, public nuisance, or environmentally harmful implementations. For Izmir case, existence of these type of associations and organizations is very important especially for preserving natural and agricultural land, increasing the quality of natural sources and avoiding undesired impacts of urban sprawl developments. However, these organizations should be strengthened and establishing new local associations or organizations should be encouraged.

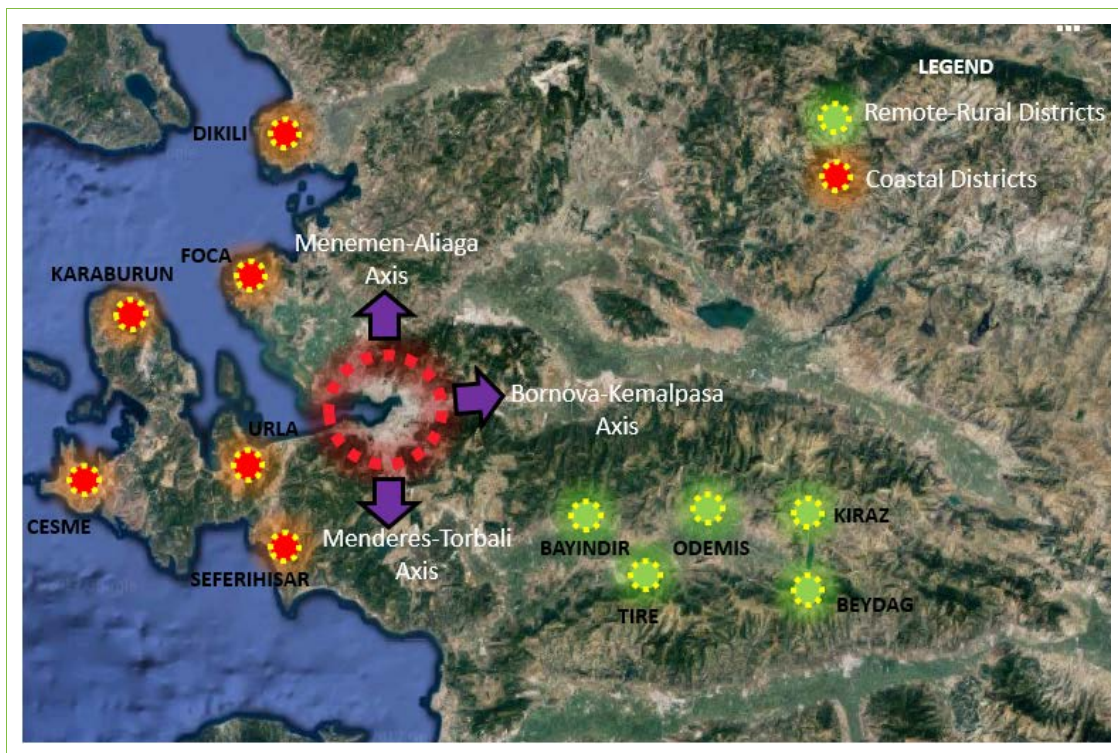
6.2. STRATEGIES FOR THE MAIN DEVELOPMENT AXES OF IZMIR

In the context of urban sprawl, there are several interrelated reasons of spatial expansion of built-up areas on the main (planned) development axes of north, south, and east corridors of Izmir metropolitan area. One of the most dominant land use type in these axis is large-scale industrial developments along with the main transportation corridors, partly towards agricultural lands. Industrial developments also encourages other land use developments close by, such as mass housing, illegal housing, commercial land uses and etc. It should be highlighted that, squatter and illegal settlements have been always an important type of urban development for Izmir in the past. They were expanding on the periphery of the core city and of the main development axis due to the proximity to industrial areas. This uncontrolled, unplanned, and illegal emergence of low-density housing areas, which is lesser today, should be

considered as a type of urban sprawl, and a reality of large cities in Turkey.

In izmir case, this kind of developments, therefore, should be handled as an important component of sprawling developments occurring on the periphery of main development axis. In order to make appropriate strategy recommendation for these main development axis of Izmir, it would be a good way to focus on and discuss each one separately. Main urban development axis are shown in Figure 6.1; which are Menemen-Aliaga Axis on the North, Menderes-Torbali Axis on the South, Bornova-Kemalpasa Axis on the East Corridors.

Figure 6.1: Main urban zones for sprawl management strategies



Source: Base map was retrieved from Google Earth, 2017.

However, there is another development axis on the western corridor, alongside the seacoast towards Urla axis. Urban development on that corridor could be characterized by residential and commercial land uses instead of industry. It has not been considered as the fourth axis separately from the core district to develop and discuss management

strategies because this axis have still remained within the core city, limited by the natural constraints such as sea and mountains. It is highly controlled by municipal plans and have different character from other three development axis in terms of development intensity and potential pressure to its surroundings. This map also shows the other designated zones for strategy recommendations which are touristic coastal districts on the northwest and southwest, and rural remote districts on the east part of Izmir.

6.2.1. Northern axis (Menemen-Aliaga axis)

Northern development axis is one of the most advanced and dynamic urban development corridors of Izmir metropolitan area in terms of its increasing population, transportation infrastructures, and existence of national scale industrial establishments such as oil refineries, petrochemical, iron and steel industries in Aliaga District.

In addition to Izmir-Canakkale highway and bypass motorway crossing along the axis; recently high-speed train line have been extended from Izmir core to Aliaga District. Therefore this axis has highly accessible from the core and the surrounding settlements. Currently, there have been ongoing development of large-scale industrial establishments, high-density housing developments and large scale commercial establishments. That is why the results of empirical analysis shows that;

- The population increased almost 30 % in Menemen and 46 % in Aliaga between 2000 and 2014 (while the total population of Izmir increased 22% within the same period).
- Built-up areas increased 35% in Menemen and 52 % in Aliaga between 2000 and 2014 (while the total built-up area increased 23% in the whole city within the same period).
- Built-up areas per inhabitant increased from 212 m² to 221 m² (4 %) in Menemen and from 356 m² to 372 m² (4 %) in Aliaga between

2000 and 2014 (while there is not a significant change occurred in the whole city, from 115 m² to 116 m², within the same period).

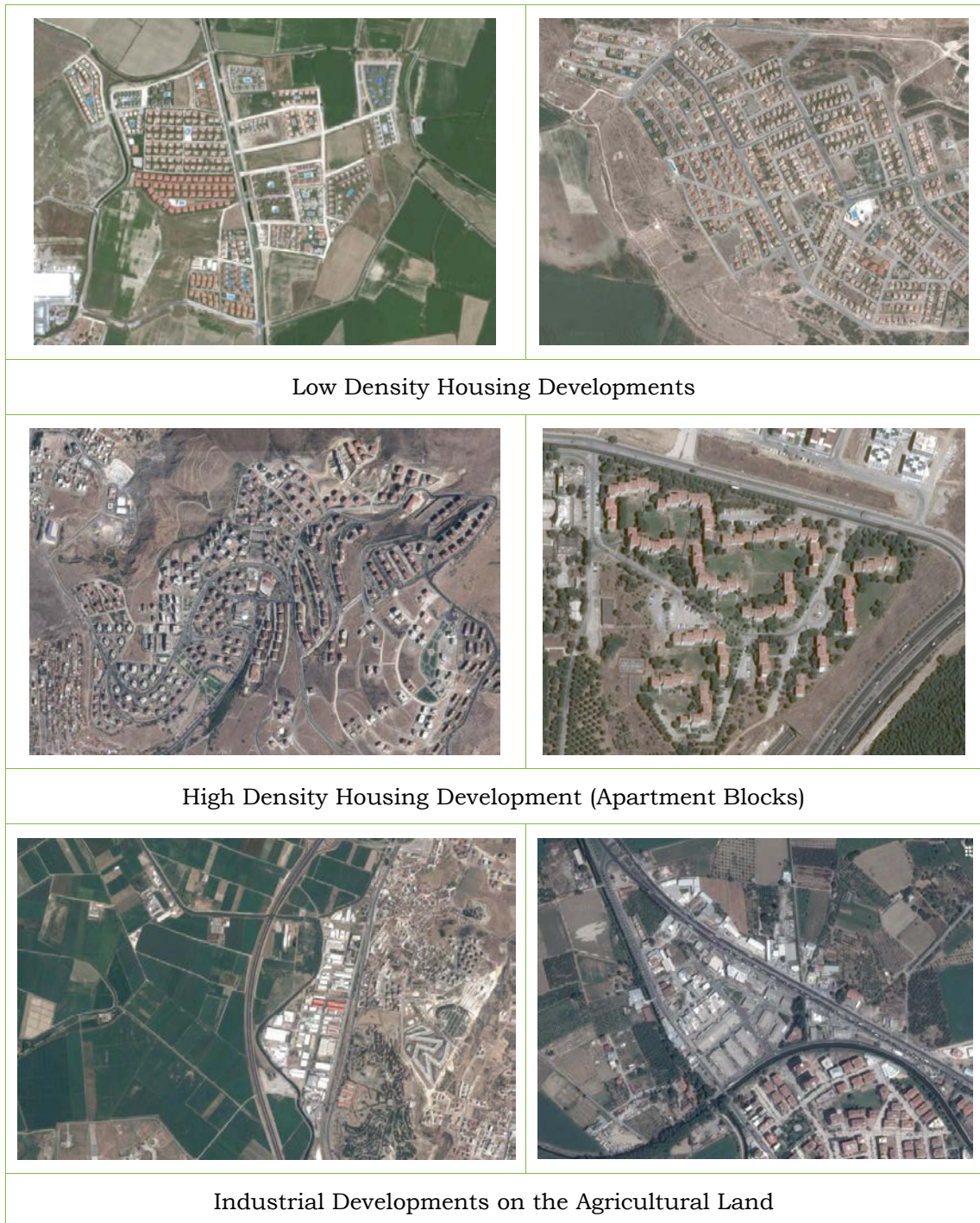
- Annual land taken per inhabitant for built-up are is 4.1m² in Menemen, and 9.1 m² in Aliaga, while it is only 0.5 m² in the core city of Izmir from year 2000 to 2014.

Considering these results of the empirical analysis, the districts located on that axis have strong evidence for sprawl developments. This means, land is taken more than the past and more than the core city when the value of built-up areas per inhabitant is considered. Several development patterns on this corridor are given in Figure 6.2. As the figure shows, there are both high and low-density residential developments on the periphery.

In the first place, of the figure, there are two examples of low-density housing developments belonging to the middle-high income groups. This is a typical case of life style-driven urban sprawl. These type of residential developments offer their inhabitants some advantages of living outside of the city (natural environment and houses with private garden and swimming pool etc.) on the one hand, and some location-based advantages (outer part of the core city, but in such location that are highly accessible from the centre) on the other hand.

In the second place of Figure 6.2, there are two examples of high-density housing developments (apartment blocks) on the periphery of the northern development axis mostly addressing to the middle and low-income groups. On the other hand, examples to large-scale industrial developments along the highway and on the agricultural lands are given in the last place of Figure 6.2. It is clear that, although upper scale plans aim to preserve agricultural areas and restrict any kind of urban development on agricultural lands remain insufficient in practice. This is one of the most familiar nationwide problems of Turkey.

Figure 6.2: Examples of development patterns on the periphery of northern development axis



Source: Google Earth, 2017.

6.2.2. Southern axis (Menderes-Torbali axis)

Southern urban development axis of Izmir could be described with two main noncore districts, which are Menderes and Torbali expanding along

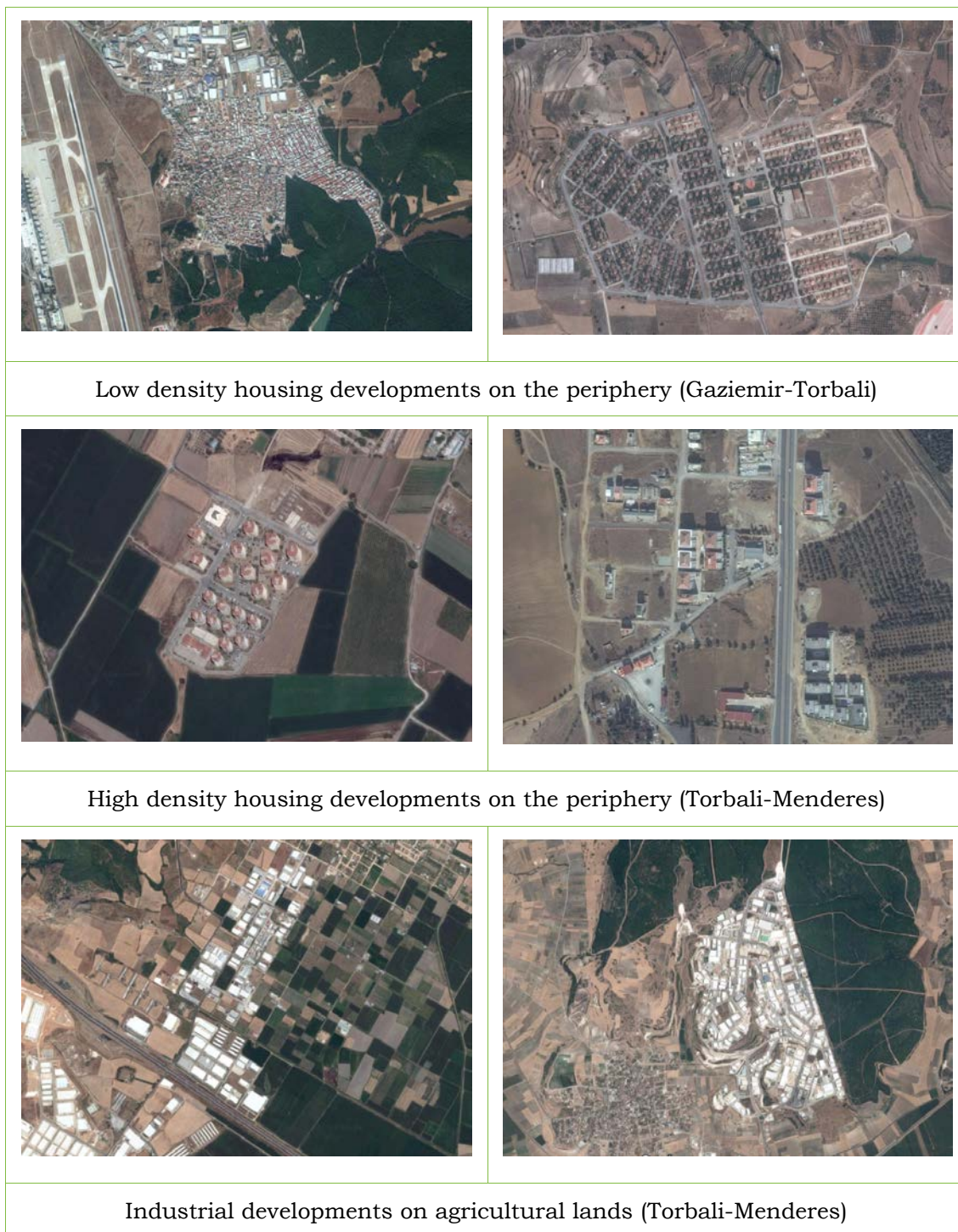
Izmir- Aydin (neighbor city) Highway. These two noncore districts are also connected to the centre with a railway, which make this zone highly accessible like the northern axis. International Airport, large-scale industrial establishments (the majority is based on agricultural productions), and mass housing developments are the main components of the urban development on this axis. Findings of the empirical analysis indicated that:

- The population increased 11.4% in Menderes, 61.1% in Torbali between 2000 and 2014, while the total population increased 22% in the whole city.
- Built-up areas increased 44% in Menderes, 42% in Torbali between 2000 and 2014, while the total built-up areas increased 23 % in the entire city of Izmir within the same period.
- Built-up areas per inhabitant increased 29% in Menderes, it was decrease 13% in Torbali, and while there is no significant, change occurred in the whole city between 2000 and 2014. There is also 15 % decrease in the core within the same period.
- Annual land take per inhabitant for built-up areas in Menderes is 5.2 m², and 3.7 m² in Torbali, while it is 0.5 m² in the core city from 2000 to 2014.

Torbali district seems to be growing denser than Menderes, when comparing their values of built-up areas per inhabitant. The decrease of built-up areas per habitant in Torbali is correlated with the existence of high-density housing developments more than the ones located in Menderes. These two districts have high-density housing developments in their periphery (as seen in the second line of Figure 6.3). However, Torbali has more accessible compared to Menderes because of Aydin highway passing through the district. This highway attracts large-scale industrial establishment's attention more towards Torbali and its surroundings. Figure 6.3 also gives some examples of industrial

establishments settled on the agricultural land in Torbali, and on the marquis land in Menderes District.

Figure 6.3: Examples of development patterns on the periphery of southern development axis



Source: Google Earth, 2017

On the other hand, there are some examples of low-density housing developments on the periphery as given in Figure 6.3. Low-density housing does not mean always a kind of residential pattern addressing to the demand of high-level income groups. It also refers to the housing of low-income groups illegally developed on the periphery. For example, the first picture of Figure 6.3. shows an example of housing belong to low income groups adjacent to the airport. It was a small village, named Sarnic, before 1980s.

During 1980s, this village had received immigrants and the built-up areas expanded though the forestland illegally. Today, the status had changed and the settlement gained a legal status by the plan revisions. Second case of low-density housing development in the picture is from the periphery of Torbali District. While the land is occupied by low-income social groups in the first case, the second case shows the housing pattern that belongs to middle-upper income groups on the periphery of Torbali District.

6.2.3. Eastern axis (Bornova-Kemalpaşa axis)

Eastern axis is stretching out from Bornova District (one of the core districts) to Kemalpaşa District along the Izmir- Ankara Motorway. In this axis, Kemalpaşa District and its surroundings are elaborated. The core of the Kemalpaşa district has a relatively compact form (see Figure 6.4) compared to the other districts located on the north and south development corridors. However, the core of Kemalpaşa District have also been expanding by high density, multi-stored apartment blocks towards surrounding the agricultural lands gradually. Findings of the empirical analysis for this part of metropolitan area shows that:

- The population of Kemalpaşa District increased 36.3% between 2000 and 2014, which is above the average of the Izmir Metropolitan City for the same time period (22%).

- Built-up areas of Kemalpaşa District increased 56%, while the total built-up area increased 23% in the whole city within the same period.
- Built-up areas per inhabitant in Kemalpaşa increased 15 % while there is no significant change occurred in the whole city between 2000 and 2014.
- Annual land take per inhabitant is measured as 4.7m² in Kemalpaşa, while it is 0.5 m² in the core city between 2000 and 2014.

Large-scale industrial establishments determine dominant land use pattern of the eastern axis. These industrial establishments have an important percentage within the total built-up areas, so they are the main reasons behind the increase of built-up related measurements. In fact, instead of residential sprawl (with some exceptions as given in the second place of Figure 6.4, Yesilcam neighbourhood, which is an area of squatter settlements), industrial developments have been sprawling in a fragmented and scattered way, particularly along the motorway in this axis, as seen in the last spot of Figure 6.4. Since space is limited and less accessible in terms of price in the core, Kemalpaşa receives many large-scale industrial investments instead of the core city.

6.2.4. Strategies for the main development axes

It is widely known that urban land use and transportation facilities are closely inter-linked as Dieleman and Wegener (2004; p. 315) state: *“Locations with good accessibility to workplaces, shops, education, and leisure facilities are more attractive for residential, industrial, office or retail development. Higher accessibility increases the attractiveness of a location for all types of land uses and so can increase the probability of the development of multifunctional land use areas. If, however, accessibility in the entire metropolitan area is increased, it will result in a more dispersed settlement structure”*.

Figure 6.4: Examples of development patterns on the periphery of eastern development axis



Urban core of Kemalpaşa district



Yesilcam Neighbourhood, low density housing adjacent to industry (squatter settlement)



Industrial developments along Ankara Motorway

Source: Google earth, 2017.

In this context, the main urban development axes of Izmir should be considered carefully due to their advantageous positions in terms of good transportation facilities. However, highly accessible positions might make the management efforts more difficult if the appropriate strategies are not implemented or adopted, which may cause further dispersion in an uncontrolled way. It is clear that these three main development axes along the main transportation networks have strategic importance, together with the natural assets in their surroundings. In terms of sustainable urban development in Izmir metropolitan area, these growth axes should be considered sensitively and well managed.

It was observed that these axes present quite similar development patterns, which are all expanding linearly along the main transportation axes with large scale industrial and mostly dense housing developments. On the other hand, it should not be ignored that the peripheries of these development corridors have tendencies of urban sprawl towards their natural surroundings, particularly to agricultural and forest lands.

According to the report of Izmir Master Plan, Greenbelt strategy, which is one of the most common urban sprawl management strategies in European cities, has already been adopted in order to preserve natural areas. To some extent, natural areas surrounding the city have been accomplished to be preserved considerably by this kind of plan decisions and national level laws such as Soil Protection Act, Forest Protection Act etc. However, as it was seen in the analysis of Izmir Case, plan preparation, and decision-making have not brought success in practice unless it is not given enough importance to the implementation and monitoring processes. It is also important not to avoid inconsistency between plans and institutions.

The common approach to these main urban development axes might be to prevent built-up expansion towards natural areas and encourage infill developments within the boundary of existing built-up areas and within

the reserved development areas as indicated in the master plans. Suitability of a combination of several urban sprawl management strategies might be discussed for the main development axes to provide better solution for sprawl management:

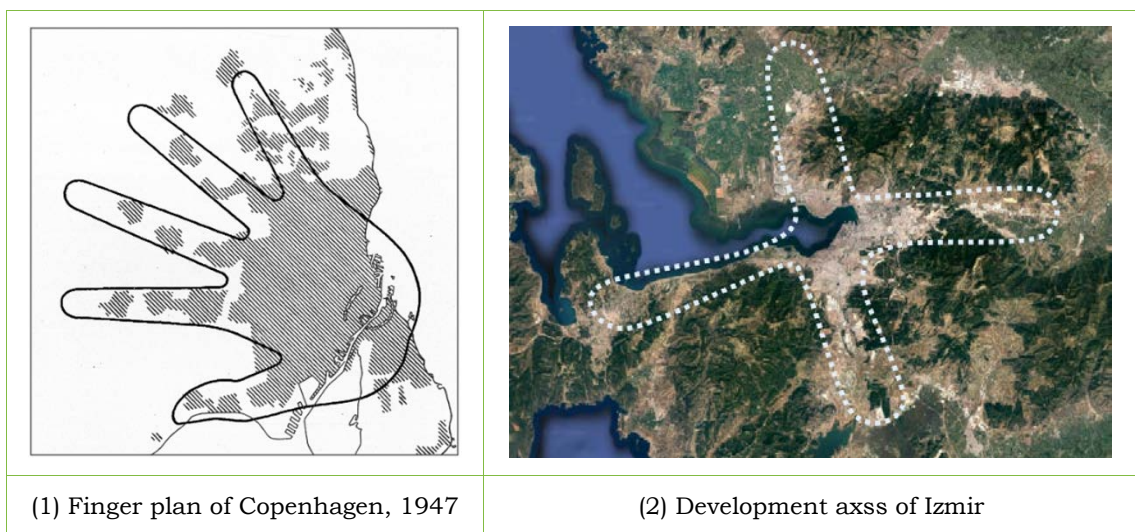
- Transit Oriented Development (TOD)
- Urban Growth and Service Boundaries (UGB-USB)
- Smart Growth (Principles)

As mentioned earlier, one of the main principles of TOD is to organize growth at regional level ensuring to be compact and transit-supportive. This approach require a well public transportation connection between the core and the high-density mixed-use suburban development zones. The main motivation is to increase accessibility of a location to make that location more attractive for all type of land uses, and provide agglomeration of population and activities close to the main stations or nodes of public transportation. Consequently, Transit Oriented Development strategy is a good solution against car-oriented sprawl in metropolitan cities.

Izmir has recently been started to implement this approach in the northern and southern axes with the proper railway investments. This type of TOD strategies should be maintained and implemented also to the other axes of the metropolitan areas. However, it should be kept in mind that, Copenhagen, one of the most successful example of this strategy, owes to its success not only having strong public transportation network between core and its suburban areas; but also having concrete, innovative, and integrated policies for each regions of the metropolitan area together. Some of these policies also belong to a combination of other sprawl management strategies such as smart city and compact city. These policies can be further elaborated as following in connection with the possible contribution to Izmir case study.

Considering the urban development structures of Copenhagen and Izmir, there might be found some similarities as demonstrated in the schematic maps below (Figure 6.5). Urban macroform of Izmir has linear development axis along the main transportation routes towards the north south, east and west corridors. This similarity is inspiring to discuss possibility or suitability of adapting the planning approach of Copenhagen city to the case of Izmir.

Figure 6.5: Finger plan of Copenhagen and illustration of starfish growth for Izmir



Source: (1) Danish Ministry of the Environment, 2007; (2) Google earth, 2017

Existing transportation infrastructure of Izmir like highways and intra-city railway lines provide potentials regarding to adaptation of TOD strategy in Izmir. In the core districts, there have already been high density urban zones along the main transportation nodes, however these structure might be encouraged for the future urban development zones along the development corridors as well.

In order to control urban sprawl, finger plan of Copenhagen designates green wedges between the peripheral urban regions (fingers) and restrict every type of urban development towards these wedges. Regarding to these regions, plan decision is quite simple and clear: “Preserve sensitive habitat, riparian zones, and high-quality open space”. In more detail: *“The Planning act divides Denmark into urban zones, summer cottage*

areas and rural zones, with special rules for development in rural zones. This is a cornerstone of protecting the countryside by avoiding sprawling and unplanned development. Agriculture and forestry comprise the priority economic activity in rural zones. Zoning creates a clear boundary between urban areas and the countryside. This protects recreational and valuable landscapes and ensures that agriculture retains good production opportunities” (Danish Ministry of the Environment, 2007, p. 26).

Copenhagen plan has also strategies to increase the quality of urban life in the core city, which is also important for changing the locational preferences of inhabitants. If the city presents good urban environment, high quality of urban life, with open green areas, pedestrian, and bicycle opportunities in urban centers, and strong public transportation services etc., people prefer to live in urban areas instead of living far on the periphery. Regarding to the quality of life in urban centre, one of the most important and radical policy of Copenhagen was replacing cars with the bicycles in the centre incrementally.

The fingers model also provide inhabitants to live in close proximity to green spaces. As a common policy of smart city, compact city, and sustainable city strategies increasing the population density also makes it possible to keep other parts of the city more open and green.

Smart growth strategy is another concept, which have been rising among European Cities for the sake of achieving sustainability requirements. As mentioned previously, *“The smart growth model emphasizes a land use pattern of compact cities and suburbs surrounded by countryside that is devoted primarily to farming, forestry, and open space. Smart growth aims to create more compact development that is cheaper to service, less land consumptive, and more attractive than sprawl” (Daniels, Tom, 2001, p. 277).*

Smart growth strategy provides a strong framework to cities with 10 principles, which are; (1) create a range of housing opportunities and choices, (2) create walkable neighborhoods, (3) encourage community and stakeholder collaboration (4) foster distinctive, attractive communities with a strong sense of place, (5) make development decisions predictable, fair and cost effective, (6) mixed land uses, (7) preserve open space, farmland, natural beauty and critical environmental areas, (8) provide a variety of transportation choices, (9) strengthen and direct development towards existing communities, (10) take advantage of compact building design.

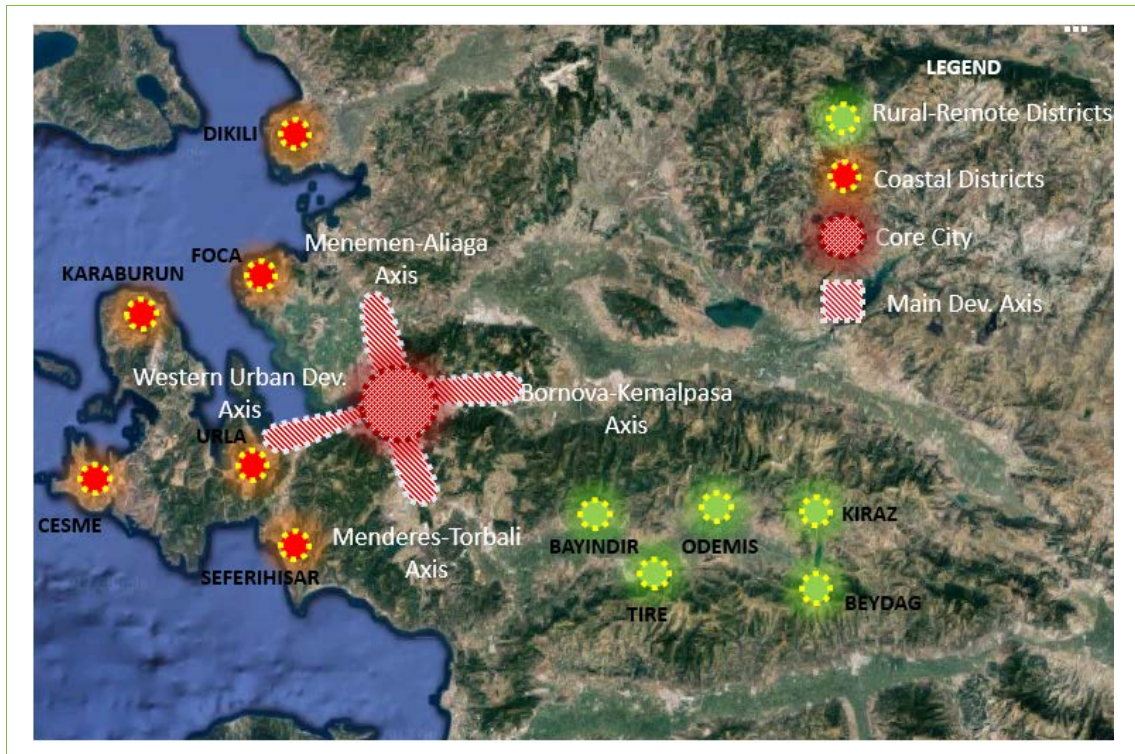
These principles show many similarities with compact city policies. Compact city is a key strategy to limit suburban sprawl and to obtain a more sustainable urban development. As seen in Figure 6.6, compact city approach also encourage urban development within the existing urban zones, while preserving the natural areas surrounding the city. It also promotes the transit-oriented development in built-up areas.

Figure 6.6: Key policy strategies and sub-strategies for the compact city

1. Set explicit compact city goals	<ul style="list-style-type: none"> • Establish a national urban policy framework • Encourage metropolitan-wide strategic planning
2. Encourage dense and contiguous development at urban fringes	<ul style="list-style-type: none"> • Increase effectiveness of regulatory tools • Target compact urban development in green-field areas • Set minimum density requirements for new development • Strengthen urban-rural linkage
3. Retrofit existing built-up areas	<ul style="list-style-type: none"> • Promote brown-field development • Harmonise industrial policies with compact city policies • Regenerate existing residential areas • Promote transit-oriented development in built-up areas • Encourage “intensification” of existing urban assets
4. Enhance diversity and quality of life in urban centres	<ul style="list-style-type: none"> • Promote mixed land use • Attract residents and local services to urban centres • Promote focused investment in public space and foster a “sense of place” • Promote a walking and cycling environment
5. Minimise adverse negative effects	<ul style="list-style-type: none"> • Counteract traffic congestion • Encourage the provision of affordable housing • Promote high-quality urban design • Encourage greening of built-up areas

Source: OECD, 2012, p.172.

Figure 6.7: Metropolitan zoning for strategy recommendations



Consequently, Figure 6.7 gives schematic explanation of designated zones in metropolitan scale for suitable strategy recommendations. Regarding to metropolitan core and linear development axis, strategies might be summarized as follow:

- First of all, Izmir should include stronger and more explicit sprawl management strategies to its metropolitan-wide, long-term vision.
- A combination of the Transit Oriented Development strategy together with the smart growth and compact city strategies is an appropriate approach for achieving efficient control on the periphery of main development axis of Izmir Metropolitan Area.
- Smart growth and compact city strategies might also be taken as a guidance for the existing core of Izmir.
- Designation of spatial hierarchy (metropolitan zones) in metropolitan area might be one of the appropriate tools for Izmir case as well as in the case of Copenhagen. Doing so, each

development zone could be considered separately, and their potential risks of sprawl could be eliminated by location-specific strategies. For example;

- For the urban core, infill development might be encouraged in vacant land, brownfield areas, and the quality of physical environment might be increased in deprived central areas.
 - Pedestrian and bicycle transportation infrastructure might be improved and integrated to public transportation nodes; accessibility to urban services and urban parks might be increased while removing the car from the centre in some points; which make the centre more attractive for the inhabitants and prevent sprawl developments.
 - For the main development axis, built-up density might be increased, public transportation can be strengthened, and the quality of urban life might be improved in order to keep the population inside the existing built-up boundaries.
 - Natural green corridors between the main development axes might be designated as natural preservation areas (green wedges) and any kind of urban developments in these corridors can be restricted. In addition to their rural-agricultural use, these green wedges, in some parts, might be open to public recreational use such as for trekking and cycling.
- Regarding to the incremental developments of industrial establishments on the main development axes, regulations that are more restrictive might be introduced to control their expansions through agricultural lands.
 - This uncontrolled expansion of industry also indicates another deficiency of planning processes in Turkey, which is incremental and arbitrary revisions of plans in the implementation process.

Therefore, having a good coordination between local governments and setting a clear arrangement of roles and responsibilities between key actors and stakeholders are crucial for achieving better policy making and implementation.

6.3. STRATEGIES FOR THE COASTAL DISTRICTS

Urbanization pattern in most of the coastal districts of Izmir could be explained mainly with the concept of secondary housing developments, which is a development type based on the consumption of urban land for the construction of real estate property in touristic areas. This kind of developments are often characterized as low density spacious residential matrix of large plots occupied by gardens and swimming pools (Hof and Salom; 2013). In this section, particular coastal districts of Izmir have been grouped with high level of tourism related use of land including Cesme, Karaburun, Urla, Serferihisar, Foca, Dikili (see Figure 6.7) districts. The strategies for controlling urban sprawl in these districts are discussed based on the secondary housing developments.

It was observed in the previous chapter that:

- In the ranking of districts according to the value of built-up areas per inhabitant (2014), coastal districts take the first places with the highest values. For instance, Cesme has the highest value (532 m²), Foca (481 m²), and Karaburun (469 m²) respectively.
- Annual land take per inhabitant value is the highest level in coastal districts Foca (10 m²), Karaburun (9.1 m²), Dikili, (8.2 m²), Cesme (8 m²), Urla (4.7 m²) respectively between the years 1975 and 2014. While the value was measured 1.3 m² for the core districts.

These findings simply show that, built-up areas have been expanding more than the population growth in coastal-touristic districts of Izmir. In other words, coastal districts of Izmir have been experiencing urban

sprawl, and the main driving force behind the sprawl is the growing demand of secondary houses in general.

This is a typical Mediterranean sprawl; which contrasts with Anglo-American patterns of ribbon development of main houses in the remote suburbs; instead, it reflects the seasonal family life pattern of urban inhabitants as having an option to escape from cities in the weekends, holidays, or summertime.

Therefore, as Chris et al. (2007, p. 237) state *“A more difficult question is: how to control urban sprawl that occurs through the acquisition and conversion of second homes? Here, land use planning seems less helpful, since the use of buildings may not change. Regulations preventing or controlling second home ownership are difficult to devise and enforce both for moral philosophical and practical political reasons. In these circumstances policy makers are more likely to look to the tax system to influence consumer behaviour”*.

To “influence consumer behaviour” might be the first key issue in coping with the undesired expansion of secondary houses towards natural areas in coastal districts of Izmir. Consumer, in Izmir case, may refer to individual landowners and real estate developers. To change the behaviour of the individual landowners and real estate developers might be accomplished by incentive and disincentive regulations. For instance, different tax regulations related to land and urban infrastructure services in periphery might influence the behaviour of the consumer.

Additionally, urban service boundary strategy might help to curb secondary housing developments in naturally sensitive areas in practice. However, local governments should be decisive and equitable to each individual request during the implementation of the regulations. Therefore, the second key issue is the “role of local government” as one

of the most active and determinative stakeholder of the decision-making, implementation, and monitoring processes.

As mentioned before, natural and cultural properties/assets in Turkey have been protected with a national law named “code of protection of cultural and natural properties” since 1983. This code, as the third key issue, have still been playing an important role in protecting natural environments in designated regions. In Izmir case, all these coastal districts have also been subjected to that protection law. However, in some parts of these natural areas, illegal/unlawful constructions, arbitrary revisions of “protected site area boundaries” or arbitrary changes on the “protection status” of the sites have been threatening the natural assets inevitably. Collaborative and participatory planning processes play important role in coping with this kind of unlawful and arbitrary implementations. Collaboration and coordination of local and national institutions, and enabling the participation of non-governmental local organizations and the local stakeholders (inhabitants, investors etc.) to the conservation process are crucial in achieving successful protection of natural areas.

Consequently, the role of non-governmental organizations could be added as the fourth key issue in dealing with preservation of natural areas from uncontrolled second home developments. As mentioned earlier, local non-governmental organizations function as mediators between stakeholders, and help to raise awareness about the importance of the preservation of local natural assets. They also act as observers and may take objection to unlawful practices or implementations when needed.

In conclusion, low density secondary housing have been the reality and the dominant spatial development pattern in Izmir’s coastal districts. These districts have been experiencing a lifestyle driven urban sprawl which increases the pressure on the local environment and threatens the sensitive natural lands (such as agriculture, forest, etc.).

6.4. STRATEGIES FOR REMOTE RURAL DISTRICTS

Within the boundaries of Izmir metropolitan city, there are two important river basins and their fruitful agricultural lands, which are Gediz and K. Menderes. As previously given in Figure 6.7, there are several districts located on these river basins, distant from the core of Izmir, and maintaining their rural characters; which are Kiraz, Beydag, Odemis, Tire, Bayindir on the east, Bergama and Kinik on the north.

It was observed in the empirical analysis that these remote-rural districts have different character compared to the rest of the city. Therefore, they should be considered separately from the other districts while making strategy recommendations on sprawl management.

Their common characteristics are:

- The basic economic sector of the majority of these districts is agriculture and several of them have been developing on agriculture-based productions.
- Although the majority of them still have more compact urban development patterns compared to rest of the metropolitan area, there is a risk of fragmentation of natural areas and conversion of the agricultural lands to artificial areas.

Considering the current development tendencies and natural assets surrounding these rural districts, the basic approach should be “stay small be smart”, which might be a combination of strategies of “protecting nature” and “growing smart” approaches together. Protecting nature strategies serve to the idea of “stay small” in these rural districts, which are located on the productive agricultural lands of the river basins. Protecting the natural areas surrounding the district requires keeping the settlements in their current size or at least limiting new developments. Therefore, any kind of new developments might be restricted by appropriate planning codes on the peripheries. In the meanwhile, the

density might be increased in some parts of the already developed inner core of these settlements, keeping their rural character in mind. In other words, new regulations should help to maintain their small town character while allowing appropriate development inside their built environment.

Smart growth strategies, therefore, might help to keep the population within the core by increasing its attractiveness through the improvement of quality of life on the one hand, and might provide appropriate sectoral policies to strengthen the agriculture based activities of the settlements on the other hand. This approach also would help to survival of ocal agriculture sector. The Greenbelt project of Vitoria-Gasteiz introduced earlier might be a good model for these rural districts of Izmir metropolitan city. They have similarities in terms of natural assets surrounding the settlements, and their urban-population sizes as seen in the Table 6.1.

Table 6.1: Populations of remote rural districts (comparison)

	<i>District</i>	<i>2014 population</i>
<i>Good practice</i>	Vitoria-Gasteiz	242,082
<i>Remote rural districts of Izmir metropolitan area</i>	Odemis	129,407
	Bergama	101,813
	Tire	81,315
	Kiraz	43,971
	Bayindir	40,310
	Kinik	28,072
	Beydag	12,457

Therefore, rural-remote districts of Izmir metropolitan area might take greenbelt strategy of Vitoria-Gasteiz as an example by considering its specific features as:

- Greenbelts of Vitoria-Gasteiz is not a passive open space, instead it is a group of peri-urban parks of high ecological and landscape value, strategically linked by means of eco-recreational corridors.

- Peri-urban parks within the greenbelt are highly accessible from city center and there is a continuous pedestrian and bicycle network.
- Restoration of degraded areas within the greenbelt is another strong and inspirational aspect of the project.
- Involvement of citizens in the project and on the implementation of environmental education activities also have played key role in the success of Vitoria-Gasteiz greenbelt project.

Similar with the Vitoria-Gasteiz case, the good practices review indicated that, local non-governmental organizations contribute to the preservation efforts particularly in rural small towns by creating awareness among inhabitants, informing them about the importance of natural area preservation. Cooperation, collaboration and communication among all stakeholders have key roles for those remote rural districts of Izmir.

With reference to these greenbelt experiences, similar strategies and policies might guide the future urban development decisions of the districts located in rural landscape of Izmir. Figure 6.8 gives an exemplary adaptation of this active green belt idea of Vitoria-Gasteiz to Kiraz, one of the rural districts of Izmir. As seen in the Kiraz case, there is a stream crossing the town and fragmented green areas surrounding the built-up areas, which also contribute natural potentials for adopting the greenbelt idea.

In conclusion, Izmir, as the third largest and most populated metropolitan city of Turkey, has been handled to discuss its urban sprawl potentials by considering its particular urban development zones. These zones were grouped as (1) main urban (and industrial) development axis on the north, south, and east corridors of the core, (2) coastal districts where the developments mainly based on tourism sector, and (3) rural districts where the main economic sector is based on agriculture.

Figure 6.8: Greenbelt model for remote rural districts of Izmir



Greenbelt and agricultural lands of Vitoria-Gasteiz*



Kiraz District (greenbelt potentials)

* <http://habitat.aq.upm.es/boletin/n38/i10aland.html>

It is obvious that, each selected zone needs to be considered, analyzed, and evaluated separately in order to develop suitable and an effective strategy framework for sprawl management. In the scope of this thesis, several urban management strategies and approaches used in developed countries (that were given in the chapter 3) have been discussed in those development zones of Izmir. It should be noted here that, more detailed, area-focused analysis are needed for making more suitable strategy suggestions. Considering the newly raising awareness of the sprawl management concept in Turkey, this study might contribute future studies in this field with various strategies and examples discussed for the case of Izmir.

CONCLUSION

Due to rapid urbanization and population growth in recent decades, urban sprawl is becoming a key feature of the cities of developing countries. In Turkey, major cities like Istanbul, Ankara, and Izmir have been experiencing rapid growth both in their population and in built-up areas. They have been expanding towards their surrounding peripheries in various ways, consuming large amount of land and requiring significant infrastructure investments as well. Although there have been various challenges related to sustainable urbanization achievements, the concept of urban sprawl management has not raised enough attention in developing countries yet.

This study examined urban sprawl and urban sprawl management strategies from both developed and developing countries perspectives. In the first part of the thesis, main conceptual discussions about urban sprawl, and leading/foremost approaches about management of sprawl were reviewed. Then, good examples regarding to sprawl management strategies, policies and projects from the cities of developed countries were elaborated.

This brief overview of policy and strategy responses to sprawl in developed countries have shown that there exists a wide range of strategy and instruments that are employed to manage urban sprawl. It was observed that, several strategies such as greenbelt, urban growth boundary, transit oriented development, and smart growth are widely adopted strategies among the cities.

Urban sprawl management literature showed that urban sprawl in developing countries need to be understood well before taking any action to combat with it. One of the main objectives of the thesis was to provide a better understanding of the phenomenon of urban sprawl in developing countries.

Therefore, in the following step of the thesis, Izmir was examined as a case study from Turkey as a developing country. Urbanization processes of Izmir were given in a historical perspective, and current plans, policies and implementations were discussed considering the dynamics behind urban growth and sprawl. It was observed that, main weaknesses were lack of coordination between plans and responsible institutions, fragmented and arbitrary plan revisions, ignorance about the illegal settlements, etc.

On the other hand, existing national policies such as Agricultural Land Protection Act, Forest Protection Act have provided a comprehensive protection in Natural environments of Izmir as well. However, specific sprawl management strategies or policies have not been introduced to national and local urban planning practices in Turkey yet.

In order to provide better understanding about the nature of urban sprawl in Izmir, an empirical analysis was handled covering the population and built-up data for the years 1975, 1990, 2000, and 2014. Several urban sprawl indicators were used such as population, population density, built-up areas per inhabitant, and annual land taken by inhabitant covering the whole metropolitan boundaries by categorizing as core, and noncore districts. All these analysis were evaluated and discussed regarding to the time periods and in conjunction with the urbanization policies, plans, socio-cultural and economic dynamics and the institutional interventions realized in Izmir metropolitan area. Main findings of the analysis indicated that:

- The core and the non-core districts of Izmir differ in their population change and population density dynamics as well as the structure of the built-up areas and the built-up per inhabitant.
- Metropolitan core of Izmir is dense in both population and built-up areas. Density decreases by the distance to the city centre gradually, from core towards the edges of the province.

- Today, urban sprawl is not valid for the current pattern of the core city with its intense use of land. However, it is a development pattern in the surrounding and coastal non-core districts. Since the 2000s, several districts such as Cesme, Urla and Foca are experiencing urban sprawl in Izmir.
- The urban development patterns in non-core districts can also be distinguished as industry-based developments, coastal or tourism based developments and agriculture-based remote districts.
- It is also observed that large-scale investments such as highways, airports and organized industrial zones have played crucial role in shaping the current urban structure of Izmir.

In the light of worldwide good examples on urban sprawl management strategies and practices together with the findings of the empirical analysis, the next step of the thesis was to discuss potential sprawl management strategies for the Izmir case. Considering the local characteristics and developmental dynamics, Izmir Metropolitan Area was handled with a proper categorization as following:

- Main urban development axis (based on industrial developments)
- Coastal districts (based on tourism developments)
- Remote-rural districts (based on agriculture)

Urban sprawl management strategies, which are gathered as good cases from developed countries, were discussed for Izmir based under these three categories. For the main development axis, suitability of a combination of transit oriented development, smart growth principles, urban growth boundaries, and service boundaries were discussed. For the coastal districts, in which the majority of them have been experiencing urban sprawl because of secondary housing developments, the main strategy discussed was incentive or disincentive regulations to deal with the consumer preferences. For the districts located distant from the metropolitan core, a combination of two approaches “protecting

nature” while “growing smart” was discussed as the basis of sprawl management strategy.

As also stated in Eidelman (2010), Tomalty and Alexander (2005), for more sustainable urban growth, the following sprawl management strategies might be taken and implemented in many cases including Izmir Metropolitan City.

- I) manage urban sprawl by prioritizing intensification and mixed-use development;
- II) provide transportation alternatives and housing choices to the residents;
- III) preserve natural heritage features, while still promoting targeted economic growth to reduce per capita consumption of land and energy;
- IV) lower the cost of infrastructure and make transit more viable and accessible.

Of course, effectiveness of an urban growth management strategy or an urban sprawl policy at any governmental level cannot be measured straightaway. Each policy or strategy has negative or positive aspects or has advantages or disadvantages in different grades, and it takes years to see their impacts on urban areas and the development of built environment.

Additionally, depending on cultural, political structures and geographical characteristics of the countries, regions, even urban areas, it cannot be suggested that a particular growth management policy or strategy applicable for all. Instead, it was observed that combination of various strategies contributes overall success more, as seen in Copenhagen, Barcelona, Amsterdam cases etc.

Urbanization itself has a complex and dynamic structure. It is changing over time by its nature. Plans, policies and strategies should come up

with these changing dynamics. Plans itself do not mean a way of achieving desired future. Monitoring the implementations and being flexible for the changes when it is needed are also important aspects of an achievement.

Consequently, further research might focus more on to the nature of urban sprawl in developing countries to find out its dynamics and the reasons behind it. It is also needed to develop suitable and efficient management strategies for the metropolitan cities of developing countries growing in a different way e.g., faster or slower. In addition to this, Izmir case requires to be handled and analysed in more detail with a focus on its particular metropolitan zones separately. Each zone is needed to be elaborated in-depth regarding its local aspects, such as urbanization processes, built environment, socio-cultural and economic structures etc. More detailed spatiotemporal pattern analysis of urban sprawl is also required to develop appropriate management strategies and policy instruments in Izmir metropolitan area.

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ABBREVIATIONS

CBD: Central Business Districts

CSOs: Civil Society Organizations

EC JRC: European Commission Joint Research Center

EC: European Commission

ECO: Environmental Careers Organization

EEA: European Environment Agency

EPA: Environmental Protection Agency

ESPON: European Spatial Planning Observation Network

EU: European Union

GHSL: Global Human Settlement Layer

GMA: Growth Management Act

GMRP: General Municipal Regulatory Plans

İDA: İzmir Development Agency

İKNİP: İzmir Urban Region Development Plan

İYKMNİP: İzmir New City Center Plan Report

KENTGES: Integrated Urban Development Strategy and Action Plan
(Kentsel Gelisme ve Eylem Planı)

LAs: Local Agents

NCC: New City Centre

NGOs: Non-governmental Organizations

NPOs: Non-profit Organizations

NPPF: National Planning Policy Framework

NSDS: National Sustainable Development Strategies

OECD: Organisation for Economic Co-operation and Development

OIZ: Organized Industrial Zones

TOD: Transit Oriented Development

TOKI: Housing Development Administration of Turkey

TSI: Turkish Statistical Institute

UGB: Urban Growth Boundaries

UK: United Kingdom

ULI: Urban Land Institute

UN: United Nations

UNEP: The United Nations Environment Programme

URBS PANDENS: Urban sprawl: European Patterns, Environmental Degradation and Sustainable Development (EU project)

US: United States

USB: Urban Service Boundary

WHO: World Health Organization

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- Ince Kompil, E., Avar, A., (2006). "Deprivation Analysis in Declining Inner City Residential Areas: A Case Study from İzmir, Turkey". European Regional Science Association Conference (ERSA), Proceeding CD, University of Thessaly, Volos-Greece.
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