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**LAND USE PLANNING FOR SUSTAINABLE DEVELOPMENT FOR PERI URBAN AREAS; IN
METROPOLITAN AREA OF İZMİR**

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Abstract :

In an era where more than half of the world is living in urban areas, there is increasing pressure on urban lands thus leading propelling a persistent depletion of rural agriculture lands in the peri-urban zones. This phenomenon becomes more pronounced when measures such as planning regulations, urban protection boundaries, agriculture land protection are not implemented in line with sustainable land use planning efforts which are usually weak at the periphery and sometimes non-existent in coverage. This research seeks to identify the gaps in terms of data and land use policy in the peri-urban areas so as to promote spatial order in the increasing land use conflicts, environmental degradation, extinction of green reserves and low agriculture production due to the extensive takeover of agriculture land urban development largely due to peri-urban sprawl

Keywords :

peri-urban areas; urban sprawl; land use planning; sustainable development; multifunctionality

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CHAPTER ONE

1.1. Introduction

The concept of peri-urban area emerged due to limitations in the dichotomy between rural and urban (Iaquinta, D. Drescher, 2000). Rural and urban features tend to co-exist within cities and beyond boundaries. In general, these urban drifting transitions, which are located in a new land area outside and between urban cores, can be defined by the word "peri-urbanization". Peri-urbanization is the agenda of sustainable development and at the same time, it is one of the major problems in terms of sustainable development. The spatial expansion of cities is more rapid than the growth of the population they meet in the metropolitan area. The rural districts around the city have become dynamic as the continuation of the existing urban doctrine.

Peri-urban areas are transitional or interacting regions where urban and rural activities are brought together and subject to rapid changes in landscape characteristics and human activities (Zivanovic-Miljkovic, Crncevic, & Maric, 2013). Peri-urbanization has been criticized in terms of causing a series of problems such as invading agricultural areas with urban expansion, abolishing many of the benefits of natural open spaces, causing social transformation and fragmented communities in rural areas, scattered settlements, lack of access, and lack of spatial governance. At the same time, under free market conditions, individuals, global investors and entrepreneurs make investment decisions with high-profit margins. This often causes the rural areas on the periphery to turn into new development areas of the city. Because the existence of vacant land in these areas and the low value of land values make construction in these regions easier and profitable.

Within this research, land use planning will be made for sustainable development due to the specific characteristics of the peri-urban areas and the pressures coming from different sectors. In the context of peri-urban, the distinction between urban and rural changes with an area which is a mixture of different functions such as agriculture, tourism, nature, industry, recreation. This shows us that there are many different land-uses in this area. This work

acknowledges that these different land-uses, like production, consumption and protection will be organized when developed as a multifunctional way in the peri-urban areas of cities.

1.2. Hypotesis

İzmir has been sprawling away from the core owing to higher population concentration. Effective and efficient peri-urban land use planning could appear as the logical answer to the research questions. However, other explanations could arise. The main hypothesis is land use planning and peri-urban development. Other possible explanations could be related to economic factors or cultural preferences, housing and topographical restrictions due to location, and the interest to stay away from the city centre. The other hypotesises; If land use planning is designated via multi functionality, peri-urban areas can be managed sustainably. Peri-urban zones have different characters; thus multi functionality description is special for each of them. Population, infrastructure investments, transportation, increased mobility, economical growth and public decisions are the factors that shape urban sprawl in İzmir case.

1.3. Aim of Research

The aim of this study is to reveal the dynamics of peri-urbanization in İzmir and to analyze the typology of peri-urban areas with spatial analysis methods and to show what the development strategies are for the more sustainable peri-urban areas. In this thesis study, the need for evaluating İzmir with peri-urban development strategies in order to create more sustainable development conditions in the near future has been revealed The research also seeks to explore untapped knowledge establishing the correlation between land use planning, urban sprawl and sustainable urban development.

In Peri-urban areas, there are scattered settlements, a relatively low population density, dependence on transportation, fragmented communities and lack of spatial governance comparing to urban standards. At the same time, the city has great social and environmental problems such as congestion, noise, pollution, infrastructure deficit, immigrants, transportation (public against private etc). Therefore, there is a possibility of merging these characteristics in one

urban agenda so as to harness the advantages of each one over the other. The approach to achieving these require policy, governmental commitment as well as civil pressures.

Therefore, the complexity of the dichotomy between the dispersed spatial settlement order in peri-urban areas and the deterioration of social life and environmental circumstances of the city has not been fully explored by existing research. Meanwhile, the issue has remained significant at policy levels for urban planners, sociologists, economists and environmentalists.

1.4. Problem Statement

The peri-urban (sometimes also called the urban fringe) may be the dominant urban form and spatial planning challenge of the twenty-first century(Nilsson, Pauleit, Bell, Aalbers, & Nielsen, 2013). Because peri-urbanization equally relates to the process of urban sprawl which has spatial consequences especially as it threatens the use of space (Kimengsi, Nguh, & Nafoin, 2017). Thus cities in all countries have to face the challenges of urban sprawl and the urbanization process which will continue to grow exponentially over the next decades. Population growth and urbanization are estimated to increase the world's urban population by 2.5 billion people by 2050, with about 90 per cent of the surge concentrated in both in Asia and Africa' (United Nations, 2014).

The peri-urban is transition or interaction zone between urban and rural areas(Zivanovic-Miljkovic et al., 2013). Therefore, we have an uncorrelated and disorderly coexistence of urban and rural functions (Antrop, 2004). The process of uncontrolled urbanization is considered as a catalyst for the peri-urban area land-use change. Irregularly continuing peri-urban land development leads to complex urban constructions. The emerging land use pattern, by and large, indicates a mismatch with the widely cherished planning norms and standards and land value theories which underpin urban land use planning instruments such as zoning and density distribution and principles like the equitable provision of basic services, including complementarity in urban land development (Kombe, 2005).

A visible aspect of peri-urbanisation is the process of land use dynamics characterised by a systematic shift from agricultural to residential, commercial and other land uses (Kleemann et al., 2017). Land use, the way human employ the land and its resources is causing the transformation

of already limited natural resources. Peri-urban areas are exposed to rapid changes through the possibilities of development in land use. Such changes can be exemplified by the increase in land use as well as the destruction of natural areas as well as a reduction in agricultural land.

Urban sprawl is observed as the growth of urban spatial patterns with low densities, large outward expansion, spatially segregated land uses, leapfrog urban development, and widespread commercial strip development. That implies sprawl defeats the resolve for sustainable urban land use and encourages wastage.

In İzmir, peri-urban dynamics are reflected in increasing pressure on natural resources such as land use changes, road investments, secondary housing, infrastructure and employment.

1.5. Research Questions

- 1.) What is the role of land use planning in managing peri-urbanization?
- 2.) What are the peri-urban typologies in İzmir?
- 3.) Which model (design) can be useful in peri urban area?
- 4.) How can we organize the peri-urban areas for sustainable development?

1.6. Objectives of Study

The aim of this study is to reveal the dynamics of peri-urbanization in İzmir a to analyze the typology of peri-urban areas with spatial analysis methods and to reveal what the development strategies are for the more sustainable peri-urban areas.

In this study, it is aimed to define the concept of peri-urban area, and determinations to be made through İzmir to explain its importance in city unity and morphology and the potential in the planning process. It is important to make land use proposals so that the peri-urban areas can be evaluated in the most efficient manner in terms of sustainable development on an urban scale.

However, the specific objectives are as follows;

- 1.) To examine the dynamics of peri-urban formation in İzmir

2.) To analyze the peri-urban typologies in Izmir

3.) To analyse the pattern of growth in terms of multifunctionality in peri-urban land use

1.8. Research Design and Methods

Firstly in the study, a literature survey was conducted to understand the process of formation, development and transformation of the developing peri-urban area concept in the direction of urban growth and to examine the peri-urban examples determined in studies in different countries and cities. Today, studies are being conducted in the world literature in order to define the peri-urban formation and its meaning in the city unity. In the light of these researches, the importance of the urban growth of the peri-urban formation in a process has been touched upon and the result that these areas should be defined as a unit of the city as a transition zone between city and rural settlements.

In order to understand the current situation of the sample areas in İzmir, the satellite images are scanned. A method has been proposed to determine peri-urban typology and to understand land use changes in peri-urban areas in İzmir. The use of land-use maps and satellite imagery (Google Earth) to help illustrate the changes that have occurred over a period of years will help to determine the dynamics of the peri-urban areas. Current maps of the municipality will be analyzed to understand the spatial development of land use and to understand development outcomes. The results will be used to determine the typologies and examine land use planning through analyzes made through GIS, Photoshop, EXCEL programs.

CHAPTER TWO

2. EXPLORATION OF RELATED LITERATURE ON PERI-URBAN GROWTH, LAND USE PLANNING, AND THE ROLE OF DUO IN SUSTAINABLE DEVELOPMENT

2.1.1 Introduction

The aim of the research in this chapter is to provide some theoretical clarity and practical utility to the problem statement. From the various definitions of peri-urban found in the literature, the essential points of agreement and the range of variation in viewpoints are explored. Next, an elaboration on the typology of peri-urban, including its relationships to rural and urban forms is dealt with in the chapter. Finally, peri-urban form and structure in with interplay of theories by Bryant (1982), Pryor (1968) and Holmes (2006) have been explained in relation to the study area.

In the ensuing and last part of the chapter land use planning and its relationship, to sustainable development is explored. Thus the origin and growth of the term "Sustainable Development" in the international arena, and lastly the link between land use planning roles and peri-urban sustainability.

2.2. Defining "The Peri-Urban"

The term periurban is used frequently in literature and in policy discussions, yet definitions are largely situational and case specific. They provide little basis for a unified understanding of what constitutes periurban. This point was well made by OECD in its report on Peri-urban agriculture (1979:10) where they state:

"The term 'peri-urban area', cannot be easily defined or delimited through unambiguous criteria. It is a name given to the grey area which is neither entirely urban nor purely rural in the traditional sense; it is at most the partly urbanised rural area. Whatever definition may be given to it, it cannot eliminate some degree of arbitrariness."

Following English urban geographer Thomas (Thomas (1978) and Matijevic, 2005), who analyzed terminological and conceptual determination of a rural-urban zone, various terms were distinguished in geographic literature: limited urban fringe against extended urban fringe, rural non-farm, suburbs, urban fringe, suburban fringe zone, outlying adjacent zone, pseudo-suburbs, satellites and pseudo-satellites, and inner and outer urban fringe areas and lately peri-urban interface (Tacoli, 2003; Allen 2003; etc.). For instance, Wandland Magoni (2017) conclude Peri-urban areas as general regions affected by strong expansion processes of the urban area, processes that are weakly opposed by marginal agricultural activities.

Recent findings from the works of Dymitrow(2018) in further elaboration to previous concepts provides an introduction to the rural/urban problem from three perspectives: societal changes versus conceptual immutability, the constancy of critique, and philosophical repositioning. It, therefore, implies that the three must be factored in to address the complexity of the rural/urban problem and to arrive at its appreciation.

Moreover, researchers such as Wandl and Magoni(2017) observe the common feature of the many different types of space that are considered peri-urban is that they are transition spaces with some degree of intermingling of urban and rural uses. By transition here means a state of land use which is undergoing a change from rural to urban. Usually, this change includes the spatial function and use of land. The transition zone, in this case, remains an area of perpetual land use change from its mother use mostly agrarian and green infrastructure to urban housing, industrial and other city-related amenities,

Other authors undertake a critical review of the theoretical concept but subsequently employ an exclusively urban fringe, operational definition. For instance, laquinta (2000) From this literature we conclude Peri-urban;

- has a demographic component, thus concerns population size or density
- is meaningfully correlated to being urban in a certain perspective, ‘
- has a temporal composition due to urban growth and relative expansion
- has a geographic component, specifically reduced to proximity an urban core, and
- improvements in the transportation network.

Another school of thought sees peri-urban as defined only in relation to specific uses, markets, or the factors which influence an area such that it is peri-urban may derive from the market. There are multiple types of peri-urban environments, and use relations or may rest in some deeper underlying processes (e.g. demographic or propagation of urban attitudes, socio-cultural).

Finally, among others, the essential components of a broad-based operational definition. a fourth pattern in the literature is comprised of those bodies of work that identify As OECD (1979:9) states:

“The impacts of economic growth and physical expansion of the urban area are not confined within urban boundaries; they reach into much wider areas surrounding urban centres, creating so-called ‘rurban areas’, ‘urban fringe areas’, or ‘peri-urban’”.

While the peri-urban area retains the characteristics of the rural area, where the tendency of continuous modifications: changes take place with respect to physical configuration, economic activities, social relationships and so forth (laquinta, 2000). According to Buxton and Coy (2007) peri-urban area can be defined in relation to a nearby metropolitan area around its inner boundary, a rural area on its outer boundary, or as the land in between. There are difficulties with all three approaches. The authors observe peri-urban land can be seen simply as urbanising land adjacent to the edge of an urban area into which it physically and functionally expands (Burnley and Murphy 1995). This city orientation, therefore, results in a peri-urban area being defined in relation to an expanding city which “constantly absorbs its fringe area and creates a ‘new’ fringe further from the city centre”

Other definitions for the term have been widely espoused by Nelson and Dueker (1990) see peri-urban as a new and distinct form of human settlement. A peri-urban area is commonly defined as a “zone of transition from urban to rural land uses” existing between the outer limits of the urban area and the beginning of the truly rural. Seen this way, it is a distinct settlement pattern, an identifiable “middle landscape” between the boundary of an urban area and rural pursuits (Davis et.al, 1994, p. 46). The idea of transition implies that a peri-urban area is an urban land bank awaiting use asserting some form of “impermanence syndrome”. Here it implies the peri-urban land is subject to change from its already sitting role. The current use is not a permanent one and thus will be taken over by urban related spatial developments in due course.

2.3. Discussion

While the term peri-urban has been variously defined in relation to the degree of change from rural to urban, a few clarity which has been conspicuously missing in most instances is the characteristics of urban activity in the already existing rural core. Also, peri-urbanization and the

slim dichotomy between peri-urban growth and urban sprawl are but a few areas which most authors have not been able to explore. In this research, there is the need to identify that slim variance in explaining peri-urban sprawl, peri-urbanization and peri-urban sprawl in relation to the city, Importantly, a non-essential subject to the definition of peri-urban is "proximity to the city". The fact that much peri-urban "place" is proximate to the city is substantively significant to a comprehensive understanding of peri-urban, but it is incidental to an elemental comprehension of peri-urban "proximity to city" presents a further classification, which allows us to differentiate between "types" of peri-urban, not to define peri-urban in the first place. In addition, the concentration on geographic location as a basis for defining the term peri-urban also undermines a comprehension of the rural-urban spectrum as transformative, dynamic and interactive.

2.4. Key Characteristics of Peri Urban Zones

In such a rural landscape, there exists a natural competition of land use which in turn displaces agricultural activities. In such transition regions, a number of issues emerge which make up the morphology and physical structure of those areas. Below are the characteristics of such phenomena.

- Peri-urban zones are usually identified along fringe zones around cities. Thus, they are impermanent areas – implying that as cities grow, their peri-urban areas move outwards; human activities are usually being imposed on a rural landscape; where new urban land uses. these human activities may include industrial, residential housing estates, warehouses, factories etc. these activities take over an already sitting green rural lands thus pushing agricultural productivity outwards.
- The peri-urban zone is seen as the total land area between an urban settlement and the rural hinterland. Examples include towns and villages located within one single urban agglomeration. Such areas are often fast-changing, fragmented with landscape between regional or local boundaries and complex patterns of land use and
- Peri-urban zones are transition or interaction zones, where rural activities and urban interactions are juxtaposed, while human actions may induce landscape features which are subject to rapid modifications,

- The peri-urban zone constitutes an “uneasy” phenomenon, usually characterized by either the lack of “urban” attributes (lack of accessibility, the loss of “rural” aspects (agricultural land, loss of fertile soil, natural landscape, etc.) or lack of services, low density and infrastructure, etc.
- The peri-urban zone is usually a wider market-related zone of influence that is recognizable not only as a zone of direct impact undergoing the immediate impacts of land demands from urban growth but is also in terms of the handling of natural resource products; agricultural and raw materials generation systems.

2.5. Multifunctionality in the Changing Rural Landscape

Multifunctionality in land can be defined as the combination of different socio-economic functions in the same area(Vreeker et al, 2004). The goal of multifunctional as planning, the concept just like new urbanism, smart growth and compact city concept is to save scarce space by intensifying its use.

Multifunctional land use can also be seen as an empirical phenomenon and be studied as such from a spatial, economic perspective. Most importantly it can be used as a planning concept which addresses the spatial challenge of concentrating and combining several socio-economic functions in the same area so as to save scare space more particularly exploit of synergy especially in peri-urban landscapes (Caroline et al, 2004).

Multifunctionality in urban transition can be seen as the result of multifaceted roles neighbourhoods within the urban fabric perform in the changing rural landscape.

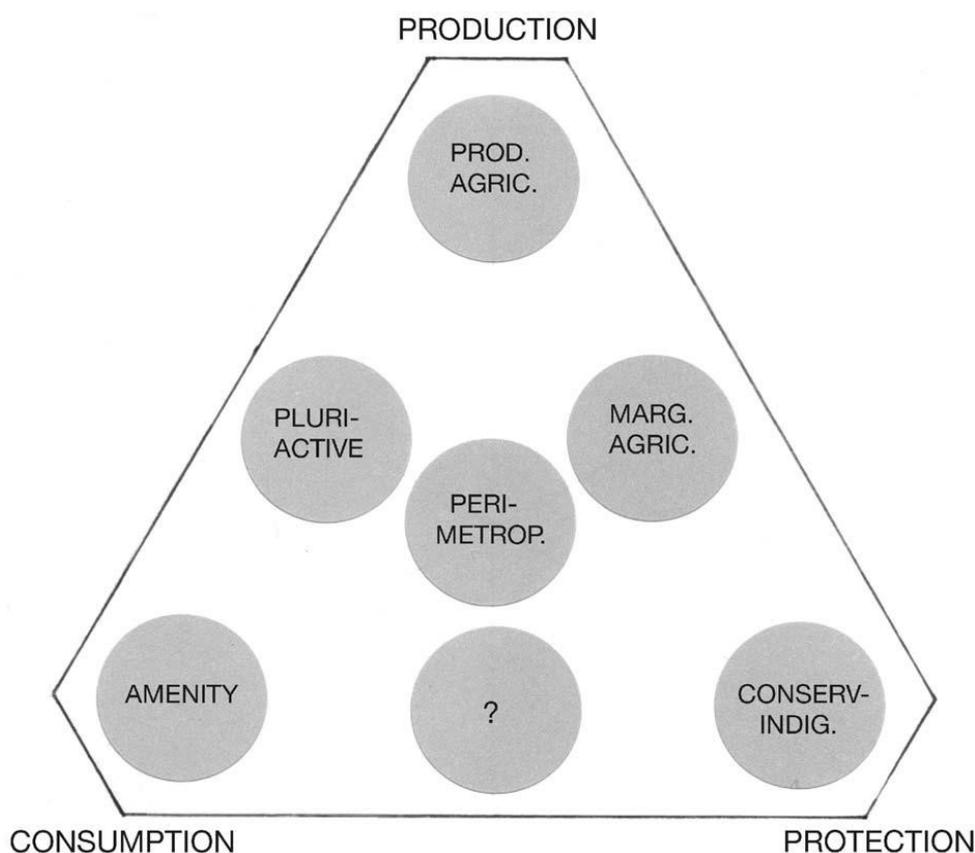
There is concrete research which found that multifunctionality rather than post-productivism is the key dynamic driving rural change, more specifically in affluent societies. This was espoused by Wilson (2001)in his comprehensive review of the post-productivist concept, which he considered as a transition along a post-productivist/productivist spectrum towards a Multifunctional Agricultural Regime. In this work, the concept of multifunctionality is extended to encompass all means of broadscale rural resource use and not restricted to an attribute of agricultural use. As a result, a number of factors have been identified as driving forces behind

multifunctional change in periurban areas. These were stated according to Holmes (2006) as follows;

Technological advances,

Agricultural overcapacity:

These according to Holmes (2006) are the factors which interplay to bring about a reinforced by state protectionism, compelled agricultural intensification at favoured settings, also leading to farm redundancy in other areas, but significantly expressed in the loss of viability and resolved through pluriactivity, intensification, disinvestment and/or conversion to non-farm uses.



0-1Fig 2.1. The Three Dimensional Forces behind Land use Change in Peri-urban area. Source; HOLMES, (2006)

(Holmes, 2006) define multifunctionality in changing rural landscape; Mix of production, consumption and protection goals. As represented in the diagram above, according to Holmes agriculture land use undergoes regime change making way for the rural transition. From “**Production**” which is fundamentally agro-based, loss of r non-farm uses especially at the fringes of the agricultural hub towards the urban shadow. Production according to Holmes specifically transcends agricultural hyper-productivity functions leading to endemic overcapacity, translation

of commodity surplus into land surplus: redundancy, the release of surplus resources to alternative purposes sometimes made of transitions into marginal agriculture. For multifunctional land use role to fester, another significant part of the Holmes model is “**Consumption**”. This is made of amenity including but not limited to enhanced access, higher incomes and lifestyle changes in urban penetration: residential, tourism, recreation, etc. Amenity premium on land values farm adjustment via pluriactivity and off-farm income access to enhanced living standards. Consumption is seen as the outcome of production. It is significant to note that in the Izmir metropolitan area, massive amenity developments in recent years especially mobility infrastructure and development in tourism and good housing at the countryside has contributed significantly to the lively existence and continuous spread of the peri-urban economy. The last component of the Holmes model is “**Protection**”. This is made of preservation rights as well as the emergence of environmental and social justice concerns, identification of rural 'solutions' Policies and programmes towards sustainability, protection of biodiversity and indigenous land rights. Here the essence is to have the interplay of urban green reserves while maximizing farm yields in limited areas. From the analysis of the model and to the development of this research, lessons on the spatial interplay of factors explaining the role of multifunctionality in the peri-urban zones of the study area would help in developing ideas for a sustainable peri-urban future. Izmir has over the years been expanding at a faster rate in built-up land to total land ratios. The depopulation of the hinterlands into the city has however slowed in recent decades (2008-2018). It, however, demonstrates a high possibility of picking up due to falling production of agriculture land use in favour of industrial, residential developments at the fringes.

Multifunctional land use as a concept is sustainability oriented. Unlike mixed use planning concepts multifunctionality seeks to achieved economies of synergy. Multifunctionality in general has an assessment tool based tool linked to its impact on sustainable development . In turkey , a country with quite a centralized planning system multifunctionality and its application could best solve the problem of incompatible land uses in the centre and the problem of over dominance of one particular land use eg pastoral activities. The and others areas where the spatial characteristics rife for multifunctionality as in the western coast of Australia case comparable to the management of the periurban landscape of the Izmir metropolitan areas do not happen without challenges. for instance the outskirts villages embanking the metropolitan has a contiguous existence of dominant pastoral activity which is giving way for urban residential

development without necessarily imbibing multifunctional function which could have called for diversity and economies of synergy as a prerequisite of the concept.

2.6. Typology of Peri-urban

The typology in peri-urban classification is significant for the kind of land use policy at play in these zones. More importantly, the institutional typology; they can help us identify useful meso-policy interventions. This is important in urban and peri-urban environments especially in contexts where there is an intensification of conflict and a necessity for negotiating for land use selection and for implementing development plans resolving competing claims (e.g., between customary institutional forms and values land for residential or agricultural use). This conflict occurs at all levels, including family, community, neighbourhood, local, regional, and or national. The nature and complexity or either wise of the region of society, which combines elements of both "rural" and "urban," is well established in the literature. These have been explained under a number of guises with varying definitions by different researchers, thus driving the essence for inclusion in this study. Terms like a peri-urban, urban tract, exurban, rurban, urban fringe, and semi-urban, even suburban have all been used variously to describe environments which are in some meaningful way neither rural nor urban and yet embodying elements of both.

2.7. Land Use Conflicts in Peri-urban Zones

Land use conflicts in peri-urban come in various forms depending on the origin of observing the phenomenon. Friedman(1973) describes these conflicts as a “collective phenomenon” economists refer to it as externalities or spillover effect. Observers suggest that conflict over land is often particularly acute in peri-urban areas. Examples are but not limited to gravel trucks roaring past residences, non-farm people causing damage to crops. Others include while cattle production might conflict residential uses due to the stench from cattle droppings, general food crop production struggle to compete with increasing land values for industrial and commercial uses at the fringes.

Various land use conflicts can also be categorized into individual versus societal, present versus future uses, economic versus non-economic(aesthetic, ecology), farmer and trespassing urbanite, asphalt plant and country residences, agricultural and gravel pits (Bryant, 1985). Conflicts arising from the differences in both economic activity and spatial order may translate into land use proposal owing to diverse employment skills, and economic specializations. These conflicts produce a new urban characteristic hampering land use planning efforts straining to draw compatible uses together while maximizing the use of space as well as working to forestall the likely sprawl associated with the uncorrelated allocation of land. Importantly, the heterogeneity of cultures and interest and land use proposals requires that any collective organisation must be negotiated across—rather than along—strict building and land use structures.

Peri-urban areas are understood that from previous literature as zones of rapid change at the urban fringes and also often characterised by land transition from rural to urban uses, where different land use may come into conflict. At the same time (Von Der Dunk, Grêt-Regamey, Dalang, & Hersperger, 2011) define the land- use conflicts are the spatial arrangement of incompatible land uses. They may contain high income gated communities, villa-type houses, industrial areas, commercial property in close proximity to low-income neighbourhoods and fringes, or agricultural production alongside the construction of large-scale residential areas. Land use conflicts may arise in such situations through noise, farm chemicals, visual amenity, stock damage etc. The regulation of land use rights in such areas of conflict which may be subject to rural land management regulations, is often inappropriate or mixed (Allen, 2003). In this study define that land use conflict; the construction of a new residential facility within an

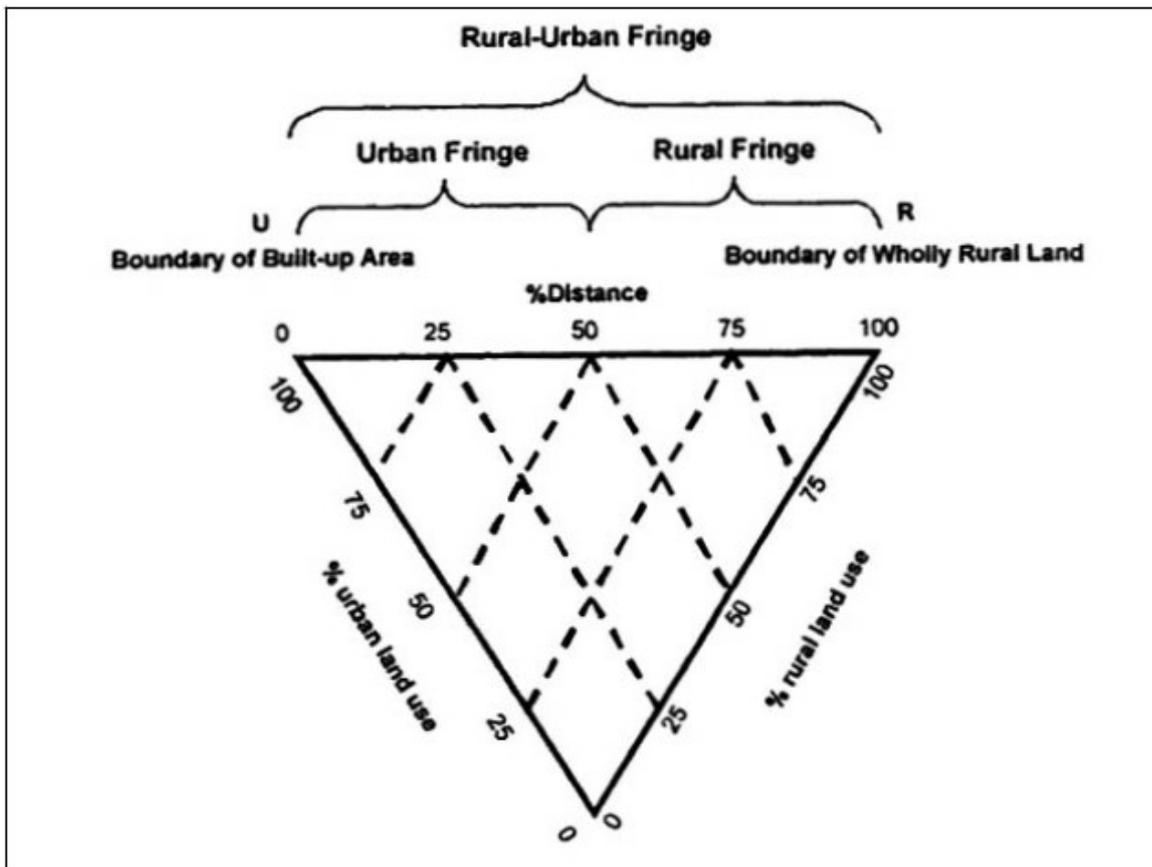
ecologically vulnerable area such a agricultural area may cause a land-use conflict between the party who is in favour of the construction and the party which is concerned with the conservation of nature or continue of agricultural production. (Ford & Universi, 2001) argue that the needs, values and expectations of im-migrants differ from those of the rural community, potentially will occur conflict between the two groups. These conflicting parties cannot have a landscape according to their demands and different social pictures will emerge.

2.8. The Periurban - Physical Structure and Form

A number of researchers have developed structural conceptualisations to facilitate an analysis of periurban landscapes. Pryor (1968) described the four sub-zones in the 'regional city' : (1) urban area, (2) urban fringe, (3) rural fringe, and (4) rural area(fig 2.2).

The urban area is the area that land use forms dominated by urban, while the rural area is dominated by agriculture. The urban fringe, that sub-zone of the rural-urban fringe in contact and contiguous with the central city, exhibiting a density of occupied dwelling higher than the median density of the total rural-urban fringe, a high proportion of urban uses(residential, commercial, industrial and vacant) as distinct from farmland, and a higher rate of increase in population density land-use conversion, and commuting.

The rural fringe, that sub zone of the rural-urban fringe contiguous with the urban fringe, exhibits a density of occupied dwellings lower than the median density of the total rural-urban fringe, a high proportion of farm as distinct from non-farm and vacant land, and a lower rate of increase in population.

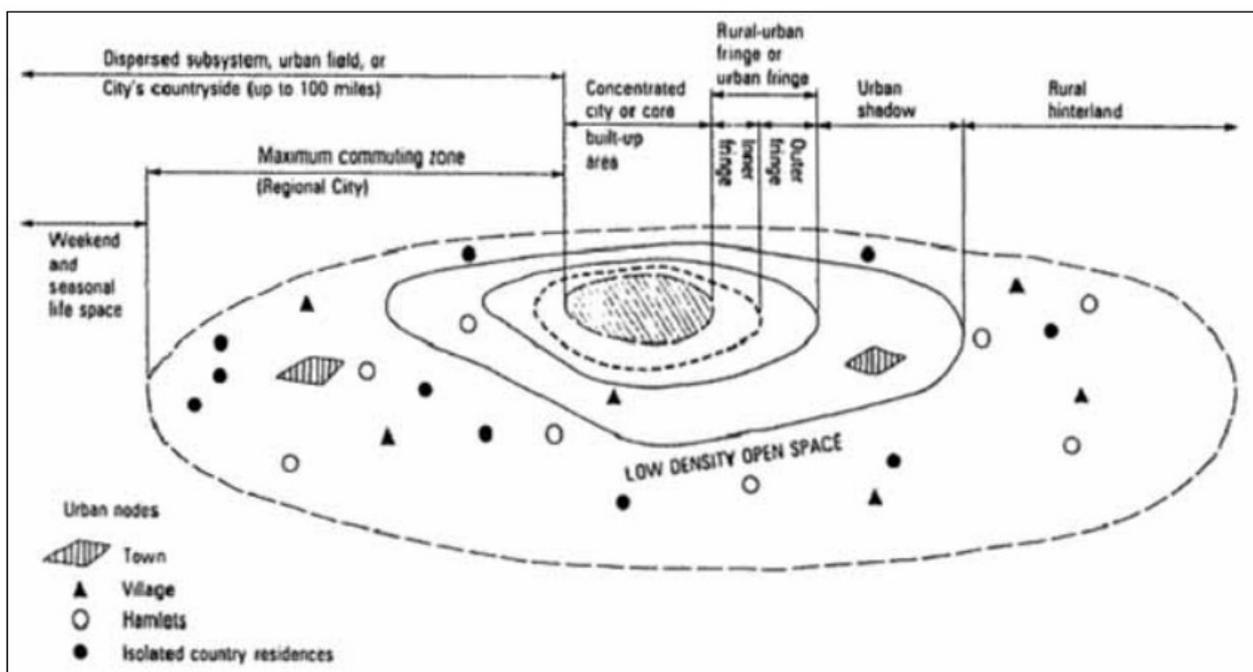


0-1Figure 2.2: Rural-urban fringe scheme (source: Pryor 1968)

Yunus (2001) adding indicators for differentiation sub-zones according to Pryor. Urban area is 100% urban-oriented area of land use. Inner fringe is the zone dominated mainly by forms of urban land use (more than 60 per cent of urban land use and less than 40 per cent of rural land use). Outer fringe is the zone of the percentage of its urban land use in balance with its rural land use. (more than 40 per cent urban land use and less than 60 per cent of rural land use).

Bryant (1982) developed Pryor's definition and scheme (fig 2.2). Ilbery (1985) suggests four distinct zones; inner fringe, outer fringe, urban shadow and rural hinterland. his structure, based partly on Bryant, is particularly helpful, since it stresses the notion of continuum between urban area and rural hinterland (Fig. 2.3) (Bryant et al. 1982).

- a) The inner fringe is characterized by land in the advanced stages of transition from rural-urban uses, land under construction, land for which subdivision plans have been approved. There is little doubt that the land will transition into urban oriented uses.
- b) The Outer fringe is an area where although rural land uses dominate the landscape, the penetration of urban oriented elements is clear, but the frequency is not as high as in sub zone of inner fringe. Infiltration of urban appearance begins to appear in this zone.
- c) The urban shadow zone is the area where the elements of urban morphology begin to infiltrate, but is still minimal.
- d) The rural hinterland is land used for recreational activities by city dwellers. (Bryant et al. 1982).



0-2 Figure 2.3: Rural-urban fringe scheme (source: Bryant-1991, p.12)

The zoning is a conceptual model only. Not all cities are separated by a sub-region sequence and have not always spread evenly in all directions, such as in the model. The structure represented in Fig. 2.3, is an idealised one. All these types do not occur in all centers or even in all directions. Sometimes an abrupt change may occur in fringe to the any type. Also according to Taubenböck (2014) The mix of rural and urban physical, social and economic environment is so complex and one cannot be easily separated each from other.

Burnley and Murphy (1995, p. 248-9, 245) proposed the term 'peri-metropolitan region' as a broad concept of urban study. According to them the peri urban metropolitan region could be grouped into two categories. The first category, known as the edge statistical local area, is seen as the land on the edge of the urban sphere that is undergoing "colonization by the new suburbs under expansion". According to their findings, these zones could further divided into edge urban, also known as the suburbanized, and edge rural.

The land use occupations in these areas remain traditionally rural pursuits mostly agricultural occupations. The second category, according to the structural underpinnings of their findings was Peripheral Area, which they referred to as land beyond the edge. Peripheral zones are further split into peripheral rural(made up of a range of rural habitations), and peripheral urban, thus "ad-hoc urban nodes found in an intermix of the rural landscape ". The structure and form of rural-urban in this section identifies the great influence of the traditional urban growth on the adjacent lands, and the reducing city influence along a distance from the urban fringe.

It can be concluded that Non-urban ('exurban') landscapes usually consist of a broad habitation of people beyond suburbanites normally on large empty lots and their land uses. while peri-urban settlements consist of more than "sociologically distinctive sites of migration for retirement and as well as tourism.

The exact classification of this zone although difficult (Taubenböck et al. 2014) classification scheme has been adopted in the study which supported by many scholars Pryor 1968; Bryant 1982; Ilbery 1985; Piorr 2011). But different terms have been used but they have the same meaning. Such as urban fringe; with high urbanity and low rurality, same meaning of inner fringe. According to Bryant (1982) the key way of understanding this various zones related to the acceptance of complex and dynamic processes. These areas can not be defined based on single criteria. The best option accept the various approaches for distinction these zones(Bryant et al. 1982).

There is no only one homogeneous peri-urban area around an urban core that has been put forward by the authors. Different types peri-urban areas can be found each with distinctive features. Indicators are needed to distinction these areas.

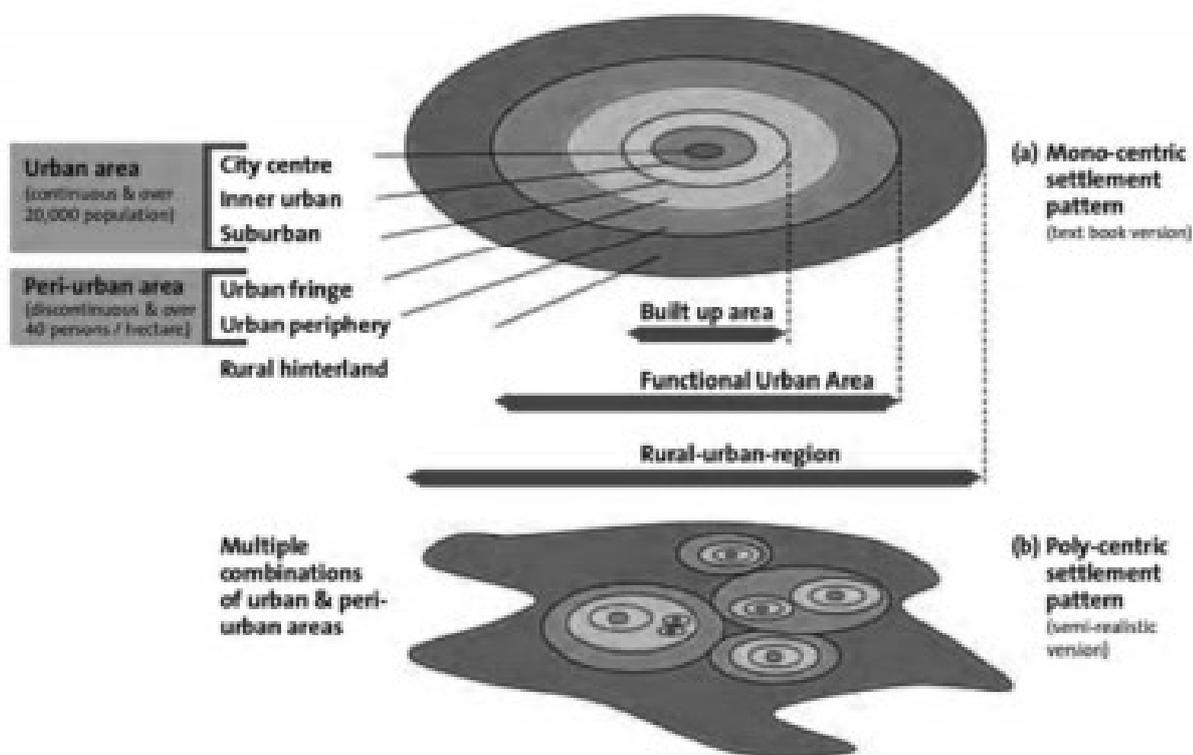
Bryant (1982) defines the inner fringe 10 km radius from city. Ilbery defines the inner fringe and outer fringe 6-10 mil from city edge. (Piorr 2011) it has supported Bryant model, in addition the urban shadow definition, which are termed as daily commuters' last limits or rural hinterland (Piorr 2011). In this study, 40 km proximity to the city center has been considered in terms of daily commuting pattern. In line with Piorr (2011) , 40 km proximity from the city centre has been taken into consideration as per daily commuting pattern. But unlike Bryant, Ilbery and Piorr who took an arbitrary circle, with a radius of 40 km from the city centre, the travel time approach is considered the most appropriate indicator of accessibility (Simon et al. 2004).

At the same time, unlike other authors, Bryant (1982) points of the intensity and type of land use conflict as a distinctive factor in these zones. The inner is the zone with the maximum conflict intensity. This is the zone that has the highest number non-agricultural population. Un-wanted land use occur in this zones such as industry, sand-gravel extraction. The types of urban-oriented uses changes in the outer fringe such as outdoor recreation activities ,market gardening. In the outer fringe, the non-agricultural population is more than the agricultural population, but not as much as the inner fringe.

2.9. Urbanization in Transition Zones (Peri-Urbanization)

The term peri-urbanization refers to a dynamic process in which rural areas outside the central area become more urban in character. Peri-urbanization, urban development affects nearby areas (usually rural and smaller close city center municipalities) (Bogotá, Valencia, & Simon, 2016) this transformation creating significant changes in social, economic, physical and ecological structures often in piecemeal fashion (Muller, n.d.). This process is ongoing and is therefore difficult to fully define. (Muller, n.d.) has provided specific percentages in countries in the global south, the common point in these countries; the rate of employment in the primary sector can be defined as peri-urbanization (for example, agriculture) decreasing, while employment in manufacturing and service sectors is increasing. this shows us that local economic and employment structures have changed. This changing employment structure also includes people who go to other jobs on a commuting daily; and also changing spatial development patterns; increase land costs caused by land speculation and investment inflow (Webster 2002).

Further developments of a similar approach by Bryant (1991), Pryor (1968) was done by (Miljkovic, 2018) below in fig 2.4. in the diagram, the pattern of monocentric and polycentric settlement patterns are woven around the transition of the urban core functions into rural hinterlands thus spurring economic function in a bid to offload pressure from the centre.



0-1Fig.2.4 Rural Urban Pattern in Zones , Source; (Miljkovic, 2018)

Peri urban area is defined as a functional area and this zone can be define zone of daily commuting . Urban core and peri urban area defined the Functional Urban Area.

In conclusion, peri-urbanization, the rate of change in peri-urban land use and multifunctional land use are interrelated concepts which share a direct correlation with spatial morphology of the urbanizing rural landscape. Peri-urban urban areas for the sake of this research can be defined as a constantly transformed land at the outskirts of the city as a way of accommodating pressure from the city centre. Indicators which form the key determinants of the land use transformation process include the nature of the agricultural activity(employment structure), built-up density, population density, and accessibility. From the aforementioned peri-urbanization can be seen as the dynamics in growth and expansion of the outer core in receipt of the seeming spill-over from the central city.

Multifunctionality in spatial growth combines different roles together in a single neighbourhood, as a result, reduces waste, resources, and energy consumption by decreasing a considerable amount of mobility.

2.10. Land Use Planning, a Periurban Antidote?

Urban and peri-urban areas are the main theatres of human activities. Land use planning and management in this area is a primary tool and strategic issue for a sustainable future (Miljkovic, 2018). The comprehension of the urban areas as both structural and functional entities is a prerequisite for the sound and sustainable development of urban and peri-urban areas. Land use planning is one of the key components effective in reducing the pressure on land resources (Miljkovic, 2018). The limited spatial resources in the peri-urban areas must fulfil several basic functions: production (agriculture and forestry), recreation, residence, waste disposal, and wildlife habitats. This can only be accomplished by the employment of multifunctional land use, where several functions are fulfilled by every piece of land.

Land use planning refers to the process by which a society, through its institutions, decides where, within its territory, different socioeconomic activities such as agriculture, housing, industry, recreation, and commerce should take place. This includes protecting well-defined areas from development due to environmental, cultural, historical, or similar reasons, and establishing provisions that control the nature of development activities. These controls determine features such as plot areas, their land consumption or surface ratio, their intensity or floor-area ratio, their density or units of that activity (or people) per hectare, the technical standards of the infrastructure and buildings that will serve them, and related parking allowances. In relation to pollution prevention, land use provisions should include, where applicable, levels of gas emissions, light radiation, noise, water, solid waste discharges, and onsite or pre-disposal treatment of pollutants. All of these provisions should be included in the jurisdiction's land use or zoning code. This code becomes the legal guide for landowners, developers, citizens, and authorities.

Considering the **urban sprawl management in Turkey**, according to a recent report of OECD (2012).

In Turkey case, peri-urban planning development has some problems due to the urban planning system. The problems can be classified as urbanization practices based and planning managing system based. Although these two reasons have specific factors, they affect the peri-urban development as a part of the holistic outcomes. When the urbanization practices are examined, the relevant inputs are:

1. **Rapid urban growth of urban areas:** the biggest cities the employment advantages are the main attractiveness as in the İzmir case. The multi-sector agglomerations attract high population groups, it births the new residential requirements and the increasing residential areas create the peri-urban settlement unrestrainedly. With reference to recreation, residence, waste disposal and transportation issues, the new areas are getting urbanize rapidly and as a result peri-urban development has a quickly transformation process.
2. **Capital accumulation and investments:** site selection for new suburbanization demands, big scale investments such as new projects, universities and industrial agglomerations cause the rapid urbanization in the peri-urban development s with regarding to population increasing. No matter which one of investments, they attract population in all cases and the peri-urban areas transform rapidly.
3. **The demand of changing of location:** with the increasing population and becoming dense urban areas becoming the insufficient urban living standards for the upper income groups. Environmental pollution, noisy urban areas, traffic problems, insufficient green spaces, housing ages etc. are the main reasons for the changing for the location. Thus the relevant group moves to love dense areas that called as peri-urban areas, the new residence areas needed to urban infrastructure and as a result peri-urban areas are getting urbanized speedily.

For the planning managing system:

1. **Lack of harmony between planning process:** when the Turkish urban planning system is examined, the discordant planning provisions can be observed as the main problem. Because the top down planning system proposes the spaces in the upper scales and it cannot well- designed urban areas. At the same the bottom-up planning mechanism approaches the physical environment in the scale of relevant plan study. Disharmony and

not-feedback planning approaches cause the inappropriate planning mechanism. Plans and reports does not have any connections between planning process due to planning authorities and the physical environment is shaped part by part; so there is no meronymy, this circumstance effect mostly the peri-urban areas and urbanized rapidly.

With regarding to all these reasons, negative outcomes of sprawl reflect to peri-urban areas as changed urban macroforms, low dense but urbanized areas, unsustainable fringe areas, lost of rural character, rapid transformations and unprotected peri-urban areas in Turkey case.

2.11. URBAN SPRAWL AND URBAN PATTERN –COMPACT, ARCHIPELAGO AND FINGER PLAN

Analyzing and exploring a selection of good practices worldwide might provide useful insights for developing better sprawl management approaches.

2.11.1. Defining Urban Sprawl

Sprawl is a world-wide phenomenon. The phenomenon of “urban sprawl” has received extensive attention in the literature particularly since the 1980’s. The term sprawl is frequently used to describe spread of urban land uses currently taking place at the metropolitan fringe. Urban Sprawl has a long history emerging from the industrial revolution and the product of steady economic growth in the Western World, leading to increased car ownerships. For instance, Gonzalez (2017 p. 32) states ;

“Urban sprawl began in the 50s in the United States during the car boom. Its ideologist was the architect and urban planner Ludwig Hilberseimer, who, like Le Corbusier, proposed separate housing uses (garden city) and offices. A great defender of this model was Frank Lloyd Wright. At that time the car was a symbol of freedom, courtesy of the American dream, and the oil crisis and the harmful effects of CO2 emissions in the atmosphere were unknown”.

The multifaceted nature of sprawl brings to the fore several definitions from a diverse set of fields. These definitions of the phenomenon have been recounted below;

Banai and Depriest, (2014); Hayden, (2004) defines sprawl as “a process of large-scale real estate development resulting in low-density, scattered, discontinuous car-dependent construction, usually on the periphery of declining older suburbs and shrinking city centres.”

While Bourne (2001, 26) recounts the occurrence of sprawl, such as “an extension of the suburban margin, the spread of development onto sensitive green-fields and agricultural soils, increases in highway congestion, the proliferation of new subdivisions of homogeneous and low density, single-family housing.” A “suburban development” that is “haphazard, disorganized, poorly serviced, and largely unplanned.” (Banai&Depriest, 2014).

From the aforementioned, it can be observed that most definitions have found sprawl as a continuous physical expansion of the urban area presenting unpleasant conditions for sustainability. Overall, urban sprawl can be referred to the low-density and uncontrolled expansion of urban-rural areas while in the process consuming a substantial amount of agricultural greenies in the peri-urban.

2.11.2. Compact Development

Today, compact city policies, such as densification and infill development policies, are best-known urban growth management policies. According to a ESPON Project (2013), Paris is one of the most compact cities in Europe.

Historically, With respect to mixed urban development, there have been three episodes, which differ in spatial focus and the inclusion of land use functions. In the 1970s, planners and designers influenced and pioneered mixed-use development. Early applications of the concept were mainly based on the redevelopment of attractive but sub-optimally used historic buildings and districts Vreeker (2004). This was, however, limited to combining office and retail functions. In the 1980s, spurred by the gentrification process, the integration of housing with retail and office functions became more common. The same multifunctional stadium concept has also been applied in other cities across Europe and the United States, for example, Arena auf Schalke in Gelsenkirchen, Germany. The idea has been to create synergy between the land use functions that are combined. The planning concept of multifunctional land use belongs to this type of mixed and compact development

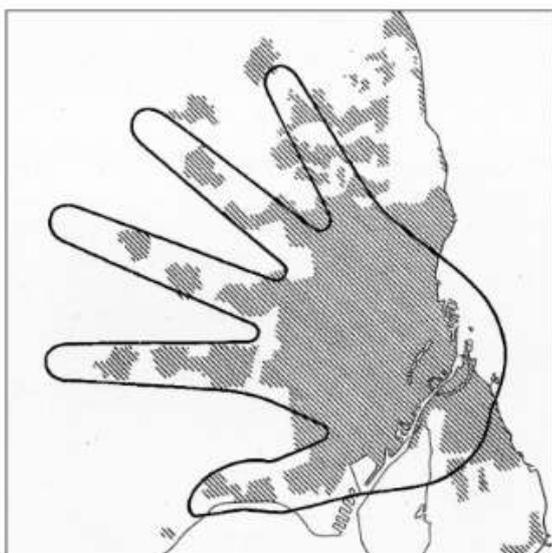
Compact metropolitan development generally means that the space needs of a population can be satisfied with less land area. Compact development can take various forms, and communities can develop more compactly by using three techniques: infill development, brown-fields redevelopment, and cluster development.

The compact city fallacy according to (Neuman, 2001) verticality is a solution to the urban sprawl, secondly, the concept means the town should be compact thus creating urban desirability and suburban livability.

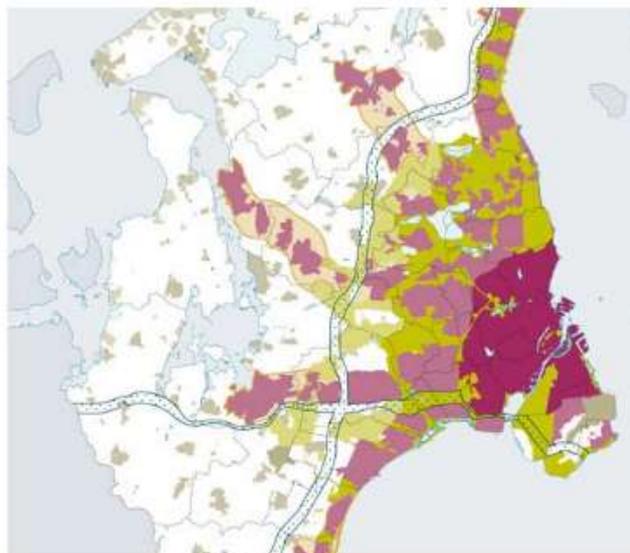
2.11.3. Finger plan

While some cities have chosen extensive greenbelts as contemporary urbanism, Copenhagen city chose an original model and precursor: the “Finger Plan” as part of the goals of this plan was to limit urban sprawl. According to the plan Copenhagen is the development along with five “fingers” centred on S-train commuter rail lines, which extends from the palm that is the dense urban fabric of central Copenhagen. 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).

Finger Plan 1947 (First sketch)



Copenhagen Finger Plan 2007



0-1Fig:2.5 Finger plan of Copenhagen. Source: Danish Ministry of the Environment, 2007 and 2015.

This ‘Finger Plan’ is a good example of a long-term planning vision;

“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).

2.11.4. Urban Archipelago

Within the context of urban research, the popularity of conceptualising cities as islands increased enormously when the architects Ungers and Koohlhaas formulated a new manifesto on The City in the CITY – Berlin: The Green Archipelago (Andexlinger, 2015). With Ungers and Koohlhaas idea of the ‘archipelago city’ – a city understood as islands of urban density within a large forest. The archipelago concept is a ‘system of fragments’(Schrijver & Koolhaas, 2007). These archipelagos can be defined by a number of by a number of different elements such as the built-up area, population, productive landscapes, water bodies, mountains.

The concept of the archipelago-city: finding a solution to the problem of constant growth and unlimited expansion, improving urban quality, restoring identity in urban spaces/establishing a close link between city and country, renewing the relationship between culture and nature/the intensification of places (Sotoca, 2014)

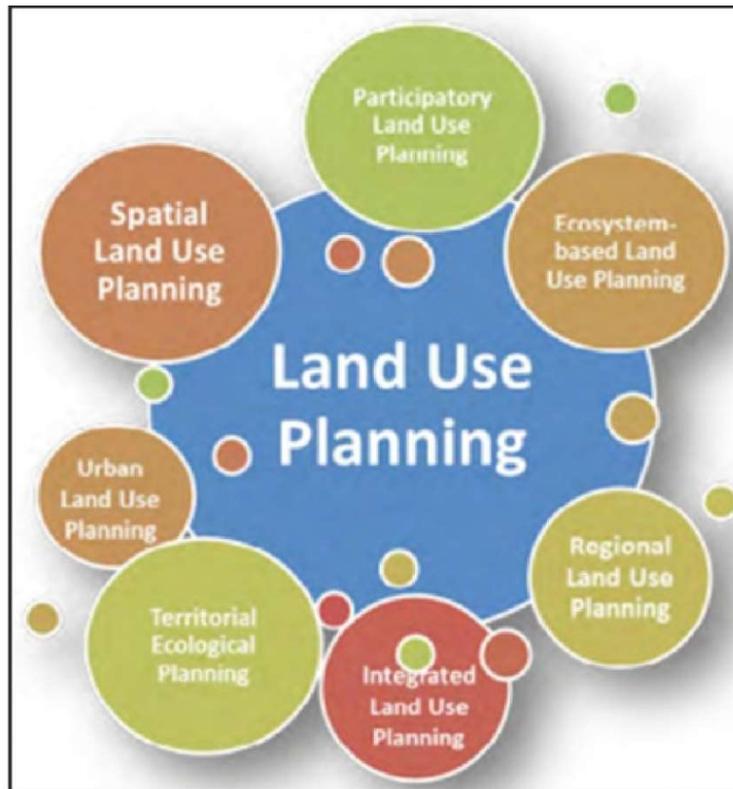
From the aforementioned, the compact city, archipelago and finger plan are contemporary design patterns that transcend the work of most researches in urban geography and the land use economics of most cities both historical and present. This work, therefore, seeks to explore the study area in terms of the possibility or either wise of choosing the desired pattern that would, in turn, minimize the consequences of sprawl, waste of rural agricultural lands, and manage the rate of peri-urbanization. These are achieved mostly through transformative infrastructure drive, multifunctional urban land use planning.

Establishing the linkage among the possible pattern for sustainability urban planning and development would require a further probe into the existing test cases of similar urban phenomena.

2.12. THE ROLE OF LAND USE PLANNING IN PERI URBAN AREAS

Sustainable land use planning can be defined as a combination of knowledge, science and creativity to design, evaluate, and implement a set of specified actions mostly in the public domain, made up of the different dimensions of sustainability such as environment, economy, and social sphere (Friedmann 1987; Berke and Conroy 2000; La Rosa et al, 2018). Land use planning allocates land and resource to optimum utilization and in an orderly fashion. This implies it reduces any form of wastage in the use of limited resources. Land use, land governance and land tenure: interdependent factors influencing land use planning, Weak governance is a major constraint with regard to planning for sustainable development; it underpins land degradation and can exacerbate conflicts over the use of land.

Efforts on land use planning and governance with several examples of national norms exist which have failed to protect valuable ecosystems from clearance. As an example of the impact of the lack of governance and land use planning on pastures and farmlands, pastoral areas of İzmir, which cause deterioration, and pastures of scattered resources with high and low production potential, are characterized by agricultural areas. The lack of a spatial planning framework and land use policy in the sense of conservation has led to the development and often contradiction of government-led pastoral land use planning; Decisions taken at different government levels are usually made without consulting local land users between and between levels. This has led to conflicts in use, especially in rapidly developing rural areas. Long-term negative consequences of pressure on local resources; Due to changes in land use, it often has a wide range effect. The previously highly-productive rangelands are being increasingly fragmented. Livestock routes are similarly increasingly blocked due to unplanned settlements, fenced enclosures/ exclosures, and agricultural areas along rivers. These are some of the roles of rural-urban urbanization and the consequences of uncoordinated and improper land use planning in the peri-urban enclaves.



0-1 Fig. 2.6 Various Forms of Land Use Planning

Name	Definition/Purpose	Examples of application
Land use planning	The systematic assessment of land and water potential, alternatives for land use and economic and social conditions, in order to select and adopt the best land use options. Its purpose is to select and put into practise those land uses that will be best meet the needs of the people while safeguarding resources for the future. [26]	Extensive application for rural, regional, local land use planning in developing and developed countries.
Spatial land use planning	Regional/spatial LUP gives geographical expression to the economic, social, cultural and ecological policies of society. It is, at the same time, a scientific discipline, an administrative technique	CEMAT European Conference of Ministers Responsible for Regional Planning [27] Torremolinos charter

	<p>and a policy developed as an interdisciplinary and comprehensive approach directed towards balanced regional development and the physical organization of space, according to an overall strategy.</p>	
<p>Integrated land use planning</p>	<p>Assesses and assigns the use of resources, taking into account different uses, and demands from different users, including all agricultural sectors - pastoral, crop and forests - as well as industry and other interested parties. [12, 23, 28, 29]</p>	<p>Regional agricultural development of Bungoma region, Kenya [23], rural planning in Laos [30]; Land use and Water Allocation on a Watershed Scale in Iran [31]; Land use and transportation planning, Jinan, China [32]; risk sensitive land use planning: case studies of Nepal, Spain and Vietnam.[14,33]</p>
<p>Participatory land use planning (PLUP)</p>	<p>Used for planning of communal or common property land, important in many communities where communal lands are the most seriously degraded, and where conflicts over land use rights exist [12,34]. Arrangements can be regulated through negotiation among stakeholders, and communally binding rules for SLM, based on planning units. Social units(e.g., village) or geographical units(e.g., watershed) can be adopted. People-centered, bottom-up approach recognizing differences that exist from</p>	<p>Laos (LuangPrabang Province) [25, 34, 35]; Loess Plateau in Northern China - EROCHINA project [36]; China [3]; Costa Rica [37]; rangelands in northern Tanzania [38]; Reunion Island: to integrate biodiversity into land use planning [39]; US - South Florida: urban planning [40];</p>

	place to place, with respect to socio-cultural, economic, technological and environmental conditions. [3]	Nambia; Oromia (Ethiopia).
Gestion des terroirs (Village land use planning)	A participatory catchment approach; it associates groups and communities with a traditionally recognized land area, aiding these communities in building skills and developing local institutions for the implementation of sustainable management plans. It has focused on natural resource management at the village or community level through: (1) technical projects, such as those related to the conservation of soil, etc; (2) socio-economic factors related to the organizational structures within which people arrange their livelihood strategies; and (3) the legal system and its administration, by which use rights are enforced in practice. [12]	Francophone West Africa. [12]
Ordena-miento territorial rural (Rural territorial land planning)	A politico-administrative and technical process aimed at organizing, planning and managing the use and occupation of the territory, contingent to its biophysical, cultural, socio - political and institutional characteristics. This process should be participatory, interactive and based on explicit goals that promote wise and fair land use, taking advantage of opportunities, reducing risks, and protecting resources in the short, medium and long term. It should also aim at a rational distribution of costs and	Argentina and several Spanish - speaking countries of Latin America [41]

Regional land use planning	benefits of territorial use amongst its users. [41]	
	A process of territorial development designed to facilitate the elaboration of a general spatial concept and land use priorities, determination of environment and monument protection conditions, formation of a	Lithuania, European Union, Canada [43]; Australia

Table 2.1 Application OF URBAN PLANNING FOR SUSTAINABLE DEVELOPMENT
(Source; UNCCD, 2017)

2.13. The Concept of Sustainable Development and Land Use Planning

Sustainable development can be explained as the development that meets the needs of the current generation without compromising that of the future generation from meeting its needs and demands. Since the UN Conference on Environment and Development in 1992, sustainable development has been raised to a comprehensive conceptual approach and become a pioneering programme for politics to cope with the common future of humankind (Wiggering, Müller, Werner, & Helming, 2003). Sustainable development also implies relevancy to the future shaping of rural areas and the development of future land use systems.

(Royal et al., 2014) has pointed out that there is an inherent congruity between planning, as a future-oriented activity, and the concept of sustainable development, which concerns the extent to which we bequeath environmental assets, services and qualities to future generations. (Royal et al., 2014) has also pointed to the wide-ranging challenge that this poses for land use planning in terms of managing resource use, including energy, water and minerals, protecting cultural environments and maintaining wildlife.

Sustainable development has been a major discourse on the agenda of governments and international organizations as well as NGOs over the past five decades. What makes sustainable development an important discourse in this research is that land use planning aims at creating a

sustainable city and with its people living in a sustainable environment. The paradigm has been extensively discussed in international geopolitical literature. For the sake of this research sustainable development interventions as well as conferences which have served as a springboard for strongest national level decisions in Turkey on spatial planning since the 1972 Stockholm Conference popularly referred to as the UN Conference on the Human Environment. As an important attribute of these interventions and initiatives is the management of the shrinking world resources. It doubtless to state that most of these resources especially of the urban environment are domiciled in the fringes of the city land landscape. Water bodies, green reserves, frontline raw materials, forestry, clean air quality reserves are all important natural resources predominant in the periurban zones. specifically, because these are areas with less amount of pollution as compared to the industrialized urban concentration and there exist fewer densities of population. Land use planning in the periurban also saw a boost the 1920s when sustainable development was used as the standard for assessing sustainable development objectives and performance in the regions of both the North and South.

Land use planning is undertaken along with environmental sustainability as well as ensuring the welfare of the urban dweller. Peri-urban areas become sustainable when planned to deliver functions that keep the environment undisturbed in the wake of land use competitions and threats of conversion of use towards urban development. The transition zone is known to be unstable, versatile and subject to unrealistic and more particularly incompatible developments which might lead to conflicts. In Izmir where there exist a uniform mix of relatively developed families educationally, to sustain the sustainability of these enclaves through land use planning as a tool means bringing together all stakeholders who matter in local level development.

2.14. Sustainable Development in a Land Use Planning Context

Sustainable development projects three dimensions which have a close relationship among which are trade-offs are inevitable: environmental, economic and social. Moreover, to implement these dimensions requires a lot of institutional and political backing especially from national to local levels. The dimension that comprises the environmental component generally aims at maintaining a certain standard quality on environmental resources. Under the properly planned human settlement imbibing land use principles, biodiversity preservation measured on the basis livability of plant and animal species, diversity as well as endemic species. A significant component of the biodiversity assessment linked to land use planning is the potential use of renewable resources by future generations against and/or the orderly transition to renewable energy sources as alternatives to non-renewables. Specifically, there have been currently staged public concerns from the perspectives of the environmentalists to consider electric cars as against fossil fuels so as to curtail increasing emissions which continue the fight against climate change efforts.

The economic dimension is often measured in terms of reduction of adverse global effects: These factors are environmentally linked to land use and spatial policy. More particularly peri-urban areas contain most of the environmental reserves in the continuous stream linked economically to income at different levels: communities, individual households countries increased food security, cash and real income. Land use planning is most recently championed by paradigms such as urban resilience, smart cities and compact cities an integral part of which includes but not limited to Maintenance of continuous growth and productivity thus withstanding stress or shocks like natural disasters, human health, social conflicts and economic conjuncture.

Resilience from these factors affects growth and sustainable spatial growth.

Lastly, sustainable development is achievable when there is a holistic a political and economic actions to ensure policies have environmental; sustainability focus. Land use planning in peri-urban hinterlands is usually driven by the goals promoting a liveable and functional, economic and aesthetic urban transitional environment. There is the need to empower the ordinary landowners, to participate in decisions and policy towards the development of sustainable goals.

2.15. Traditional Land Use Planning

Identifying challenges in relation to use of space through making conscious efforts to define potentials, resource constraints in the use of different types of land and making decisions to implement development programmes according to laid down policy direction on the basis of these decisions are all roles performed by communities, individuals and governments as part of the traditional land use planning processes peri-urban areas. Just as in urban and industrial planning these decisions are sometimes rigid with formal procedures with time schedules and cost for implementation.

Historically, a major revolution in land use planning approach specifically for rural areas may be seen to be dating back to the 1960s when land capability concept was introduced in the United States (Klingebiel and Montgomery, 1961). In the global south due to the logistical and economic challenges, land use planning is seen to be more informal and may include re-negotiated trekking routes among different tribes especially nomadic areas. The purpose of this approach was to develop and classify specific areas or lands earmarked for agrarian activities different types such as mechanized farming, irrigation, forestry and grazing. In the late 1960s and early 1970s, the initial work on land use planning was reemphasized by efforts to add value to soil surveys which were conducted to identify carrying capacity, yield per acre in order to influence decisions on land use patterns according to land potential

Finally, Peri-urban land use planning has proven to provide the needed tools for sustainable development standard measurements. It, therefore, means that the best approach to identify land potentials especially in city outskirts could be when such lands are assessed according to the dictates of land use planning so as to provide a yardstick to form the basis for allocating land in a more sustainable manner while limiting the consequence on the environment.

2.16. Conclusion

A periurban area is precisely a part of the urban outskirts under transition from rural to urban. but to plan such areas in a more efficient way that requires multifunctional land use, Multifunctional in itself serves a simple purpose, to reduce negative externalities associated with over-concentration and over-specialization of single spatial roles in an urban neighbourhood. Nevertheless, land use planning in periurban areas is an eclectic activity which when not done comprehensively may invite a chaotic pattern of growth that produces a monumental public

agenda. The chapter brought in theoretical underpinnings to the problem of periurban growth especially the assessment of the impact land use planning systems. In other words, the general impact of sustainable development agenda directly infused in state-sponsored urban land use planning would preferably reduce the mess especially when local authorities in these transitional regions do not leave the role of planning to be determined by market powers. Sustainable development has a multifaceted spectrum of which land use plays a key role in regulating key drivers. This section has therefore provided enough literature to enable a continuous exploration of the subject matter in the subsequent chapters.

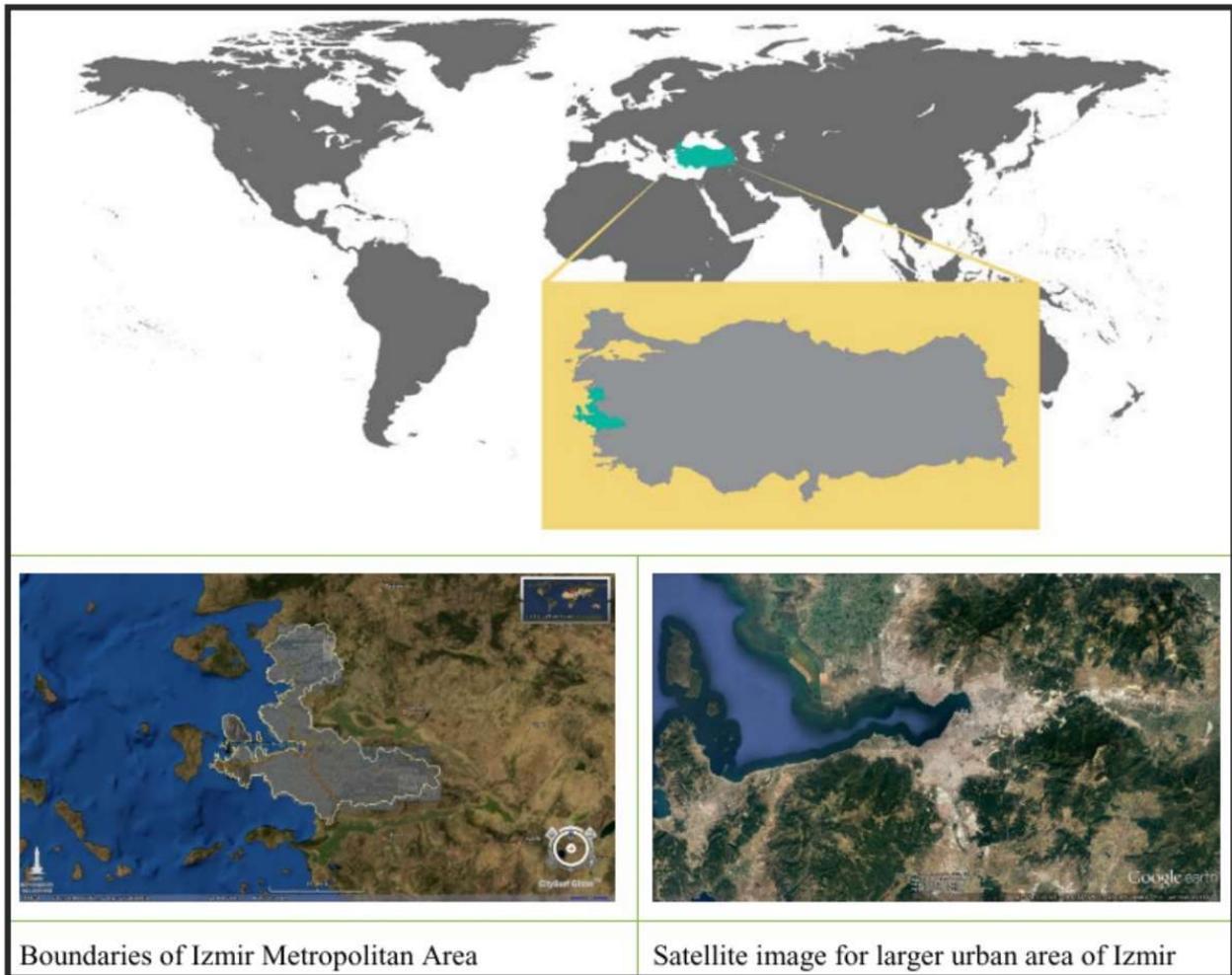
CHAPTER THREE

3.1. DESCRIPTION OF THE CASE STUDY: IZMIR METROPOLITAN AREA

The Izmir case is introduced in this chapter. Current planning approaches, practices and plans are also summarized in the context of urban growth within the first part.

3.1.1. Location İzmir

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

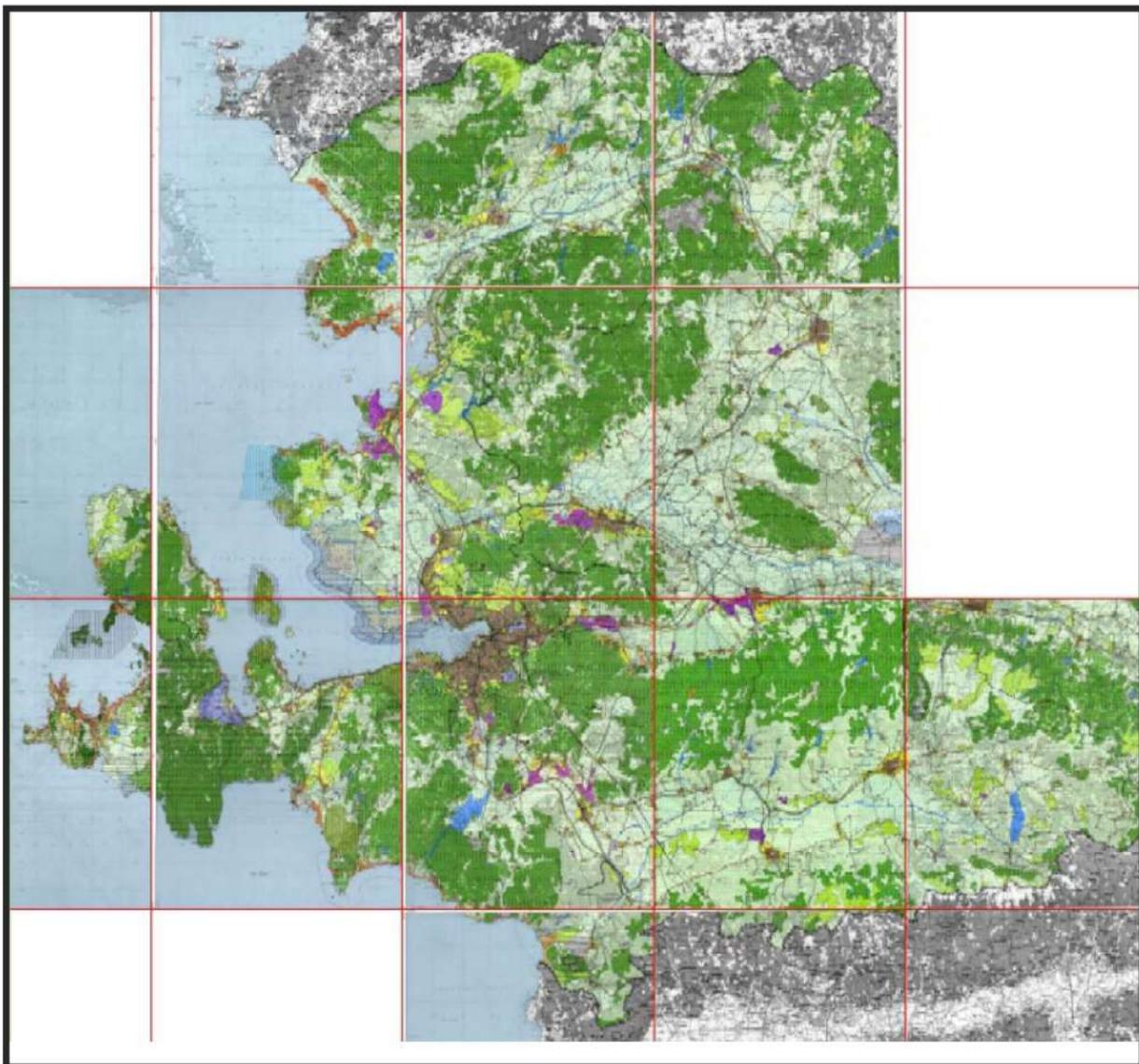


0-1Fig. 3.1 the Location of Izmir Within Turkey and World (Source: Izmir Development Agency, 2015,p:41; Citysurf Globe, 2016; Google Earth, 2019)

3.1.2. Current Plans, Policies Izmir

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 3.2, 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. Core city development strategies developed by taking natural and legislative thresholds (topography, disaster risks, and existing conservation laws etc.) into consideration.

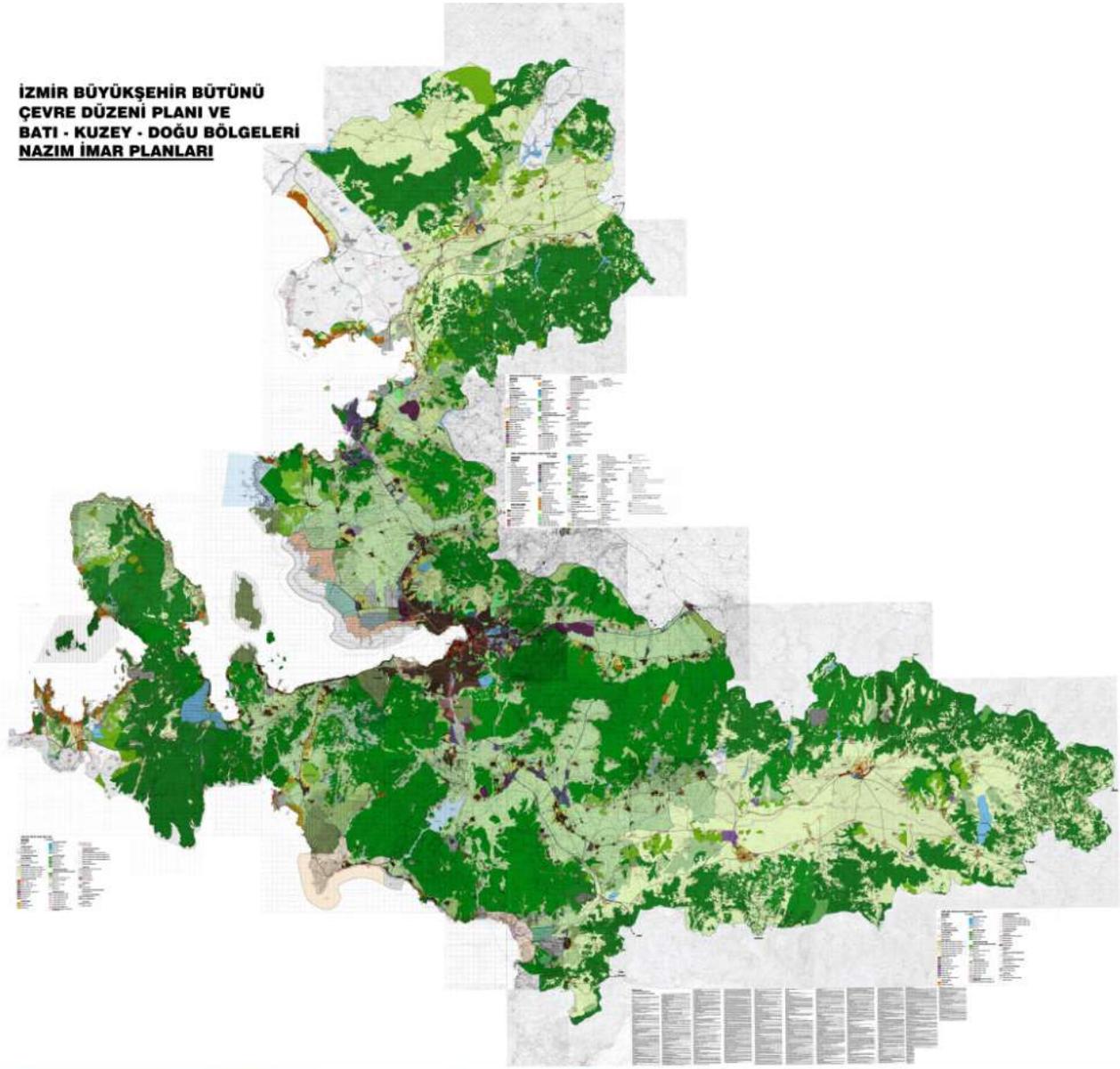
Doing so, it proposes new development areas on the northern axe of the city, especially in un-built- up areas and in already built-up sprawled areas. As stated in the planning report, being closer to industrial and large-scale commercial facilities is another reason of the selection of these areas for 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 sectoral characteristics.



0-2Fig. 3.2 Izmir and Manisa Macro Plan (1/100000), Source: Izmir Greater Municipality,(2015)

Existing 1/25000 (Figure 2.11) 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.



0-3Fig. 3.3 Izmir and Manisa Macro Plan (1/100000),Source: Izmir Greater Municipality,(2015)

Main aim of the 1/25000 Izmir master plan is settled almost the same with 1/100 000 Izmir - 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”.

CHAPTER FOUR

4.1. ANALYSIS OF POPULATION DISTRIBUTION IN IZMIR

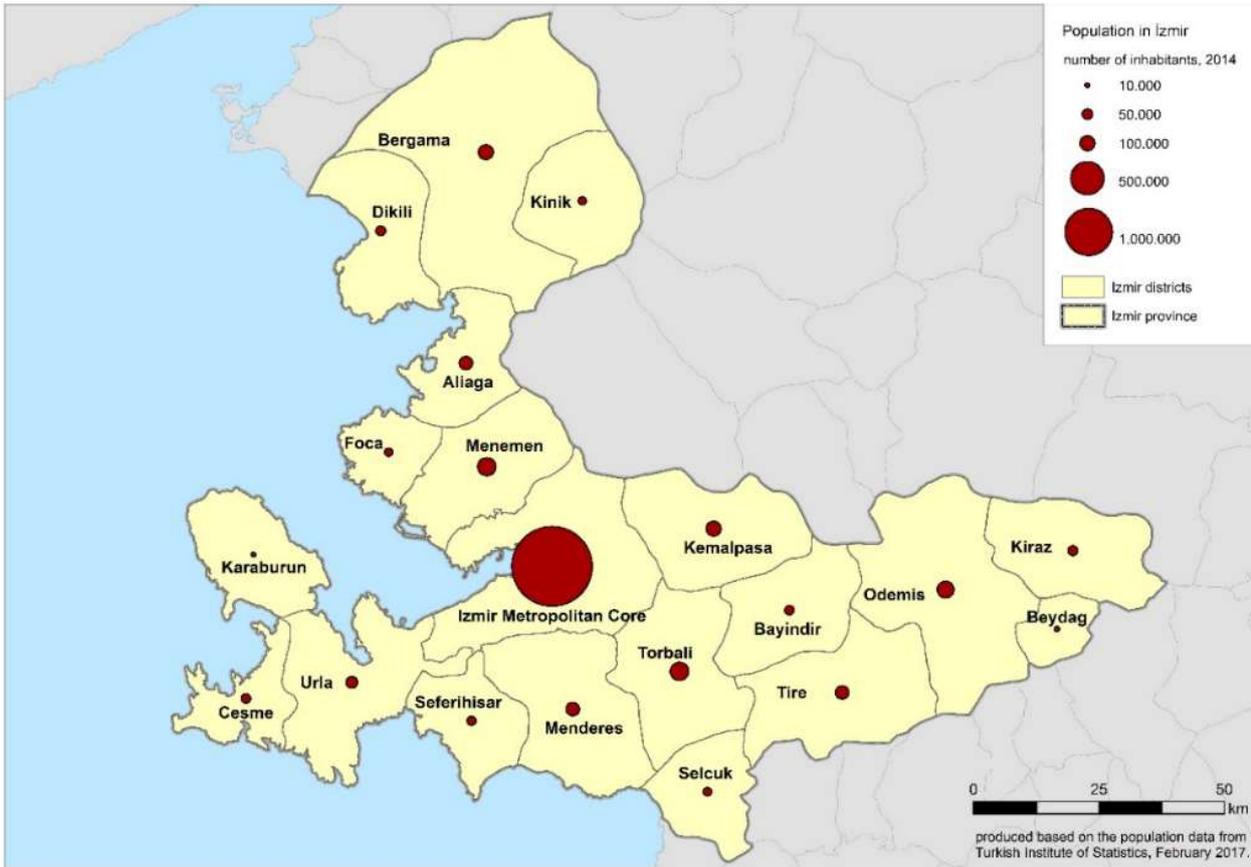
4.1.1. Introduction

In this chapter land use change, economic indicators of spatial growth and the generality of the built environment; factors that shape urban development in the study are explored. The aim of this chapter seeks to answer the question of how land use planning can support the sustainable spatial development process of the study area. By so doing an in-depth analysis of the condition the city is centred around. Mainly two aspects of the population which have been analyzed: Population change (distribution, growth rate, speed of growth population), and density. Population, data of the Turkish Statistic Institute (TSI) for the years 1975, 1990 and 2014 have been used for the analysis.

4.1.2. Population Change and Distribution -Izmir

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 4.320.519 in 2018. Figure 4.1 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 4.1. There are several striking points in the table, which are the subjects of more elaborated analysis, and discussion. Empirical analysis of urban sprawl in Izmir 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 4.2). Apart from the metropolitan core, as of 2014, the most populated districts is Torbali while the least populated district is Karaburun.



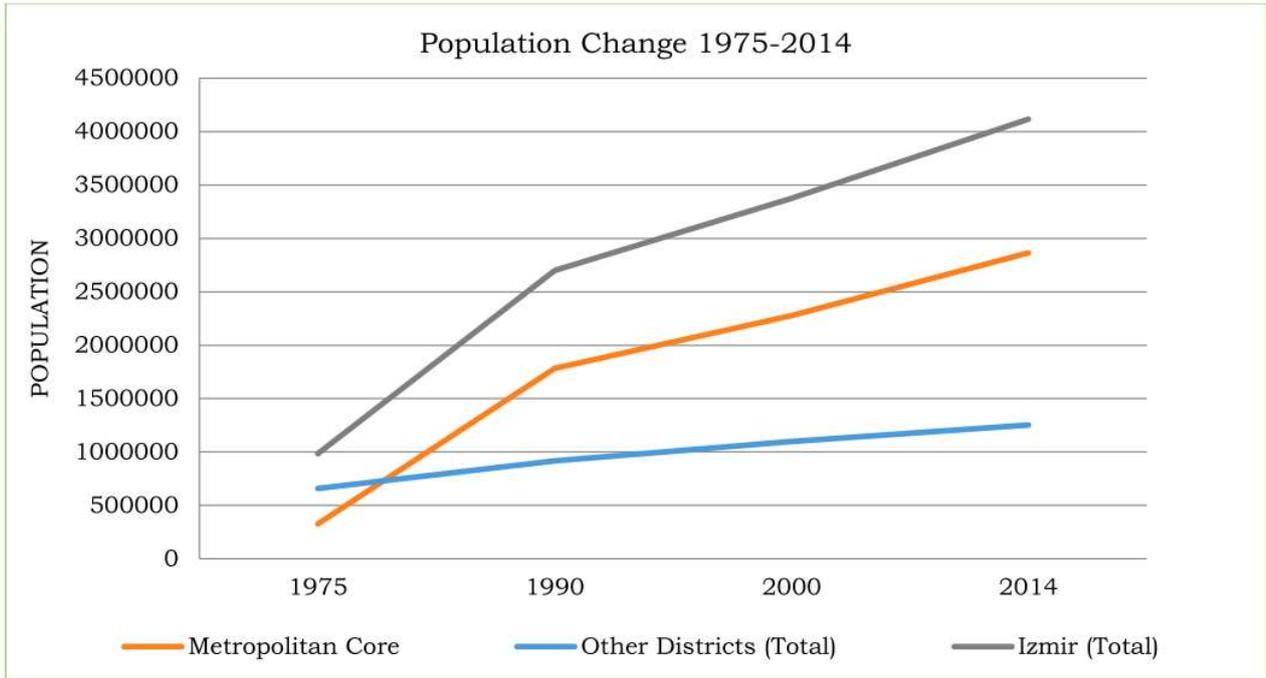
0-1Fig. 4.1 Population Map

Figure 4.2 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 İzmir province increased almost four times from 985 thousand to 4 million within the 40 years, from 1975 to 2014.

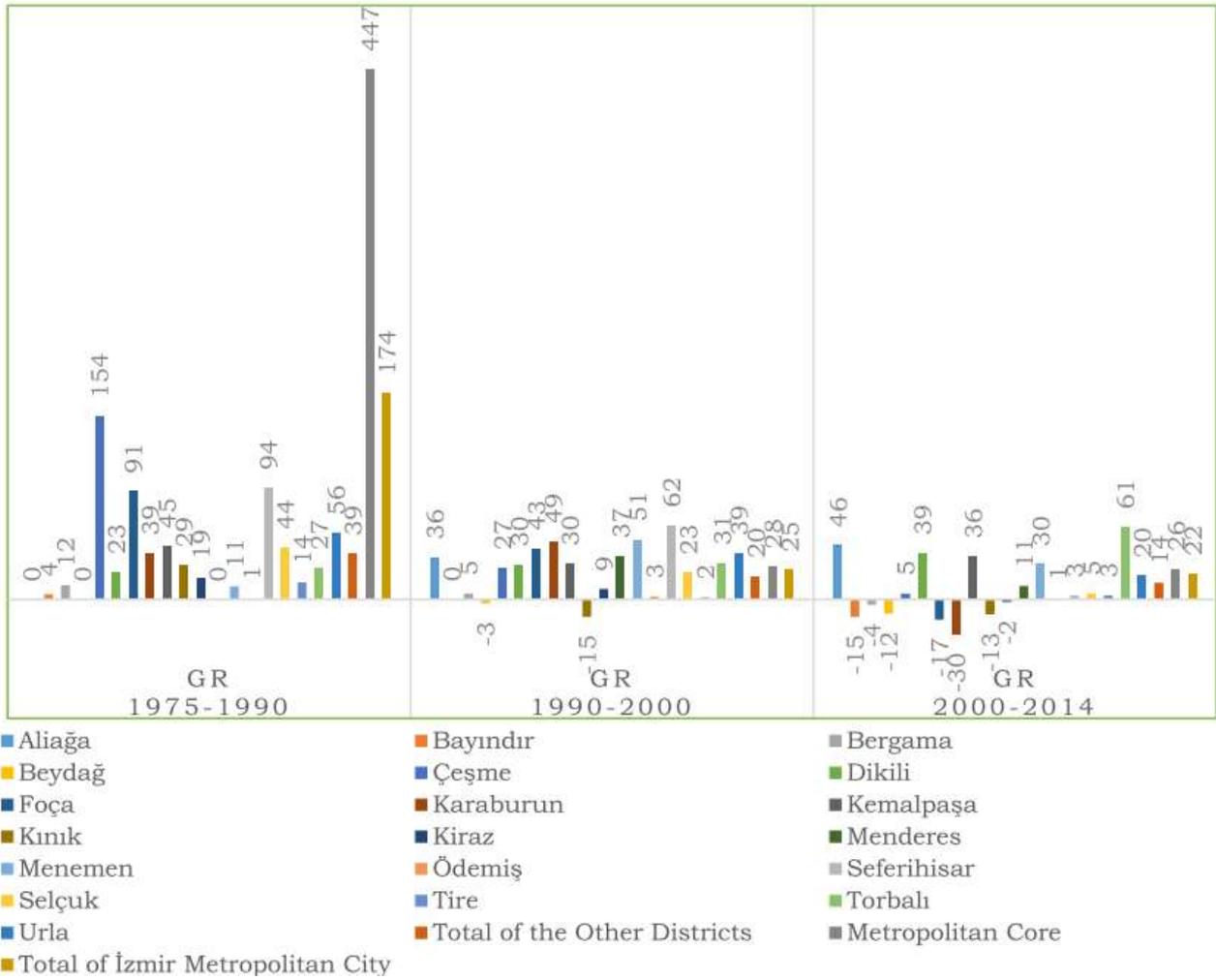
Name of District	1975	Change % (75-90)	1990	Change % (90-00)	2000	Change % (00-14)	2014	Change % (75-14)
Aliaga	n.a	n.a	42150	35,7%	57192	45,8%	83366	n.a
Bayındır	45199	4,3%	47126	0,2%	47214	-14,6%	40310	-10,8%
Bergama	90591	12,0%	101421	5,0%	106536	-4,4%	101813	12,4%
Beydağ	n.a	n.a	14632	-3,3%	14147	-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%
Odemiş	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%
Torbalı	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 %
Izmir (Total)	985551	173,8%	2698750	25,1%	3374866	22,0%	4117100	317,7%

Table 4.1: Population changes between the periods of 1975, 1990, 2000 and 2014, Source: Turkish Statistical Institute



0-2Fig. 4.2 Population Change Between 1974-2014

Growth rates shown in Figure 4.3 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 (1990-200) 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 %).



0-3Fig. 4.3 Population growth rates by districts, Source: Generated from population census data, Turkish Statistical Institute

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 %).

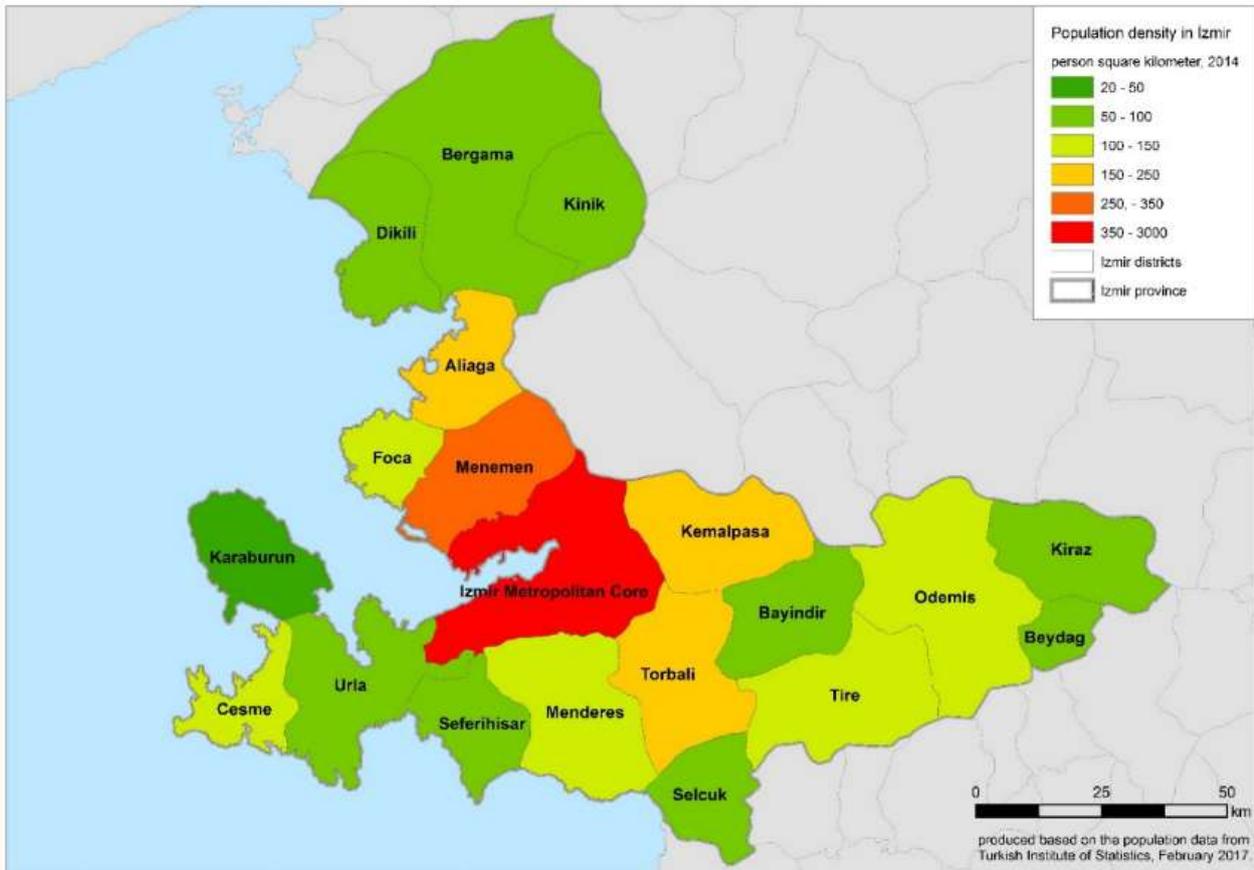
4.1.3. Population Density of Izmir

Izmir is the third densest city of Turkey after Istanbul (2767 per/km²) according to the 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 the metropolitan core as seen in Table 4.2 and Figure 4.4. 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 people/km² in 1975 to 114 person/km² in 2014. Figure 5.7 shows the population density gap between core and non-core districts.

Districts	Population density (person/km ²)			
	1975	1990	2000	2014
Aliağa	N/A	108	147	214
Bayındır	88	92	92	79
Bergama	58	65	68	65
Beydağ	N/A	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	N/A	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

Table 4.2: Distribution of population density, Source: Turkish Statistical Institute



0-4Fig. 4. Population density map of Izmir metropolitan area, Source; Turkish Statistical Institute

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

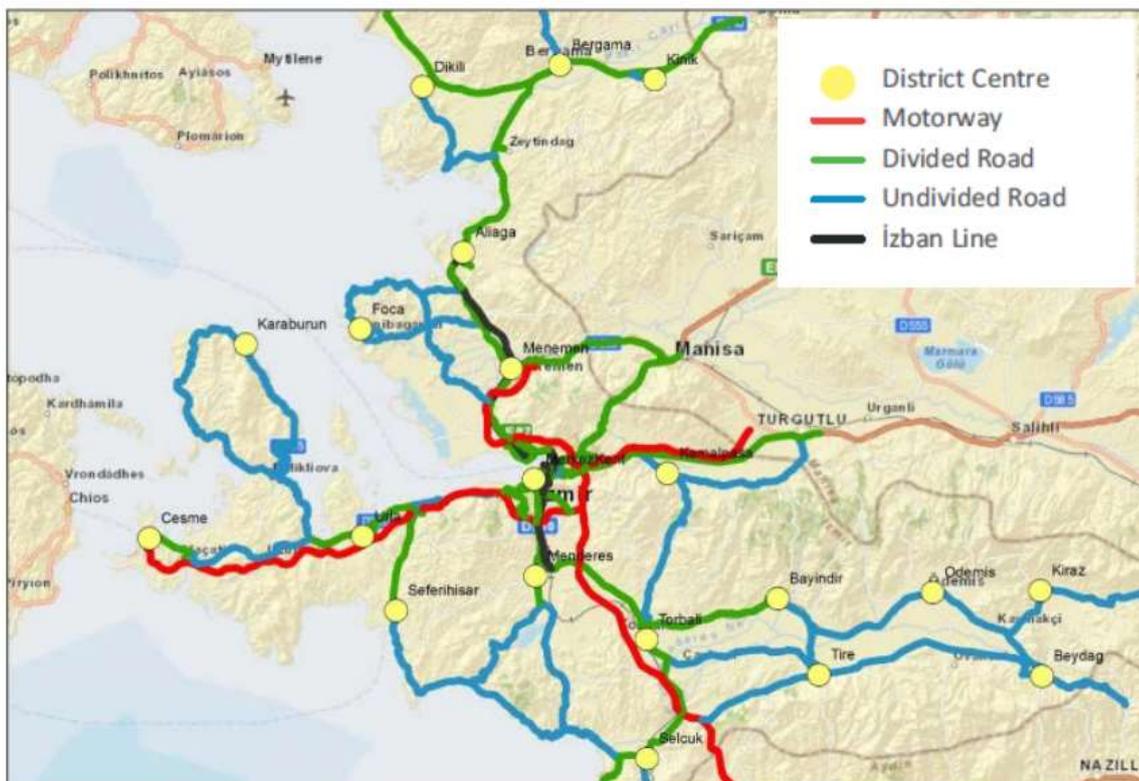
Among the non-core districts, Karaburun, Kinik, Bergama, and Dikili have the lowest population density in almost every period, which confirms their relatively higher rural structure. These districts are also located in a distance more than 50 km far from the metropolitan core.

CHAPTER FIVE

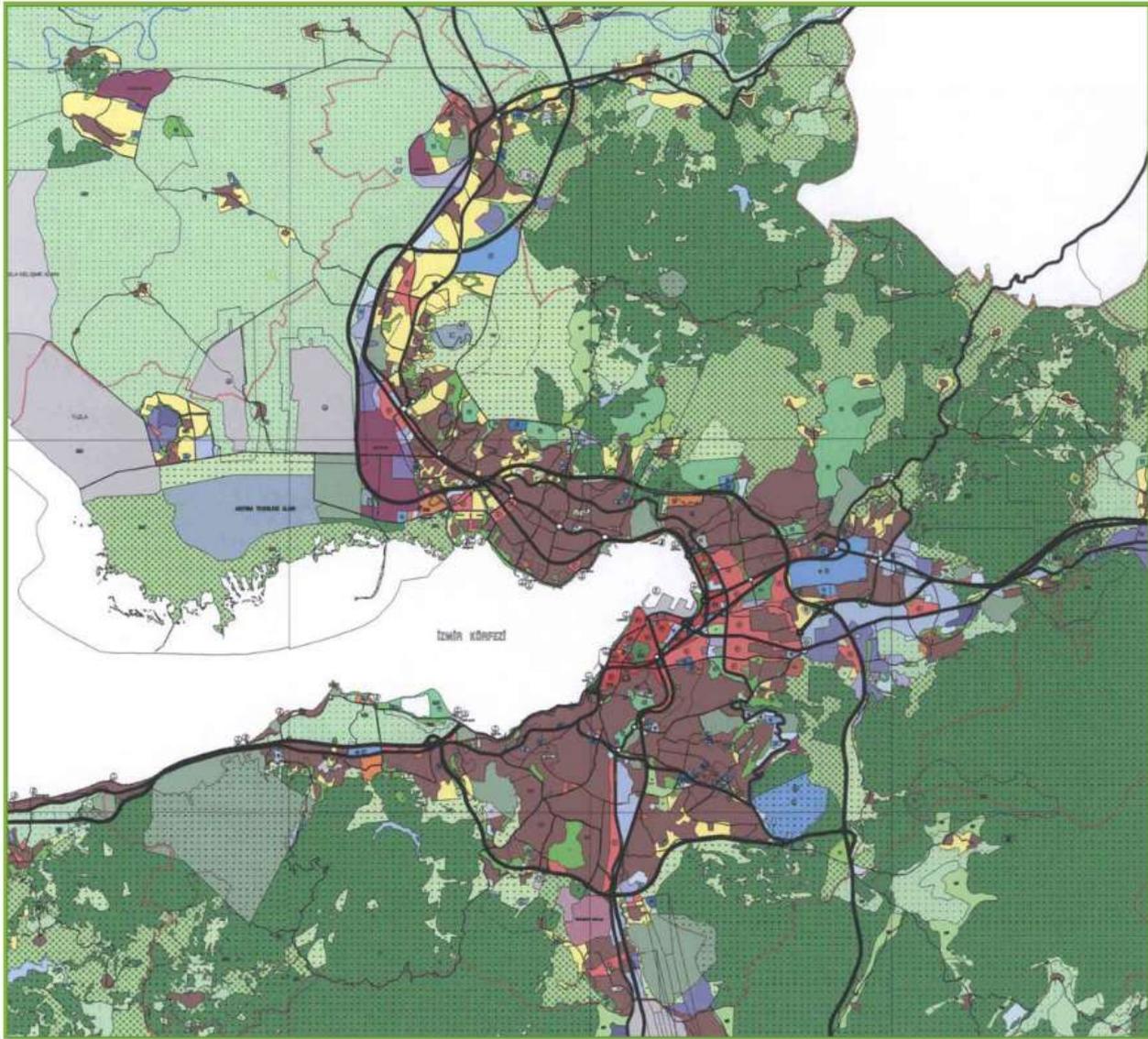
5.1. ANALYSIS OF THE GROWTH OF BUILT-UP AREAS

5.1.1. 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. 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 this axis particularly on the main roads (Figure 5.1). These axes are being encouraged for the new developments by the current 1/25000 Structure Plan which was prepared by the Greater Municipality of Izmir and approved in 2012 (Figure 5.2). These development axes are simply Menemen-Aliaga axis on the north, Kemalpaşa Axis on the east, and Menderes-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.



0-1Figure 5.1: The main transportation network in Izmir, Source: Izmir Development Agency, 2013



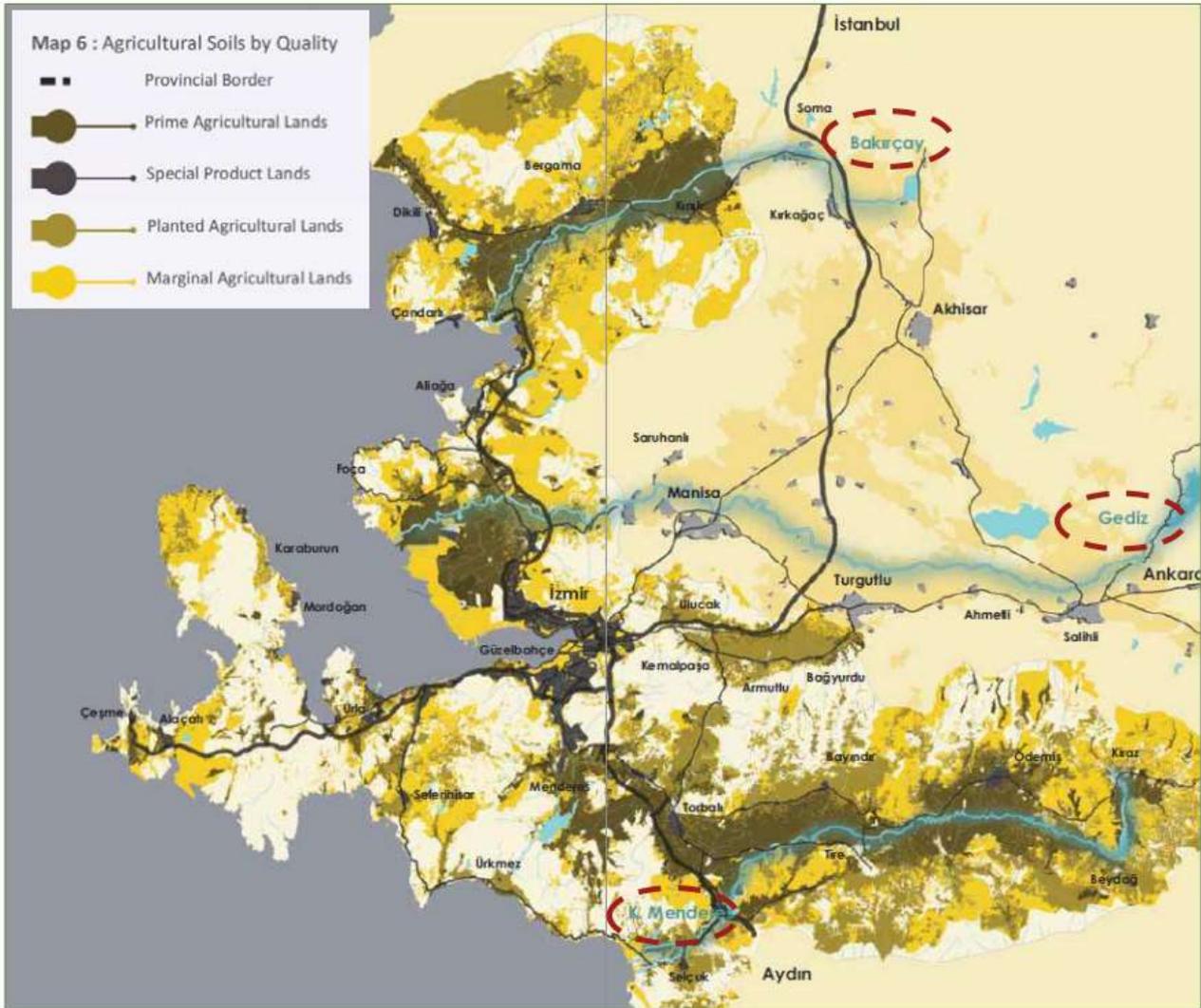
0-2Figure 5.2: Structure plan of Izmir (1/25 000), Source: Izmir Metropolitan Municipality, 2016.

According to the 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 5.3).

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)

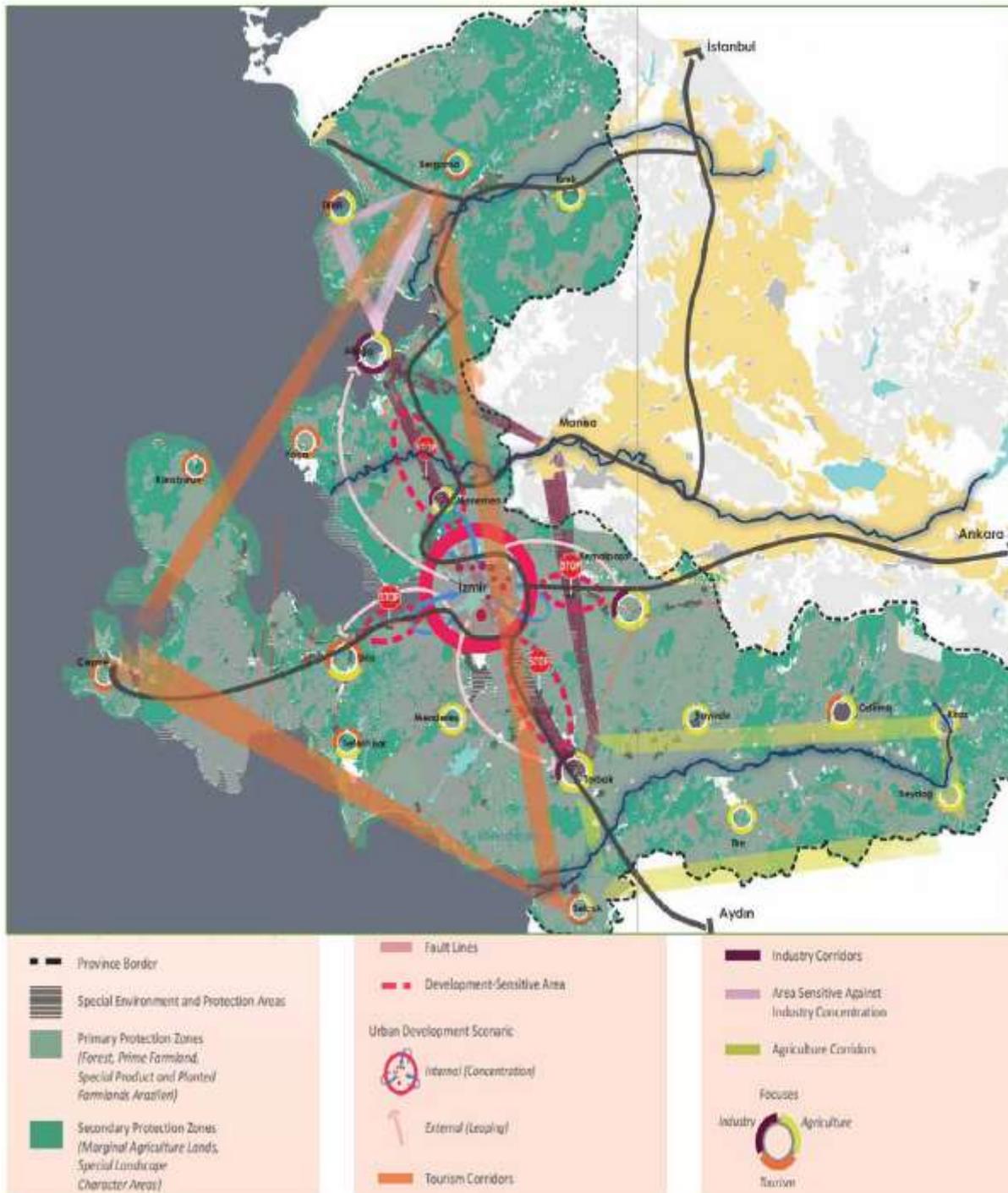
On the other hand, the transportation sector has the highest proportion within the public investments (37%) in Izmir. During the last decade, important transportation projects have been finished within the metropolitan area. Particularly, the motorway and railway (Izban line) investments have increased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



0-3Figure 5.3: River basins and agricultural lands,Source Izmir Development Agency, 2015,

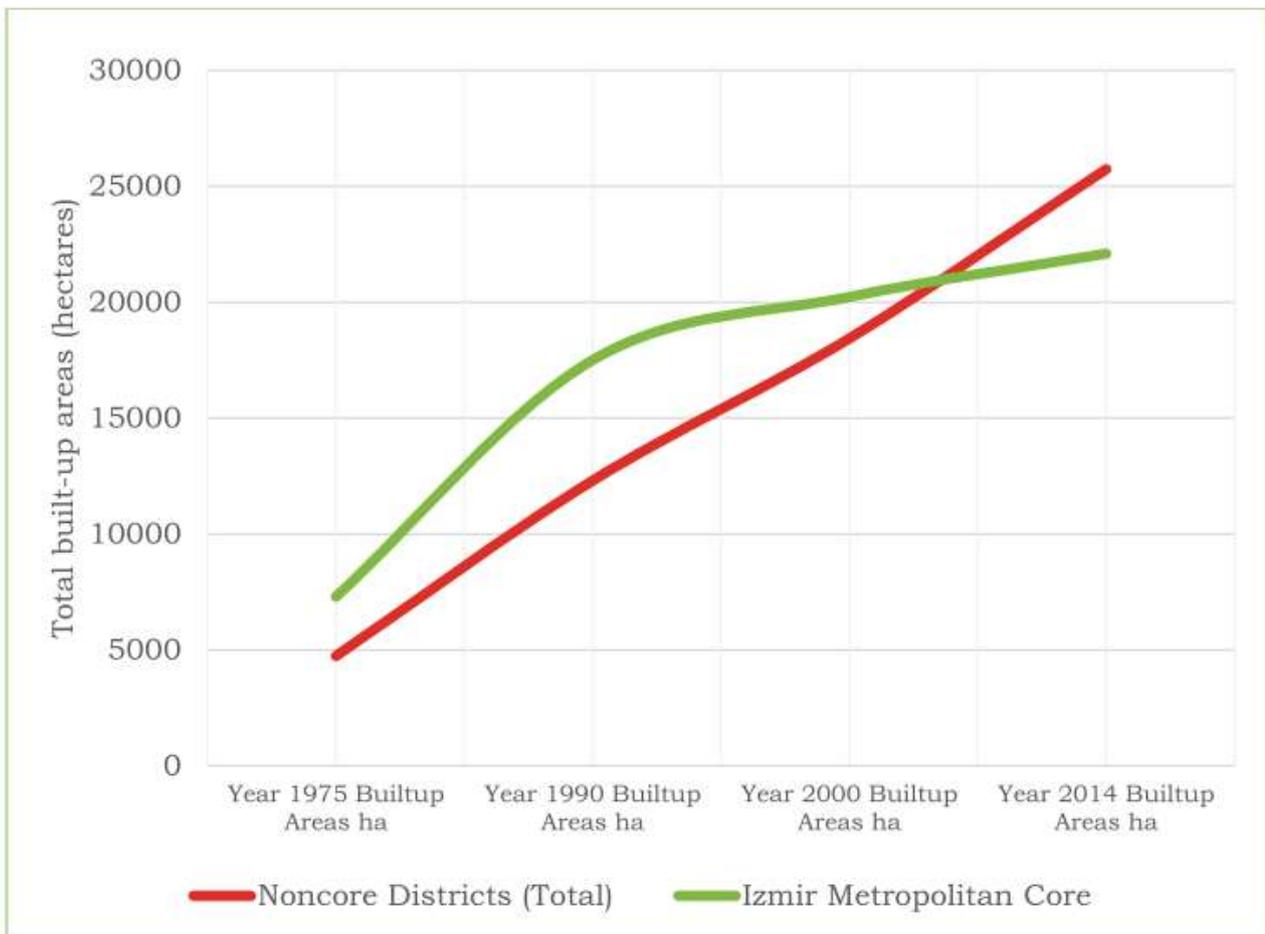
Regional Spatial Development Diagram (Figure 5.4) presents a comprehensive look to Izmir Metropolitan City, which was prepared by the Izmir Development Agency (2015). The diagram emphasizes the important tourism destinations (Bergama, Cesme, Selcuk triangle), sensitive areas in terms of urban and industrial developments, main agriculture corridors, and environmental protection zones.



0-4Figure 5.4: Regional spatial development diagram, Source Izmir Development Agency, 2015,

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

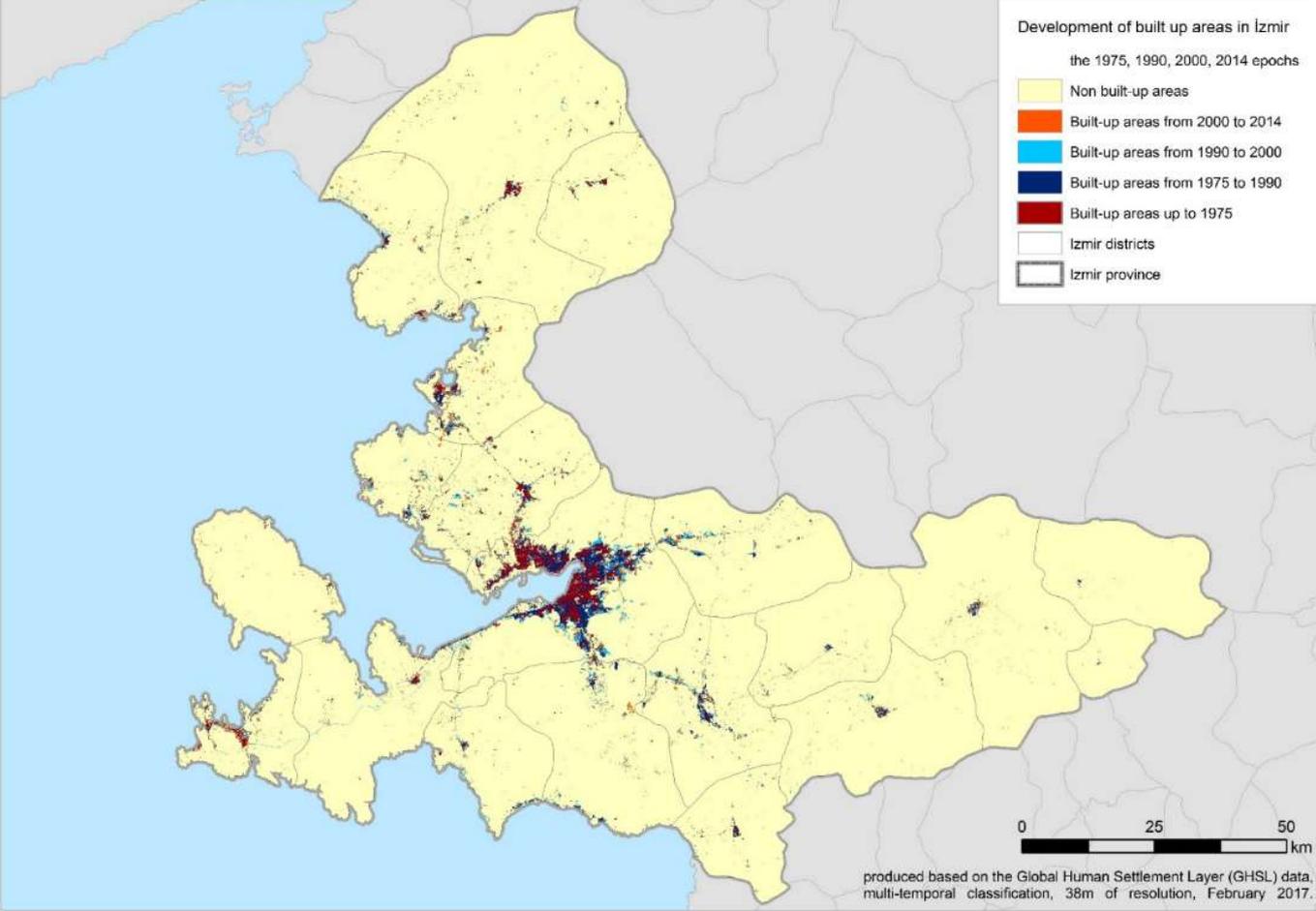
Figure 5.5, which shows the change in the total built-up areas comparatively in the metropolitan core and the rest of city, the total amount of built-up areas had increased rapidly from 1975 to 2000, but then the rate has slowed down through to a stable stage. On the other hand, the line that shows the 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.



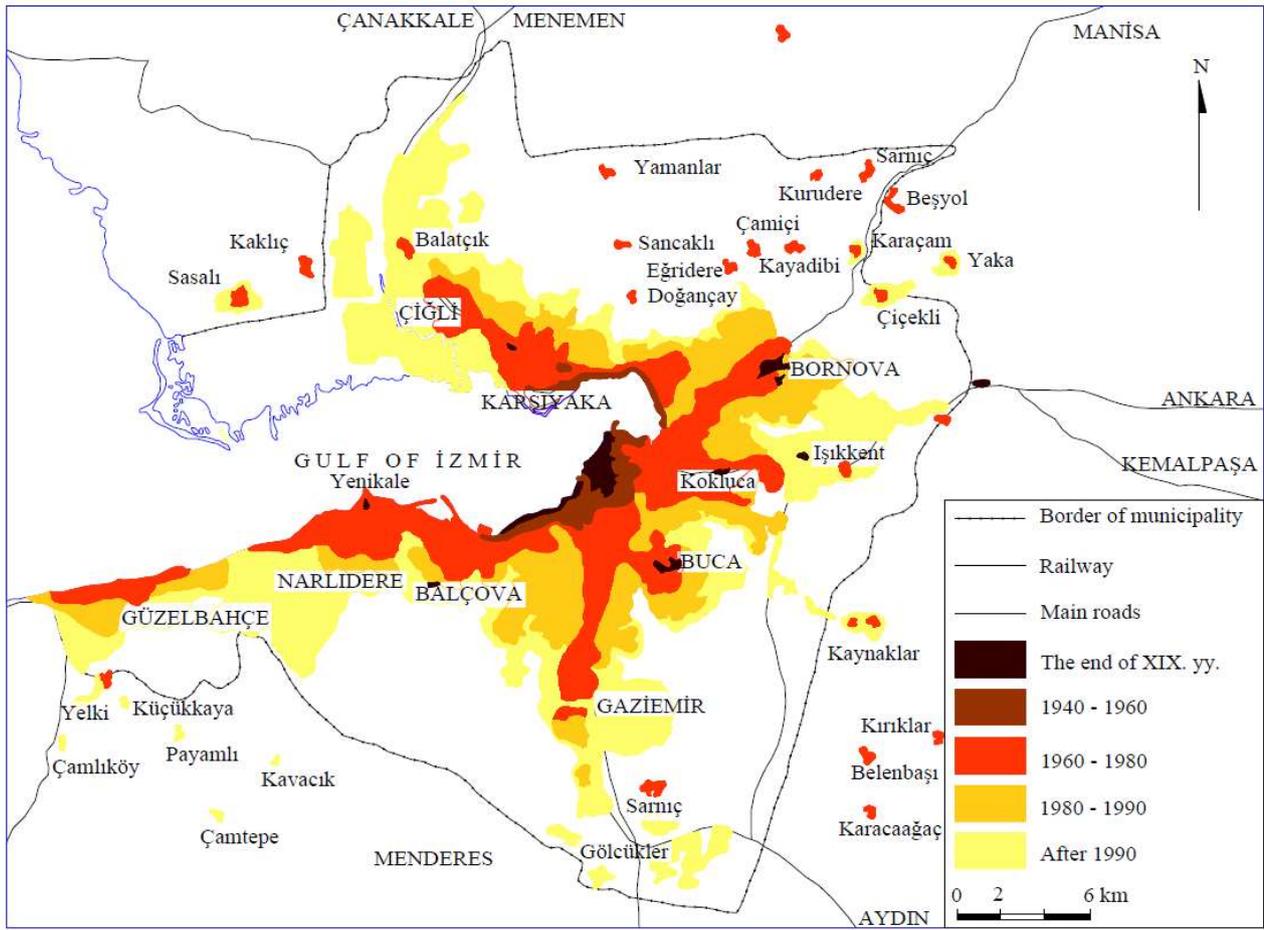
0-5Figure 5.5: Change in built-up areas in Izmir, between 1975 and 2014

It is obvious from Figure 5.6 and Figure 5.7, which demonstrates spatial development of built-up 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 5.6 and Figure 5.7

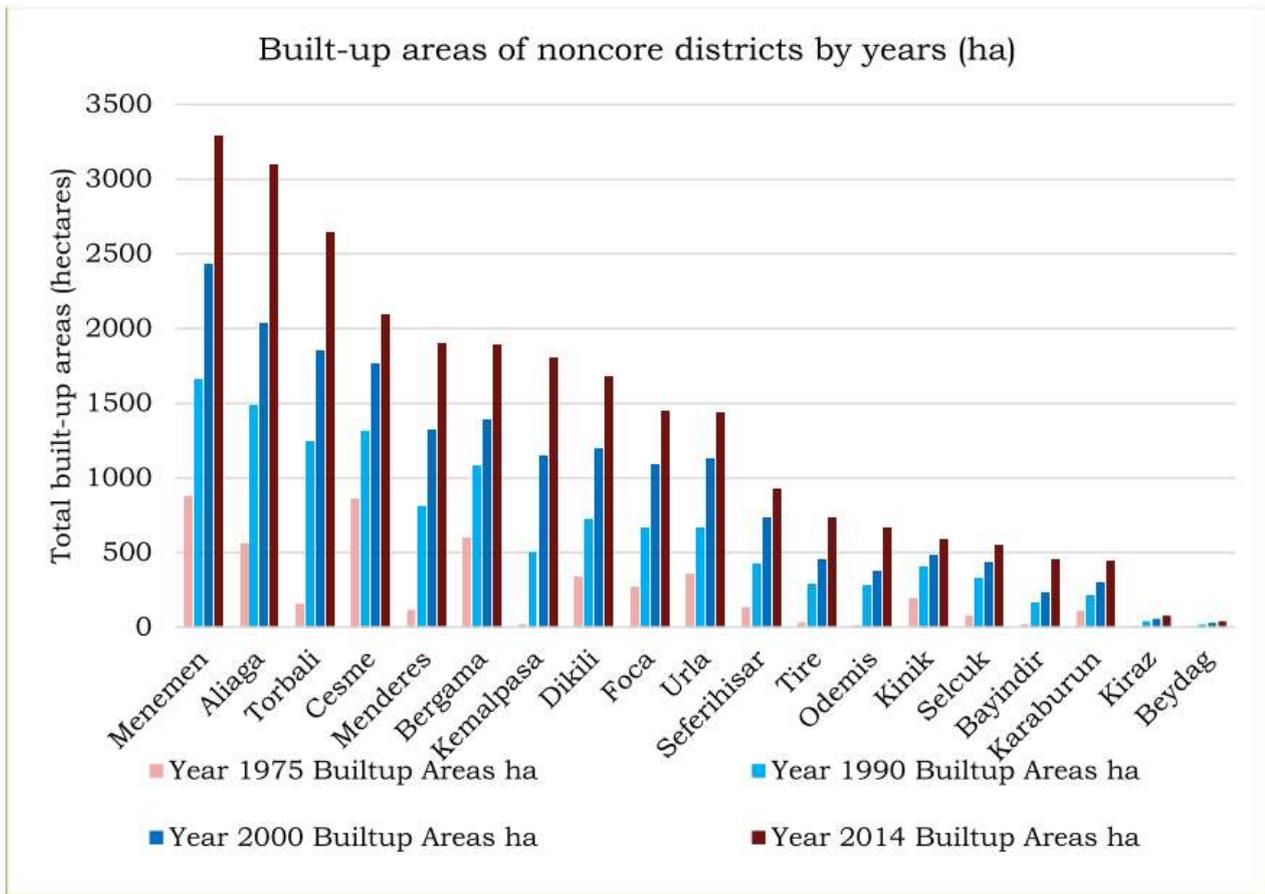


0-6Figure 5.6: Periodical development of built-up areas in Izmir metropolitan city



0-7Figure 5.7: Periodical development of built-up areas in Izmir metropolitan core and its surroundings (Karadağ, 2000)

Figure 5.8 show the results of a focused analysis of the non-core districts excluding the core city. This might help us better understand the dynamics of urban development in the districts of Izmir.



0-8Figure 5.8: Built-up areas of non-core districts

As indicated in Figure 5.8, 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 5.8) 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 have shaped the development in Menemen.

Aliaga is the second largest district, and it has been expanded more than 5 times in its built-up areas during the last 40 years. Economic activities in the district are the most important reason

behind its growth. The economy of Aliğa, which was based on agriculture until early '60s, has gained an industrial character.

Torbali, as the third largest district of Izmir, was a small village during the 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.

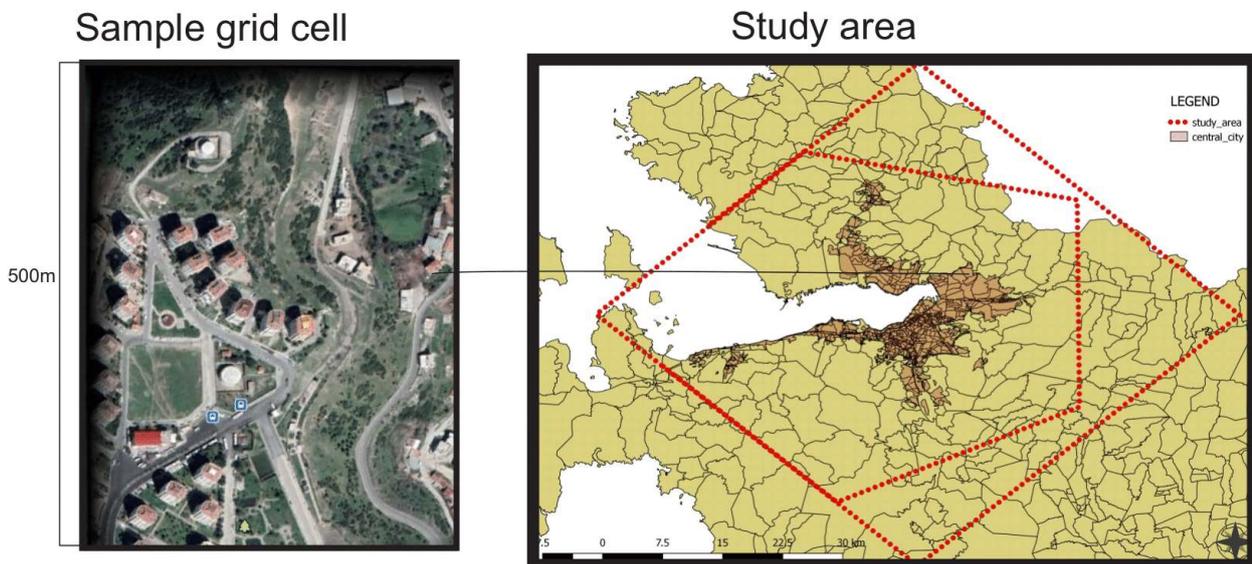
Another most dramatic expansion occurred. Kemalpaşa was a very small village, and the main economic sector was agriculture. Due to its location, at a 29 km distance to the core city, and close the Izmir- Ankara highway, Kemalpaşa has become an attractive place in terms of industrial investors and housing developments. Today it is the seventh largest noncore district of Izmir (Figure 5.8).

CHAPTER SIX

6.1. ANALYSIS OF PERI-URBAN TYPOLOGY İZMİR and RELATION WITH MASTER PLAN

6.1.1. THE STUDY AREA

The applied approach involved a number of grid cells of 25 ha each in size containing settlement structures, and entire study area (Figure 6). Firstly in line with Piorr (2011) , 40 km proximity from the city centre has been taken into consideration as per daily commuting pattern. But unlike Piorr who took an arbitrary circle, with a radius of 40 km from the city centre, I applied a travel-time approach. The travel time approach is considered the most appropriate indicator of accessibility (Simon et al. 2004). In accordance with this approach the author chose the 40-min boundary from the city centre (study area). A grid of 500 m × 500 m was drawn with Qgis, and used as a basis for analysis and grid cells containing settlement structures examined. Data were processed and analysed using the software programs Qgis.



0-1Fig:6.1: Study Area

6.1.2. Methodological approach

The first steps of the methodological approach are to select the relevant dimensions from the literature to characterize the peri-urban areas and to determine the appropriate indicators for each of these dimensions. There is no simple method for this complex subject (Taubenböck et al. 2014). Attempts to establish a broad set of criteria for analyzing the comprehension of geographical definitions of peri-urban areas are still insufficient (e.g., Pryor, 1968; Bryant et al., 1982; Ilbery, 1985; Piorr et al., 2011). In order to achieve this, not only dimensions coming from a single approach will be considered. For example Ilbery (1985), inner and outer Fringe says that between 6-10 miles from the city, but when you consider that the city grew over the years this definition shall not apply. Therefore, not only one dimension is considered to characterize the peri-urban areas.

Dimensions and indicators which have been used for the distinction of peri-urban areas were selected from literature survey. And as a result, a series of three dimensions have been created that can define the character of these areas. Accesibility, socio-economic variables and Land Cover. The second step was to determine theoretically appropriate and operational indicators to characterize each dimension (these are described in the 5.3 section). These dimensions are of different types. For example, the Land Cover provides information about the built-up area, while the socio-economic dimension provides information about the population, the non-agricultural population. Five indicators were identified and data were collected. Following the collection of data, they are entered into grid-cells. However, the result of a single grid cell is taken into account by the grid cells surrounding it, and it is assumed that the designated indicators show values between values those observed for rural and urban areas. It is accepted that the diversity of the social and physical environment of peri-urban areas in the growing cities has undergone a rapid change. Therefore, based on the assumption that the peri-urban areas show relatively high values, there is a change in both diversity and land use. It is assumed that these indicators, which show the degree of urbanization, show values among the observed for rural and urban areas. An index is created based on the average value of five indicators ranging from 0 to 1, with the same weight assigned to each indicator.

6.1.3. Data analysis

The first stage of the analysis was to calculate the indicators in the grid cells. For the grid cells, the total value was calculated according to the index based on the average value of 5 indicators ranging from 0 to 1 with the same weight assigned to each indicator and the classification was made according to the total values. On the basis of indicators the grid cells were classified as 'urban', 'inner fringe', 'outer fringe' and 'urban shadow'.

-Accessibility: Accessibility is a major constraint, driving force which shape of city the (Pryor 1968) used for the determination of commuters limits Piorr (2011) and peri-urbanization which is decreasing from the city and main roads to rural areas. Therefore, distance is important for shaping peri-urban area. The calculated indicators are divided into two as "Distance from the municipality and Distance from the main road". This data is calculated from Google Earth (2019) satellite imagery.

-Non-agricultural workers: Non-agricultural workers means people who engaged in other than an agricultural relate activity such as industry, trade and commerce. Per cent of non-agricultural workers of the total working population is an important indicator of socio-economic transformation use to define a place to be urban (Bryant et al., 1982). Non-agricultural workers data were obtained by the Turkish Statistical Institute (TURKSTAT,2018).

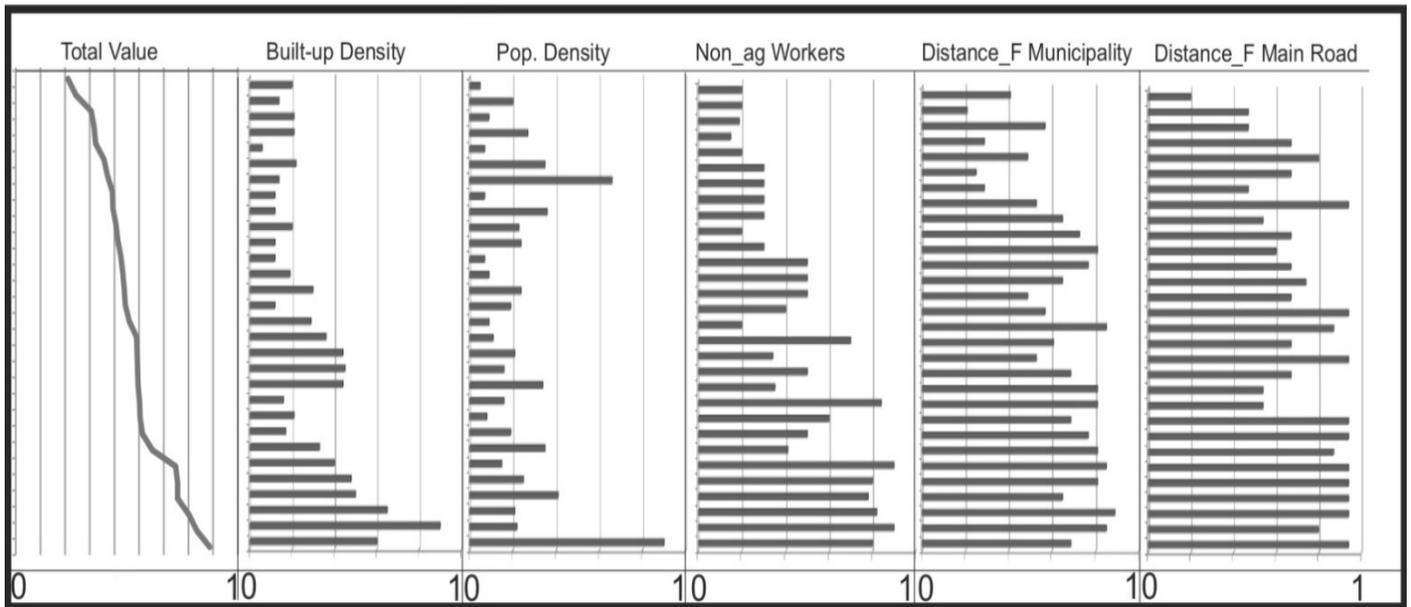
-Population density: Population density is an important factor for use to define peri-urban area which correlated with peri-urbanization. Because population density is gradually decreasing towards rural hinterland. The people in-migrant from other places prefer to close proximity of city and working place to reduce commuting distance. Population density is calculated as person / hectare. The 2017 population data for this calculation was obtained by the Turkish Statistical Institute. Settlement area is calculated via Google Earth satellite imagery.

-Per cent of built-up land: Urban growth penetrates into the surrounding periphery of an urban area and gradually decreases towards rural hinterland (Pryor 1968; Bryant 1982; Nilsson et al. 2013). In order to account for the surrounding environment, the levels of built-up area for the neighbouring grids were included.

Grid cells was assigned a value for each indicator. The mean value was taken, assigning the same weight to each parameter. It is associated with an index value based on the evaluation table.

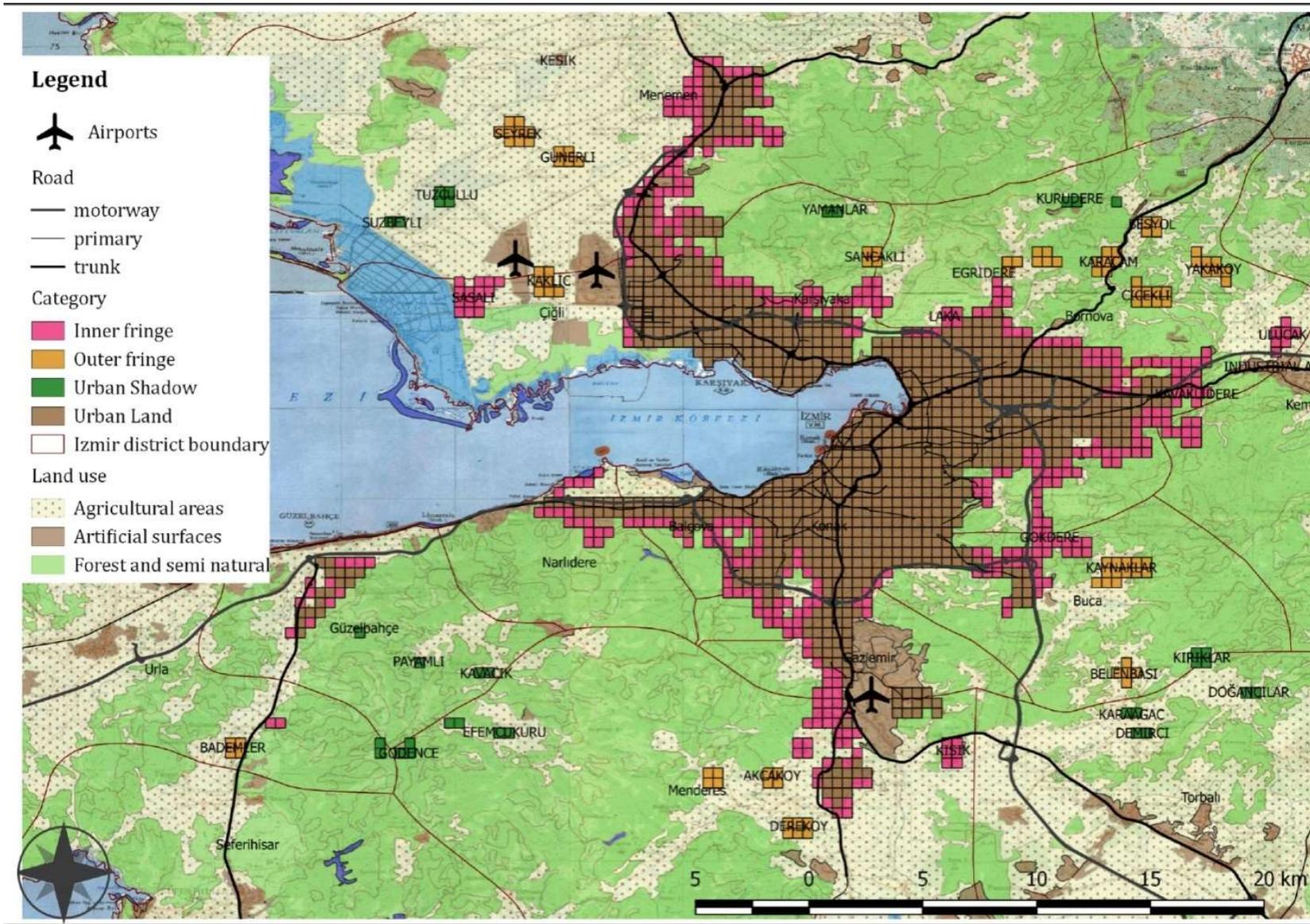
6.1.4. Classification of Grid Cells as Inner Fringe, Outer Fringe and Urban Shadow

The results consisted of five parameters derived from the data (Figure 6.2). A value close to 1, high urbanities, and values close to 0 represent low urbanities.



0-2Figure 6.2: Evaluation and contribution of different indicators

The total values in the grid cells ranged from 0.21 to 0.78. As expected, high total value ratios were found close to the center of İzmir and close to districts. Different degrees of total values determined the classification of grid cells as inner fringe, outer fringe and urban shadow (Figure 6.3). The grid cells, named urban shadow, were characterized as low total value. Outer fringe areas exhibit moderate total value levels (Figure 6.4), while inner fringe areas are characterized by values ranging from moderate to high total value levels (Figure 6.5).



0-3 Figure 6.3: Resultant



0-4Figure 6.4: Outer fringe zone 16 km away from İzmir's city centre. (source: Google Earth,2019)



0-5Figure 6.5: Inner fringe zone 10 km away from İzmir's city centre. (source: Google Earth,2019)

Inner fringe is sharing more than equal to 0.6 of total value. The inner fringe is wide around İzmir city and at a certain distance from the city center. This is because it is close to district centers along transport corridors and shares strong market links with the city. Inner fringe areas are very dynamic and therefore experience increasing population density. The dynamic character of the Inner Fringe areas shows an intense land use competition and a transformation from agriculture to a non-agricultural area. The areas closest to this city appear to be spreading over agricultural lands. The complexity of the socio-economic structure also stands out. Land use conflict is the most intense area. Unwanted uses by the city such as industrial and mineral extraction areas are most common in this region.

Outer fringe is sharing 0.6–0.4 of total value. The inner fringe lies around the inner fringe of İzmir city consists of 16 villages. Outer fringe areas are dominated by the width and size of agricultural areas. Its socio-economic structure is wider than inner fringe. This may be due to non-agricultural employment options, as opposed to rural households with poor access to urban markets and services, with open potential livelihoods of households. Non-agricultural employment options were observed as hobby farm areas, recreation areas and daily tourism areas. In outer fringe areas, it can be said that land-use conflict types different according to inner fringe. Outer fringe areas have relatively high heterogeneity, probably due to their

proximity to urban facilities, on villages that are relatively close to traditional villages with relatively rural lifestyles and therefore exhibit relatively strong links to the city, which are increasingly absorbed by urban growth.

Urban Shadow is less than 0.4 of the total value. The urban shadow of İzmir city is spreading around outer fringe characterized with the rural agrarian community. The urban shadow consists of 16 villages. The main source of income for these households is agriculture. The number of non-agricultural employment is low. Urban penetration is still minimal.

6.2. Analysing and Findings About Peri-Urbanization with İzmir Master Plan

The subsections of the study 5 and 6.1 chapters aim to examine the key factors of the urbanization process of peri-urban areas in the İzmir Metropolitan City. Targets to examine indicators that have correlation via urbanization that is differentiated each other In these areas peri-urban types. The main focus of this chapter is, understanding the quantity of contradiction between predicted land use of development planning in the Master Plan and existed land use. Much of environment-development problem of a city is depended on land use planning and its management as in the Master Plan.

Peri-urban areas that have been located in different ways and distances, are within the study's field of interest (Figure 6.3). Existing 1/25000 (Figure 3.3) master plan have been prepared by İzmir Greater Municipality and approved in 2012 and current Master Plan has been still in effect. In order to examine the results, these two maps were overlapped with Qgis software (figure 6.6).

As in the figure 6.6, urban development is denser in the corridors that are determined by natural thresholds and main transportation connections. However there is a discrepancy between the decisions that and land use plan, arise from the Master Plan; they have negative effects on urban environment's forest areas, fertile agricultural lands and threatens the natural values. It can be sampled like; the new proposal development area that is on the fertile agricultural lands , Sasalı Neighbour is in the İzmir's north corridor and the area is next to Ramsar Area that has been declared as Specially Protected Environment Area . Another sample is in the same corridor Villakent Project, designed as 2500 houses on an area of 2000 acres. The used slogan in the advertisements is "spaces which lie in the arms of nature".

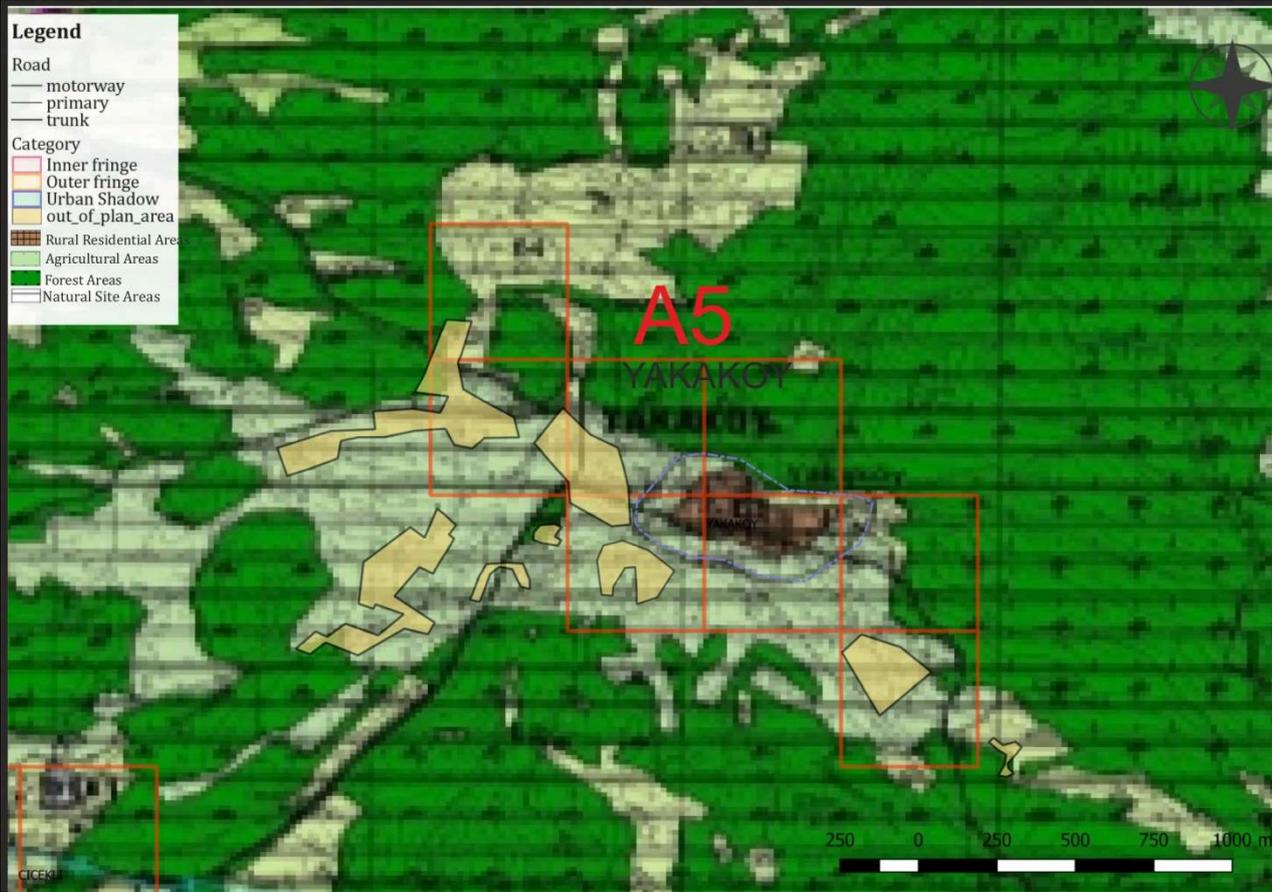


0-2Figure 6.7: Villakent Project, Source: Google Earth,2019

Besides to north corridor there are any other peri-urban areas on the south corridor too. south corridor is one of the remarkable development corridors of İzmir; Ege free zone, light industry zones, Adnan Menderes Airport and massive residential projects strengthen the urban sprawl. Seen as in the Figure 6.3, there are physical, economical and social alters in the peri-urban areas where enclose İzmir City. At the same time, thirteen area plans conflict with Master Plan decisions; eleven of them are transformation of the agricultural lands to residential areas , represented as A(A: Eğridere, Kayadibi, Karaçam, Çiçekli, Yakaköy, Kaynaklar, belenbaşı, Bademler,Hürriyet, Yelki ve Aydoğdu neighbours), two of them are transformation of the agricultural lands to industrial areas, represented as B (B: Gökdere neighbourhood).

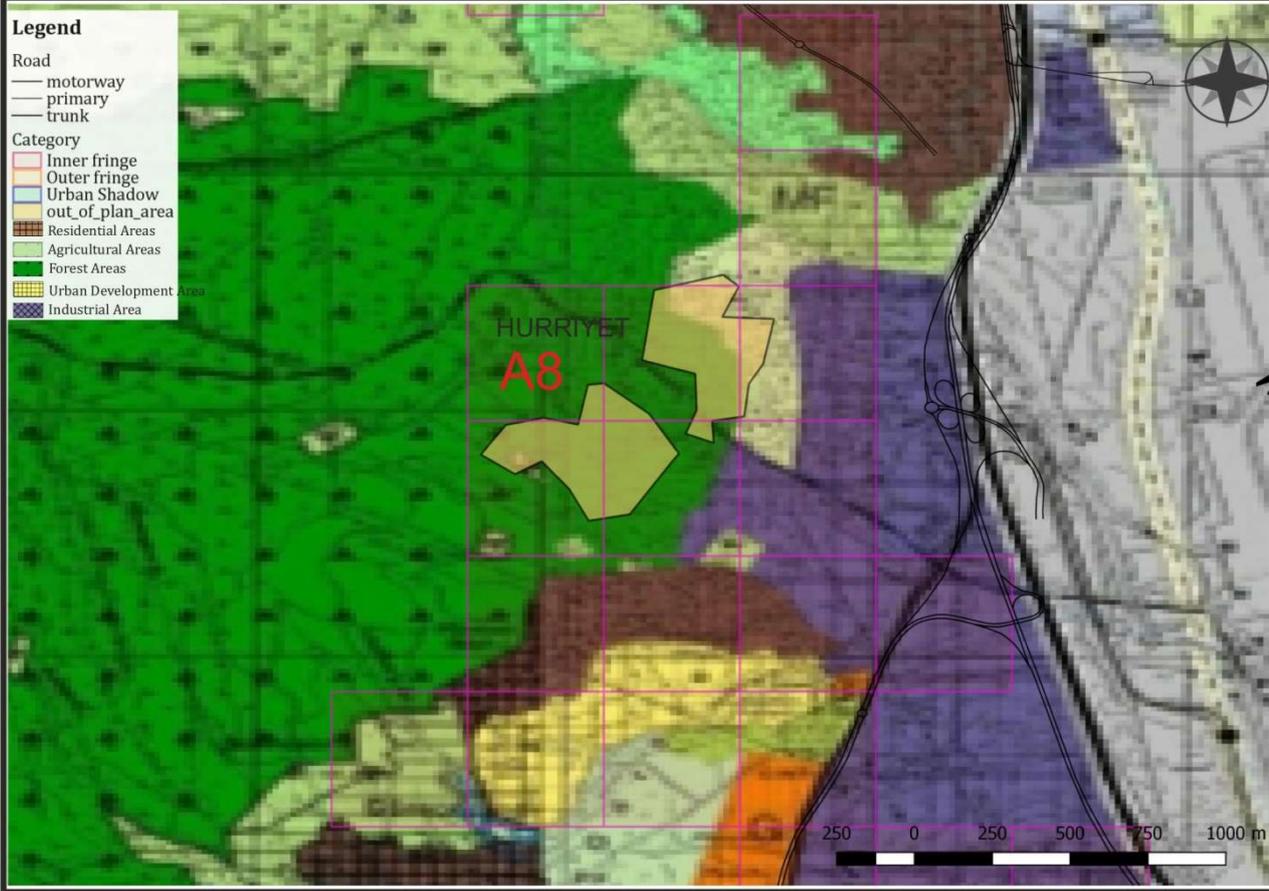
After these comparisons and examinations, plan discrepancies are determined mostly in the outer fringe areas, piecemeal on the agricultural lands dispersedly, with the intention of transformation to residential areas. Yakaköy is the outhter fringe area and residential transformation trend is observed

recently, seen in the Map A5. Yakaköy is the site area and a new development area has not been proposed, but the land use descions have not perpetual seen as in the Figure 6.8 .



0-3Figure 6.8: Yakaköy Village (Outer Fringe Area)

Another areas is Hürriyet Neighbour that called as A8, in the Menderes District. There is a dense residential transformation in the area that has been designated as agricultural and forest lands (Figure 6.9).



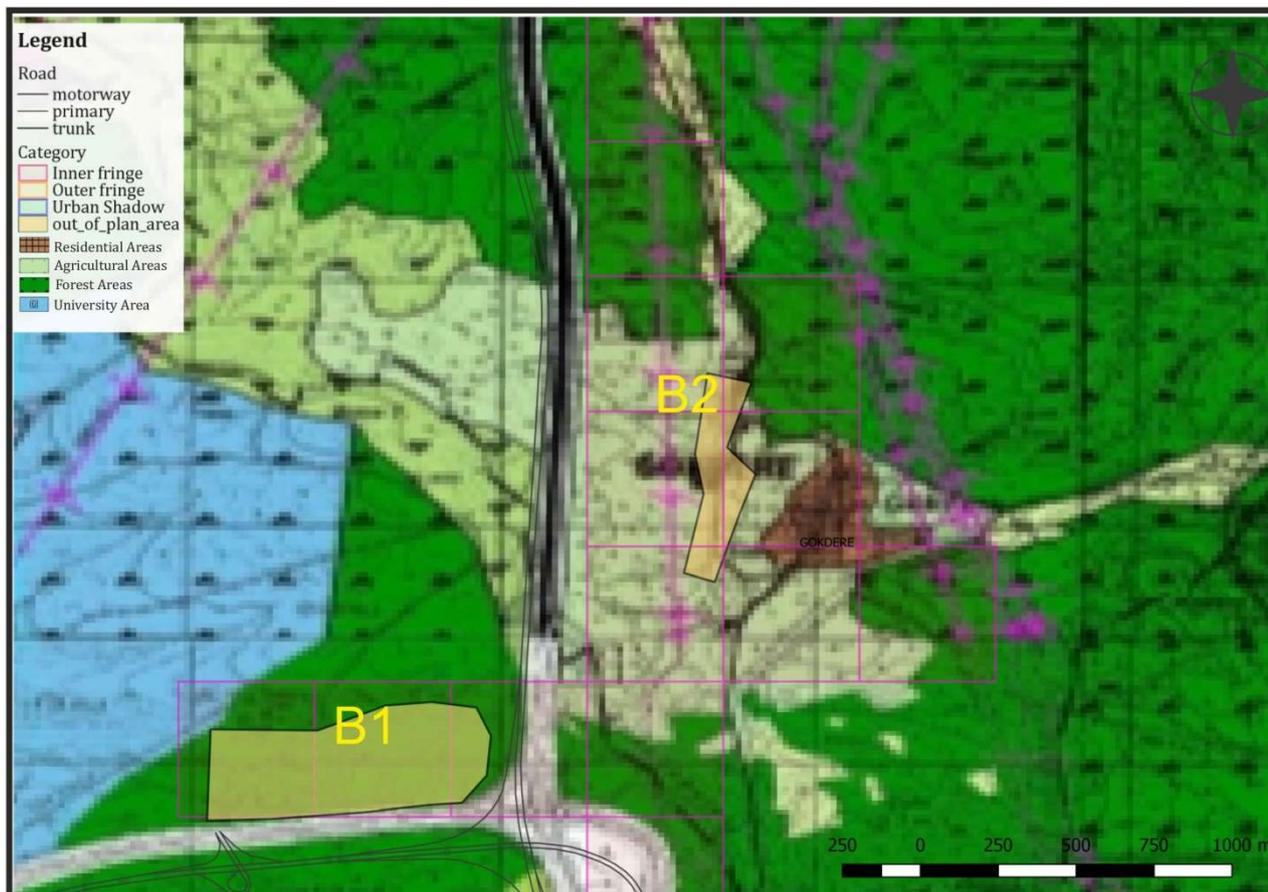
0-4Figure 6.9: Hurriyet neighborhood (Inner Fringe Area)

İzmir's west corridor has secondary houses and single-family housing estates that develop and the construction of Çeşme Highway encourage this sprawling process. In the Yelki Neighbour (represented as A9), there is a secondary housing residential transformation as villa type (Figure 6.10).



0-5Figure 6.10: Yelki neighborhood (Inner Fringe Area)

The second determined discrepancy type is transformation to industrial areas from the agricultural lands. In the Buca District's Gökdere Neighbour that determined that the agricultural land has transformed to industry and storage areas, has been represented as B2 in the map figure (6.11).



0-6Figure 6.11: Gökdere neighborhood

The İzmir population grows there is pressure on urban fringe areas to be converted from rural to urban use. This has been common occurrence as once agricultural land is converted to residential land. This land use change is occurring at a relatively high rate on the urban fringe of İzmir and also conflict with agricultural and environmental issues on the fringe. This conflict arises when this rural residential lots are scattered throughout the countryside and next agricultural areas. The location of unplanned rural residential sites next to agricultural land is perhaps a more important issue for many parts of İzmir beyond the metropolitan issue.

6.3. Exploring Multifunctionality in the Inner and Outer Fringe

6.3.1. Eğridere Village (Inner fringe)

Eğridere village is located in Bornova district of İzmir. It is 10 km to the city center and 5 km to the district center. After the interview with the headman of Eğridere Village, approximately 30,000 sheep and goats were given in 1980. However, they said that many farmers had to sell their livestock because of changing legal regulations, bovine incentives and irregular market prices, and that the number of sheep in the villages had fallen to 3,000. Although it is very close to the city center, livestock activities continue to a small extent and a few families are engaged in agriculture. There are pastures occupied by the highrise houses (Figure 6.12). There is no loss of population, but with the occupation of private houses, the population has started to increase.

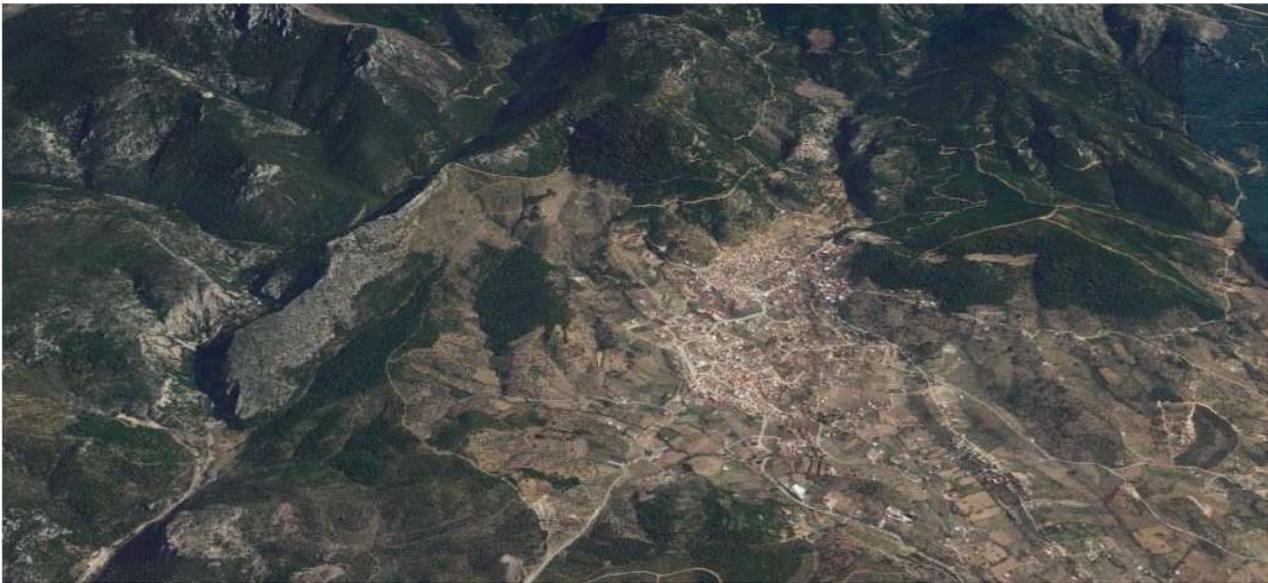


0-1Figure 6.12:Housing occupation on pastures, Eğridere Village(Source: Google Earth,2019)

The high degree in Egridere village also has the pressure of urbanization. At the same time, high-density dwellings and agricultural lands still exist. This field requires a new definition of multifunctionality. Mixed use of farmland with conservation may be recommended.

6.3.2. Kaynaklar Village (Outer Fringe)

Kaynaklar village is located to Buca district of İzmir. It is 13 km from İzmir city center and 8 km from the district center. The eastern part of the village of Kaynaklar is the richest forest area (figure 6.13).



0-2Figure 6.13: Kaynaklar village 3d Satellite Imagery(Source: Google Earth,2019)

There are many water sources in the region. In Buca Kaynaklar village, the livelihood of the local people is agriculture and animal husbandry. With the development of ecotourism in recent years, a third source of income has emerged. Sources are the occupation of villa-type houses on the farmland in the village (Figure 6.14). At the same time, its proximity to the city along with its industrial and services sectors dominate the village economy. Socio-economic structure has a wide level.



0-3Figure 6.14: Kaynaklar Village (outer fringe) occupied by villa type houses(Source: Google Earth,2019)

The main values of the resources village in the field of ecotourism are; Monument trees, trekking trails, rock climbing area, camping areas. Activities can be listed as hiking, monumental tree visits, local market place, local tastes, rock climbing festivals, food competitions, technological sleep festival (away from technology) and local theater. Resources, historical plane-tree in the square, monumental trees are in the category. These monumental trees, which are protected by the monument institutions, are the symbol of the village of Kaynaklar. Having these recreational areas has an important place for Ecotourists to come to Kaynaklar village.

In the outer fringe area, the type and intensity of the conflict is different than in inner fringe. The village of Kaynaklar, has the pressure of urbanization secondary housing development with tourism and recreation. In these areas, can may recommended to develop a farm infrastructure for more efficient use of agriculture. At the same time, the restriction for secondary housing development, protects the limited agricultural land. It is advisable to differentiate the amenity-oriented and product-oriented zones with land use planning. The definition of multifunctionality for this area may can suggest as a mixture of agricultural use, conservation and sustainable tourism (like ecotourism).

CHAPTER SEVEN

7.1. DISCUSSION OF FINDINGS AND CONCLUSION

Land use planning in Peri-urban areas for sustainable development is a very broad topic that encloses diverse areas of study. Periurban areas in Izmir exhibits similar contests of land use conflict in most cities under.

First, land use policies in Izmir have not been robust enough to specifically resolve the decreasing densities into the hinterland of the third largest metropolitan city in Turkey. The influence of land use reflects the natural role of local authorities and that of the upper government structures in streamlining and regulating holistic urban Planning.

The occurrences of urban sprawl despite some weak efforts to change it, it has continued up to these days. Urbanization in the periurban areas has been attributed to the sprawling city functions as well as massive investment in motorway infrastructures, especially along the Menemen, Kemalpaşa, Torbalı commercial routes.

In İzmir, each peri urban typology has different characteristics. Inner Fringe areas are generally located near the city or central districts. And the land use conflict type differs from outer and urban shadow. Since each of these fields has different properties, one definition of multifunctionality cannot be defined.

The convenience of movement and daily commuters to improved transport infrastructure influence the increasing taste to settle in periurban areas notwithstanding the dominance of agricultural production already occupying a significant portion of such rural lands

Lastly, multifunctional land uses new urbanism and archipelago city concepts have been proposed as the solution to the periurban towards achieving sustainable development. an important aspect of the factors influencing the rural-urban shifts in recent findings is cultural aspects and individual preferences which also play an important role in this subject.

7.2. Conclusions

The research has dissected and exposed a number of realities as well as disparities between the peri-urban phenomenon between land use competitions and conflicts and the sustainable land use planning functions to manage the same. The study would build knowledge on policy and decisions centring around peri-urban challenges, forestalling orderliness in the rural-urban transitions especially by taming the drivers that trigger peri-urban sprawl.

The Metropolis of Izmir has changed substantially over the last few decades. The arrival of international immigration due to the political crisis of Middle East (not excluding intercity, rural to urban population mobility), the rapid transformations in family settings in terms of organization and composition, the role of land use changes towards industrial led economic viability in Turkey have all contributed significantly to shaping then peri-urban landscape of Izmir. Unlike other cities located on continuous landmasses and not surrounded by marine coasts, Izmir is founded within topographical archipelago which further influences the land use architecture. The upgrading and expansion of major infrastructures like the airport or the ports at Gaziemir and commitments to strengthening and creating new central urban areas in all the territory cannot be downplayed in the role of metropolitan land use policy impacting on the outskirts spatial appearance of Izmir.

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