# Ribbon Developments in Aydın Along Denizli-İzmir Highway

By

Gökçen KILINÇ

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We approve the thesis of Gökçen KILINÇ

**Date of Signature**

.....

**29.06.2000**

**Prof. Dr. Cemal ARKON**

Supervisor

Department of City and Regional Planning

**Assoc. Prof. Dr. Semahat ÖZDEMİR** **29.06.2000**

Co-Supervisor

Department of City and Regional Planning

.....

**29.06.2000**

**Asst. Prof. Dr. Ziya GENCEL**

Department of City and Regional Planning

.....

**29.06.2000**

**Asst. Prof. Dr. Murat GÜNAYDIN**

Department of Architecture

.....

**29.06.2000**

**Prof. Dr. Akın SÜEL**

Head of Department

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## ABSTRACT

The purpose of this thesis is to show that the ribbon development is an important practice in the formation of urban-rural fabric.

This thesis analyses the structure and problems of ribbon development with its attributes on environment and planning practice. The attributes of ribbon development are defined as; loss of agricultural lands, environmental and scenic quality damage, decrease in capacity of roads, problem of traffic and uneconomic extension of utilities. Considering these attributes, the level of impacts of ribbon development on urban-rural fabric can be analysed through an empirical study. Therefore, with such an empirical study the structural characteristics of ribbon development and degree of importance of attributes of ribbon development become clear. In addition to this, how the developments of transportation and planning mechanisms on agenda affect the process of ribbon development, is justified.

# ÖZ

Bu tezin amacı yol boyu gelişmelerin kentsel-kırsal dokunun oluşmasında önemli bir etmen olduğunu göstermektir.

Bu tez, yol boyu gelişmelerin yapısını ve çevre ve planlama pratiğinde yol açtığı problemleri inceler. Yol boyu gelişmelerin etkilerini; tarım topraklarının kaybı, çevresel ve görsel kalite bozulması, yolların kapasitelerinin azalması, trafik problemleri ve kamu hizmetlerinin gelişigüzel ve dengesiz dağılımı şeklinde tanımlamak mümkündür. Bu hususlar gözönünde bulundurulduğunda, ampirik bir çalışma ile yol boyu gelişmelerin kentsel-kırsal doku üzerindeki etkilerinin önem derecesi ortaya çıkar Ayrıca; bu tezde, ulaşımdaki gelişmelerin ve yürürlükteki planlama mekanizmalarının yol boyu gelişme sürecini ne şekilde etkilediği de gösterilmiştir.

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# CHAPTER I
# INTRODUCTION

Twentieth century has experienced the greatest urban expansion in human history. Cities became crowded and compact by the effect of industrial revolution in the nineteenth century. However, technological developments, especially the street-car and automobile innovations have changed the compact city models and the static structure of them. The effects of technological change is more rapid in urban areas, because problems demanding solutions have more commonplace and inventive and innovative capacity are concentrated there.

Urban areas grow centrifugally with major transport routes having a dominant influence on the direction of physical expansion. Strong links between urban areas and suburban or rural areas support the expansion along the major roads. Many of the urban functions depend on agglomeration economies in city centers have became to prefer locating on these routes for many reasons. In this sense; improved communication network, especially the transport connections spread labour force, urban core impediments like over-congestion, planning projects and restrictions, environmental deterioration, high central land values, taxes and intervention of flexible transport services are the factors causing outer expansion of cities.

At the beginning of this outer expansion process, generally ribbon developments occur along the major roads. The transportation facilities as well as construction technology, in addition to agricultural density, and therefore costs involved in transportation, communications and the other urban infrastructures might have played an important role in the appearance of ribbon development. It is cheapest to construct transportation networks along flat lands. Commercial establishments, industrial plants, residential areas and other functions tend to locate along these corridors, because construction costs usually necessitate construction on sites with minimal slopes.

Industrial location criteria that mostly depend on the minimisation of transportation

costs play leading role in ribbon developments. Lower transport costs usually favour the growth of firms which already have the largest markets based on advantages of lower marginal cost of production. Such firms already use more transport inputs than their smaller competitors and, therefore have their total costs of transport reduced more by any lowering of transport costs. On the other hand, small entrepreneurs who have small capital, who work with poor technology and make simple production generally tend to locate along roads at the periphery of cities. Because, they cannot leave the inner city advantages such as social and technical infrastructures, marketing, labour force etc. at all. In addition to the industrial locational preferences, sites along the roads have been attractive for residential units with cheap land values and high accessibility. These developments sometimes, occur according to plan decisions (partial plans or urban development plans) and sometimes, in an illegal way as the reflection of personal preferences. But it is certain that they cause chaos and many environmental problems on rural-urban fabric.

Ribbon developments stands as the threating factor with which agricultural uses are unable to compete. Such developments are concentrated in the better farming areas because urban uses requiring accessibility to roads, public utility services, etc. and these are more readily available in the better farming areas. Thus, agriculture has little success in preventing urban growth.

In Turkey; preservation of rich agricultural lands around the metropolitan areas has became more difficult after 1960s. By the huge increase in population as a result of migration to urban centers and car ownership, the big cities such as Istanbul, Ankara, Izmir, Adana and Bursa tend to grow towards the major roads on the most fertile plains of their region gradually. Because of the Fordist mode of economy the industries were agglomerated in those cities In addition to that, as a result of political decisions which support industrialisation and highway transportation, urban expansion occurred along the highways which goes to the agriculturally rich rural areas.

These developments by the effect of Fordist economies in 1960s and 1970s has been superseded by a new, more competitive market based economy after 1980s. The post Fordist economies have caused the decentralisation of world capital to the rural areas

and the other unindustrialised cities. Low land and labour costs are the most effective factors in that decentralisation process. In that period, cities where the economic life mostly depend on the agricultural structure of the district have attracted the sub-units of firms which were once located in big metropolitan cities and working with great specialisation. The decentralisation of the industrial firms for increasing the flexibility and decreasing the risk factor have caused some ecological and economic problems such as loss of agricultural lands in the world.

The study area of this thesis (Aydın) is located on the most fertile plains of western Turkey, on the major axis which connect Izmir metropolitan city to Denizli and the other eastern cities. Ribbon developments have been seen on this axis after 1980s due to the reasons mentioned above. These developments have affected the direction of urban growth, plan decisions and way of life and have caused the uneconomic extension of utilities, environmental and scenic quality damages, traffic problems and loss of agricultural lands in the region. It is the aim of this thesis to determine the causes and costs of ribbon developments and put resolutions for the problems that these developments cause in the local and national level.

In Chapter II a general review of ribbon developments due to transportation experiences of the two developed countries; United Kingdom and United States of America where ribbon developments were first occurred is examined. Then, the dynamics and the policies that cause ribbon developments and costs of such developments are discussed.

In Chapter III, the characteristics of ribbon developments in Aydın are studied by conducting a questionnaire survey in the area. The sectoral distribution, legal status, locational preferences and locational flexibility of the service and industrial establishments and the residential units located on the study axis are analysed in the scope of the thesis.

In the light of this analysis of the collected data, the resolutions for preventing the ribbon developments and preserving the agricultural lands are developed and the recommendations are made at the local and national level in Chapter IV.

# CHAPTER II

# GENERAL REWIEV OF RIBBON DEVELOPMENTS

## 2.1. DEFINITION OF RIBBON DEVELOPMENT

Ribbon development is the spreading of urban functions through an accessible road by the effect of urban and industrial dynamics.

"It is precisely the case when new transportation routes alter the pattern of accessibility and hence the local ground rent structure, leading to new development that clings exclusively to the new route. Without the new road, railway or canal development ribbon development would not have occurred." (Smith, 1996, p.81)

There are many factors which cause ribbon development. Most of them are economic in nature and depends on prevailing planning decisions. But it is mostly the result of spreading the nineteenth century' cities in the twentieth century by the effects of technological developments in transportation.

## 2.2. DEVELOPMENT PROCESS OF TRANSPORTATION TECHNOLOGIES

Since the middle of the nineteenth century, there have been four periods of major change in urban transportation, each of which has left its own mark on urban spatial form. Initially , the significant changes in technology were in public transportation. Since 1930, however the major changes have been a consequence of our growing preference for the use of private transportation, the automobile.

### 2.2.1.The Horsecar Era: (1840-1890)

In the early 1850s, the introduction of the horse- drawn street car provided the first

dramatic alteration in the spatial form of the cities. It was more obvious in American cities. Prior to 1850, the typical American city was highly agglomerated, with all urban activities clustered in close proximity to each other. The focus of economic activity was a central core, with industries, commercial activities, and fairly dense area of residential dwellings. The compactness of the spatial form was dictated by the limited accessibility in a pedestrian city. Most households were located close to places of employment, regardless of personal income. A common pattern of zonal land distribution emerged, with residential zones surrounding the industrial, commercial center. With its industrial core and concentrations of crowded tenement housing, the city had many negative externalities. A dissatisfaction with the physical and social environment led may middle-income residents to cluster in zones more removed from the industries and their working class neighbourhoods. The horse-drawn street-car, using iron rails, was the first mode of transportation that was faster than walking. Although the improvement in transport time was modest, it was enough to permit the development of middle-class neighbourhoods in a narrow band along the periphery of the city center. The first horse-drawn street-car services were usually along the major radial routes leading to the core of the city. As a number of middle-class neighbourhoods were established along the outer reaches of these radials, the original compact spatial form of the city was transformed into a star-shaped pattern. (Toaffe, Gauthier, O'Kelly, 1996, p.174 )

By the 1880s the demand for middle-income housing had generated sufficient demand in many cities to warrant the construction of cross-town horse drawn street-car routes that linked the earlier radial extensions. These new routes permitted the filling in of the interstices between the radials with new housing. This filing in process restored, to some degree, the original concentric, circular pattern of the city. (Toaffe, Gauthier, O'Kelly, 1996, p.174)

### 2.2.2. The Electric Street-car: (1890-1920)

With the availability of electrified transportation in the early 1890s, the horse-drawn street-car was replaced by the electric trolley or street-car. Its widespread adaptation resulted in one of the most dramatic changes in spatial form in cities. By tripling the average speed of interurban transportation, the electric street-car permitted the

widespread movement of urban activities into previously undeveloped land beyond the city limits. These peripheral lands were brought within the commuting range of the electric street-car. Along with these increase travel speed and decline in travel time was a decrease in travel costs per passenger. Since the electric trolley was cheaper and faster than horse-drawn street-car, it touched of a major population shift. Middle income groups moved in increasing numbers of to the outlying parts of the cities and to the new street-car suburbs. (Toaffe, Gauthier, O'Kelly, 1996, p.174)

The electric street car permitted more people to escape the negative externalities of central city. The residential filtering process, related to the high levels of foreign immigration into the cities, exerted greater pressure on middle- and higher- income groups to seek new locations in previously undeveloped areas. The growth pattern was very sectoral, reflecting the construction of street-car routes along the arterial streets of the city. (Toaffe, Gauthier, O'Kelly, 1996, p.175)

With the expansion of middle- and higher-income neighbourhoods throughout more of the urban area, a number of outlying suburbs reached population thresholds that were capable of supporting commercial centers to supply goods and services conveniently. The heavy use of the street-cars also resulted in commercial strip development along the major arteries. The economies of agglomeration, however still favoured the center of the city. Nearly all the suburbanites commuted to the central business district.

The electric street-car was the first truly mass transit system in urban America. The dramatic improvement in accessibility that it brought to most urban locations fostered the emergence of specialised land-use districts for commerce, wholesaling, and industry. Most of these continued to be in close proximity to the central business district. Also the electric street-car began to alter the social geography of the city. With greater accessibility and lower travel costs many residents enjoyed more choices in selecting their residential locations. No longer were different income and ethnic groups forced the inter-mingle because of the difficulty in interurban travel. The electric street-car fostered the concentration of different ethnic groups within their separate neighbourhoods. The result was a rapid acceleration in social stratification or sorting throughout the city. (Toaffe, Gauthier, O'Kelly,1996, p.175 )

### 2.2.3 Interurban and Suburban Railroads: (1900-1930)

The impact of the railroad on urban spatial form began in the mid-nineteenth century. The construction of railroads along the periphery of the old core of the city fostered a major relocation of industrial activities. Many of the so-called nuisance industries, such as stockyards and large iron and steel works, were the first to locate along the new railroads, thereby forming the nuclei for new industrial districts., further strengthening the economies of agglomeration. (Toaffe, Gauthier, O'Kelly,1996, p.175 )

For most urban residents the major impact of the railroads came with electrification and the advent of the electric interurban. The electric commuter train was a new technology that further decreased travel time and cost and increased the accessibility of the range of the cities. This was most evident in the growth of suburban corridors along the major rail lines where high-income suburban communities were developed, often at considerable distances from the city. (Toaffe, Gauthier, O'Kelly,1996, p.175 )

A common spatial form developed as the railroad-dependent suburbs grew in a widely spaced pattern along the major rail lines leading out of the city, thereby creating a characteristic "beads-on-a-string" settlement pattern. The electric commuter train increased significantly the number of suburban settlements by decreasing both travel time and cost, opening many suburban areas to the middle class for the first time. In some cities, the interurban lines established the urban pattern for the growth of the city. Many of the rail lines forged rights of way along corridors that would be upgraded into major streets and eventually into expressways. The interurban and suburban railroads extended and strengthened the sectoral pattern of cities along their major radial lines. (Toaffe, Gauthier, O'Kelly,1996, p.175 )

### 2.2.4. The Automobile (1930-Present)

No transport technology has had a greater impact on the spatial organisation of cities than the internal combustion engine and its adaptation as the power source for horseless carriages. The first automobiles were developed in Germany in the 1880s. By the turn of the century the technology had become widespread throughout Europe and North

America as many carriage makers began to produce a variety of automotive models, not all of which used gasoline engines. Although the early vehicles suffered from many mechanical problems, the real drawback to their widespread adoption was cost. Only the very wealthy could afford them. At first, the automobile was used primarily for weekend recreational trips beyond the city. Public transportation was still depended on for commuting and shopping trips. (Toaffe, Gauthier, O'Kelly,1996, p.176 )

Not until the 1920s did the automobile become economically affordable for the middle class. Lower unit production costs that resulted from the adaptation of the mechanised assembly line to automobile manufacturing brought a reduction in retail prices. Pioneered by Henry FORD, the mass production techniques for manufacturing automobiles began a process that revolutionised travel within and between cities. Between 1915 and 1930, the number of automobiles on the road in United States increased from 2 million to more than 23 million. In 1915 there was approximately one automobile for every 200 persons. By the late 1920s, there was one automobile for every 10 persons. (Toaffe, Gauthier, O'Kelly,1996, p.176 )

During the economically prosperous 1920s, more and more urban households recognised the personal advantages of the automobile. No longer was it necessary to live within walking distance of public transport facility, such as the electric street-car, for commuting, shopping or recreation. The automobile provided for all of these travel needs with unmatched flexibility. The advantages that a private automobile provided in flexibility, convenience and personal comfort far outweighed its advantage of being more costly than public transportation. (Toaffe, Gauthier, O'Kelly,1996. P.176 )

Before World War II, an unprecedented expansion in the development of suburban communities began. Radial highways penetrated deeply into and beyond the older suburban locations, reaching into previously nonurban areas beyond the suburban fringe of the interurban and commuter railroads. Low-density settlement in the form of single family houses spread throughout the new suburban areas. Quite frequently, these began around the older commuter railroad stations and created wider zones of suburban settlement. As a result, the 1930s saw suburban growth rates exceed those of the central cities. The new spatial organisation was creating the framework for the modern

metropolitan area. (Toaffe, Gauthier, O'Kelly,1996, p.176 )

After World War II, there was a dramatic acceleration in suburban growth as more and more people sought the perceived amenities of suburban living. The social geography of American cities became more distinct as middle -and higher- income populations sought positive externalities in suburban neighbourhoods, which more and more differentiated by levels of household income. (Toaffe, Gauthier, O'Kelly,1996, p.176 )

Spatially, the increasing demand for single-family housing in suburban locations created a greater demand for the construction of streets and highways to fill in the interstitial areas, thereby reestablishing a number of concentric residential rings.

The intensification of the decentralisation of urban population during the 1950s and 1960s brought with it on increase in the decentralisation of commercial activities. Large regional shopping centers emerged in the nearby suburbs and they competed with retail stores in the central business district.

There was also a shift away from railroads to trucks for the transportation of a variety of goods. As a result, industrial and wholesale activities became less dependent on rail locations. New industrial parks that depended on locations offering easy access to highways developed in many outlying urban locations. Light industry, in particular, became part of the ongoing decentralisation of urban activities.

## 2.3. HISTORY OF RIBBON DEVELOPMENT PROCESS

At the end of the nineteenth century big cities had became increasingly difficult to live in largely, because they were difficult to move in. The concentration of people and resources in urban areas was impossible without the mobility and supply lines afforded by transportation.

Street-car railroad and subway systems were no longer profitable investments. When city-street interurbans had been constructed the automobile and paved highway were

still in their infancy. But as the automobile registrations reached their peak near 1920s and populations rapidly spread out across the region, street-car transport with its fixed rails and high investment cost started to decline motor busses automatically presented a competitive solution, for their flexible route patterns could easily capitalise on reduced or shifting commuter patterns. (Boyer, 1983)

By this way the giant cities were changing, partly through market forces. The process of suburbanisation, especially the market-led variety, was far more pervasive and more evident in American cities than many of the European cities except London.

### 2.3.1. Ribbon development in United Kingdom

In England many of the urbanisation acts generally depended on the problems of London. In London as congestion worsened with the growth of private motoring, engineers and planners had been grappling with the problem of the London traffic at least since the start of the automobile era. "Already in 1905, royal commission of London traffic had devoted eight bulky volumes to the subject and had proposed on ambitious system of new arterial highways boldly slicing through London's built-up fabric." (Hall,1996, p.384)

It was thought to be the long term solution must be suburbanisation of the congested city for the solution of unhealthy areas in London. (Hall, 1996) By improving the traffic flow elimination of congestion could be achieved and the environmental intrusion that traffic represented whenever it penetrated into living and working areas could be reduced.

Planners achieved a remarkable synthesis: a concept of a city replanned on organic principles with cells and arteries, in which each part performed its proper function effectively on three different dimensions: functionally in terms of efficient movement, communally in terms of social cohesion and identity, and monumentally in terms of strong sense of place.

A carefully-designed development would be marked by a variety of house-styles, winding roads, closes and crescent, generous garden, tree plantings and grassed verges. But often the speculative suburb lacked any overall plan, being developed road by road by numerous builders until the land ran out... The result of such activity was sometimes a long sprawl of monotonously similar semi-detached houses along a busy arterial road, backed by a waste of derelict agricultural land remote from amenities such as shops, schools and stations. (Hall,1996)

Since the frontage was the dearest aspect and also the basis of cost, in England, long narrow plots between 25 and 35 feet wide were the rule, producing a parallel rows on identical plots. Natural features ignored, roads were laid out in aimless serpentine fashion or simply followed old field path, giving an impression that managed to be simultaneously restless and monotonous. The result was segregated landscape of suburbia. And the 1932 Act actually encouraged this. (Hall,1996)

Essentially, "the suburbanisation was greatly accelerated by rapid developments in transportation – developments with which the young planning machine could not keep pace. The ideas of Howard (1898), and the Garden City Movement, of Geddes (1915) and of those who like Warren and Davidge (1930) saw town planning not just as a technique for controlling the layout and design of residential areas but as part of a policy of national economic and social planning, were receiving increasing attention, in practice, however town planning often meant little more than extension of the old public health and housing controls." (Cullingworth & Nadin, 1994, p.3)

Various attempts were made to deal with the increasing difficulties. Of particular significance were the Town and County Planning Act of 1932, which extended planning powers to almost any type of land, whether built-up or undeveloped, and the Restriction of Ribbon Development Act of 1935 which as its name suggest; was designed to control the spread of development along major roads. But these and similar measures were inadequate. For instance; under the 1932 Act planning schemes took about three years to prepare and pass through all their stages. (Cullingworth & Nadin, 1994, p.3,4)

Theoretically; the 1932 Act offered all the powers to stop ribbon development. The practice, though, rather different and a new act (Ribbon Development Act) specifically focused on this proven abuse was passed. It gave highway authorities ( counties and county boroughs ) immediate control over the main roads, regardless of whether a planning scheme (normally prepared by county and district or county borough) was in force. Moreover it had the tremendous advantage of allowing immediate enforcement which was not possible under the interim planning development control. Basically it allowed the whole question of planning in the vicinity of major roads to be tackled more effectively. Yet, despite what the widening planning lobby would have liked, it did not challenge the predominant emphasis on peripheral suburban development as the main strategy for urban growth.

According to Thomas Sharp – perhaps the most prolific writer on planning problems in the early 1930s – the evil started with Ebenezer Howard's vision of Town-Country which in practice had produced a depredate mixture: " From deary towns the broad, mechanical, noisy main roads run out between ribbons of tawdry houses, disorderly refreshment shanks and vile, untidy garages... Over great areas there is no longer any country bordering the main roads, there is only negative suburbia. And if the present ideals continued to hold sway, under the influence of new technologies- radio, television, the car- things could only get worse." (Hall, 1996)

Tradition broke down. Taste was utterly debased. There was no enlightened guidance or correction from authority. Rural influences neutralised the town. Urban influences neutralised the country . In a few years all would be neutrality. "The strong masculine virility of the town; the softer beauty, the richness, the fruitfulness of that mother of men the countryside, would be debased into one sterile, hermaphrodite beastliness." (Hall,1996)

**2.3.2 Ribbon development in United States of America:**

In American cities the ribbon development process is more obvious and much different from the European cities.

"The extension of electric street-car lines to suburbia around the turn of the century led to mass decentralisation and the emergence of streetcar suburbs outside of New York, Los Angles and many other cities. Prior to this, America's urban centers were very dense, with factories, shops and household tightly packet together. Most Americans had to live and work nearby because the only way to get around was by foot, bicycle, or horsecar. The compact settlement patterns of the day reflected the need to minimise travel. Pre-1900 cities were also extremely polluted, overcrowded, and regarded by most social commentators of the time as oppressive environs. Soon after the nation's first electric trolley line opened in Richmond, Virginia in 1887, streetcars were heralded by many by many as a long-awaited saviour, allowing middle-class Americans to flee decaying central cities for he suburbs.... Streetcar expansion mirrored the country's explosive growth in urban population, propelled by the industrial revolution and mass in-migration." (Bernick & Cervero, 1997, p.38)

America is considered to be the land of the reformer, the land of the clean start. And new beginning would come in an unexpected manner, for once again in 1920s, a transportation innovation delivered its impact upon the American cities.

In America transportation affect the structure of the cities more obviously than the other cities in Europe. The horse-drawn omnibus was important from 1830 to 1860, the suburban railroad from 1850 in the largest cities, cable cars from 1860 to 1890, and elevated rail lines and subways from around the turn of the century. The most universal transport medium from 1890 to about 1945 in all but the largest cities was the electric street-car. But the revolutionary transportation development of the twentieth century has been the spectacular rise of the automobile. There were only about 8000 automobiles in America in 1900, less than 500 000 in 1910, about 8 million automobiles in 1920, but the number has risen spectacularly from about 25 million in 1945 to more than 70 million cars and 13 million trucks and busses today. And each automobile, on the average is driven more miles every year. The effect of urban structure of this new private form of transportation was really immense. (Nelson, 1971, p. 76, 77)

The automobile and the paved highway spread the urban population over the surrounding countryside, absorbing old satellite communities, forming congeries of

business centers, open fields, suburban villas and factory towns yet still retaining densely populated tenements and scraping skyscrapers in the city center. This sudden growth of automobile started a continent-wide redistribution of population and industry. In consequence, it became dramatically clear that country and city were one functional unit, that the allocation of highways, the determination of national trunk lines for public utilities and transport had little or no relationship to political boundaries.

There are at least three key reasons why transit has lost ground in recent times to the private automobile. One is spatial. Decentralised growth, especially the rapid exodus of jobs to the suburbs in the 1980's has diluted transit's ridership base. Environments with trip origins and destinations thinly spread in all directions are environments where few people patronise transit. Second, transit has increasingly found itself at an economic disadvantage. Between 1980 and 1990, the average cost per mile of driving a car fell by 45 percent; this was because of lower gasoline prices and higher flee-average fuel efficiency. Lastly, powerful demographic shifts have increased automobile ownership and driving. Foremost has been the movement of baby-boomers into midlife, a time when their disposable incomes and amount of travel are usually at their highest. Additionally, transit has lost market share due to the rapid growth in working women. Women tend to rely more than men on cars because they make more linked trips, such as between work, a child-care center, a grocery store, and home, trips for which there are few viable options to the private automobile. (Bernick & Cervero,, 1997, p.41,42).

Ribbon developments, decentralisation and increasing car ownership affect each other in a supporting way in United states. Automobile was seemed to be a tool for the effect of regional policies in America. However it was the tool for suburbanisation policies in Europe.

When railroads dominated transportation corridors , urban growth took place along linear lines at points where these networks coalesced or crossed. Automobile transportation, however; favoured a more even distribution of population, a more flexible network of roads culminating in regionally decentralised centers, not metropolitan-wide congested development. Energy, space and time referred back one upon the other. Giant power, the consolidation of electrical industry into a few holding

companies, carried with it the vision of better alignment between urban and rural areas in ecological balance to water and power sources, in districts where land values were low. Surrounded by belts of agricultural land, these regional centers would soon become agriculturally self-sustained, fully planned with living, working and learning in mind. They would establish a symbolic relationship between the country and the city. The suburbanisation of super power for isolated steam power would check the flow of population to congested centers. Dirt, smoke, noise and slums would be replaced with decentralised suburban and rural living environments. (Boyer, 1983)

### 2.3.3. Ribbon development in Turkey

Ribbon development process in Turkey largely depends on the increase in car ownership and the development of highway transportation system. At the end of the nineteenth century and at the beginning of the twentieth century railway was the most dominant transportation system in Turkey. Especially, after the foundation of the new Republic, industrialisation was seen the most important factor for development and the national politics depended on the development of the railway transportation all around the country. This process continued until 1940. And as a result of it, industries spread over the country through the railway lines. It was also a tool for socio-cultural equation between the regions.

After World War II automobiles and highway transportation had became to take place increasingly in the country agenda as parallel to abroad. The politicians regarded highways as the most important tool for the integration to the international markets and also for the adaptation of small entrepreneurs to the national economy. In this period the highway development didn't depend on a program. On the other hand the railways were neglected.

In Turkey the changing political approach changed the transportation policies also. After 1950 by the establishing of a new department (General Directorate of Highways) for the development and programming of highway projects by the central government, a comprehensive highway construction process have appeared all around the country.

Cities were developed along to the railway lines, close on railroad stations till 1955. But the accessibility of highways and the high mobility of automobiles has changed the structure of urbanisation mostly. Especially the cities on the major roads has spread through the roads with a population increase also. New settlements have became to appear on these roads. The old city centers have lost their functions and new centers around the roads have became functional.

It is cheaper to construct a highway on flat areas such as agricultural lands. The important highways in Turkey which connect the cities or rural areas to big markets were generally constructed on the most fertile plains. There was no prohibitive measures. So industries have became to take place along these roads on the agricultural lands where they minimise their infrastructure costs and the areas which are close to the markets.

As a result the ribbon developments had started to be occurred along these roads as the reflection of political approach, construction costs and personal preferences. In addition, these industrial plants have attracted the worker houses near them. There was no national planning perspective for the development and also for conversation.

By 1980s the Post-Fordist mode of economy also affected the urbanisation in Turkey. Big shopping centers, outlet stores have appeared in urban areas as a result of globalisation. Those commercial establishments need large parcels. Therefore, they tend to locate to the lands with high transportation facilities out of inner cities. Transportation is the main criterion for the success of such establishments.

In this period; hectares of treasure lands at the periphery of those crowded cities began to be sold in the scope of privatisation policies in the country. Most of these lands have been a subject to mass housing settlements because of insufficient house stocks in inner cities by the migration from rural areas to urban areas. Some of these mass housing settlements along the roads were constructed to meet the needs of high level social groups with high rates of car ownership. Minimisation of commuting time was the main factor for the attractiveness of these settlements.

Besides; it is also possible to see another type of mass housing sites along the roads where middle class settle down. The entrepreneurs who have small capital tend to locate those lands because of lands prices being lower than the inner city. They gather their capital and construct those mass houses with insufficient social and technical infrastructure facilities.

All of these factors have been effective in the ribbon developments in Turkey. Such developments are most evident on the roads which connect the cities to the metropolitan areas, in other words to the big market areas, on İstanbul – İzmit axis, Bursa – Yalova axis, Adana – Mersin axis and İzmir – Denizli axis . Ribbon developments have greatly changed the structure of those cities and also have caused the industries to aggregate on the same places.

The disequlibrium between the regions have got bigger as a result of this process, in addition; cities have developed in an unplanned, anaesthetic and uncontrolled way.

The main difference in the ribbon development process in Turkey and in abroad (especially in England and America) is its being the result of unplanned industrialisation policies in Turkey on the other hand it has been mostly the result of suburbanisation policies and congestion in big cities in abroad.

## 2.4. CAUSES OF RIBBON DEVELOPMENT

### 2.4.1. Technological developments:

Twentieth century was the era of technological developments. The era which bared the witness of a great change in every social, spatial, economic and political subjects. And many of the problems of our cities are the direct result of technological advances to which the mechanism of government has never fully adopted.

Ribbon development has occurred after the application of transport technologies to the space. Suburban settlement built before 1920 grew up around the railroad. The

development and widespread use of the automobile radically changed this pattern. It was now possible for the people to choose more convenient sites for their houses and establishments. The highways provided people with more economic and maximum accessible sites for their settlements.

**2.4.1.1.Technology and urban development:**

There is a relative connection between the technology and urban development. It could be possible to reach three basic conclusions about this relationship. "(1) In general more technology is available than is being effectively used. While research in new technology should continue, what is needed most are strategies and programs for utilising available technology in effective applications to the urban area. (2) The design of systems for community improvement is not fundamentally limited by available materials and technologies, rather it centers on the knowledge of sociological and behavioural requirements and the assessment of the relative value and desirability of various alternatives. (3) Identification and selection of useful available technologies for application in a national program for urban development will require a high degree of technical competence." (Harvard University Prog. on Technology and Society, 1970, p.14)

If technology is come to the aid of the city, it must be responsive to the city's needs. Technology must fit the city rather than vice versa. The city is a complex system, and it is only when it is understood as a system that high technology can come to its aid. This does not mean that the efficiency is the only value to be optimised. (Eberhard, 1976, p.18)

"A city is made up of a complex of "hardware" and "software" systems. The four major hardware systems are (1) the metabolic system, by which water supplies, food and fuel enter the city and wastes are produced as residues of their consumption; (2) the cardio-vascular system including both vertical and horizontal movement of people and things throughout the city; (3) the nervous system, whereby information is communicated by telephone, street signs, TV, newspapers and so on; and 4) enclosure system, "the combination of ...subsystems...that surround the hollow places of the city where the life

of the city goes on" (i.e. for the most part, buildings). Software subsystems include the economic system, the educational system, and the life support system. Hardware and software systems are, of course, interdependent." (Eberhard, 1976,p.18,19)

In this century high technological developments in many subjects have given an unlimited independence to people. And government not fully try to limit that. However; a city is an organisation and in an organisation there should be some limitations for the sustainability of the social life.

In a system a development or a defect in a small element would effect the whole system. Because of this reason any small change in the system should be done in a comprehensive approach. Cities as a complex system should be planned in this way. Planners ought to balance the negative and positive effects in a technological development. It is the same in transportation technology. Ribbon development is considered to be an unexpected and unwanted process of the adaptation of new transport technologies to the city space.

**2.4.1.2. Technological developments in transportation:**

Transport technology has had a greater impact on spatial organisation of cities. By 1921, however; electricity had surpassed steam in importance as a motive power, and the flexible automobile had replaced the rigid lines of railroad. These technological innovations would produce a new pattern of spatial development. They made decentralisation of population and industry possible.

Of course "the concentration of people and resources in urban areas would have been impossible without the mobility and supply lines afford by transportation. The capacity of the transport system and the low cost and dependability of transport services have enabled an increasing number of people to seek the economic, social and cultural opportunities that urban living ideally provides. But paradoxically, metropolitan cities have now grown to the point where they threaten to strangle the transportation that made them possible." (Owen, 1966, p.1)

According to OWEN; one reason for this dilemma is the fact that urban areas have been unable to adjust to the changing conditions brought about so rapidly by the technological revolution in transportation. The older urban centers with physical characteristics that were fixed in less mobile times, have been staggered by the impacts of recent innovation. And the newer suburbs have been compounded the transportation problem by duplicating, the errors of downtown and by creating problems of public administration and finance that traditional governmental organisation was not designed to meet. (Owen, 1966, p.2)

In fact, transportation is the most effective force that influence the dynamics of land use. It is also complex to understand which demands the other, such a chicken-egg problem. Does transportation cause changing of land use or land use causes new transportation types. The land use – transportation cycle shown in Figure 1 can explain this complexity.

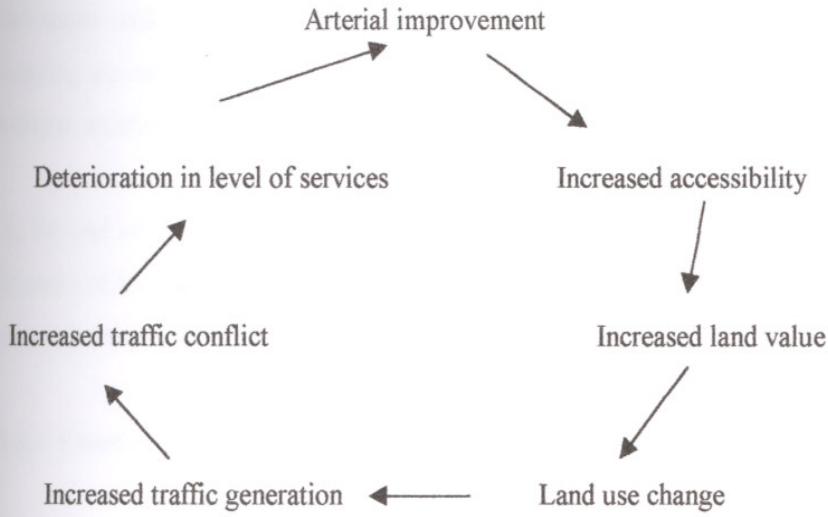



***Figure 1:*** *Transportation – land use cycle. (Stover, Koapke, 1988)*

Transportation could be qualified as the most important catalyst of ribbon development. Trolley and bus lines produce strip developments and rapid transit lines have only extended the strips. Primarily, however, it is the auto which permits access to remote

areas and provides the essential condition which allows ribbon development to occur.

**2.4.2.Congestion in city centers:**

At the end of the nineteenth century the big cities were being congested by the population increase. The number of car ownership increased due to the population increase also.

Many environmental, social and spatial problems occurred in urban areas. At the beginning of this century it was necessary that all the urban functions should be altogether. But by the steam power and gasoline this obligation was broken down. The availability of reaching everywhere in a short time changed the compact city models.

Planners thought that it was possible to form the industrial and residential areas at the suburbs. But for this, a strong linkage between the inner city and the outer settlements was needed. The only solution of distribution was along established rail lines or in co-ordination with spreading highway system. Thus planners distributed central areas by opening up new traffic ways and creating new open spaces carefully allocated to enhance existing property values.

At the end of this process ribbon development has seen along these new axis by the pressure of high land values and the environmental problems those are mostly the result of congestion of inner cities.

**2.4.3. Centrifugal and centripetal forces:**

Two forces are effective in the shaping of our cities. They are centrifugal forces that impelled functions to migrate from the central areas of the city to the periphery, and centripetal forces that tend to hold certain functions in the central zone and attract others to it.

Centripetal forces are the result of a number of attractive qualities of the central portion of city. One of these qualities is site attraction. It is the quality of the natural landscape.

It has an original character that invited the people. For example, river crossing or a deep water landing. The second force is functional convenience. It results from the possession of the central zone of maximum accessibility , not only to the metropolitan area, but often to the entire surrounding region. The third one is functional magnetism. The concentration of one function in the central zone operates as a powerful magnet attracting other functions. And the last one is functional prestige that stems from a developed reputation. One street may become famous for its restaurants or shops as a result of functional prestige. (Nelson, 1971, p.77)

Centrifugal forces on the other hand are not only opposite forces, but are made up of a merging of influences- a desire to leave one part of the city and the urge to go to another. Five forces are recognised. One is the spatial force, when congestion in the central zone uproots and empty spaces of the other zones attract. The second, is the site force, which involves the disadvantages of the intensively used central zone in contrast to the relatively little used natural landscape of the periphery. Another, the situational force, results from the unsatisfactory functional spacing and alignments in the central zone and promise of more satisfactory alignments in the periphery. Then there is the force of social evolution in response to which high land values, high taxes, and inhibitions growing out of the past create a desire to move and the opposite conditions in the newly developing periphery provide an invitation to come. Finally, the status and organisation of occupance creates a force for change, in which such things as the obsolete functional forms, the crystallised patterns, the traffic congestion, and the unsatisfactory transportation facilities of the central zone stand in opposition to the modern forms, the dynamic patterns, the freedom from traffic congestion, and the highly satisfactory transportation facilities of the outer zone. (Nelson, 1971, p.77)

In addition to these forces another factor, human equation which could work either as centripetal or centrifugal force. Although today other forces may also be at work, these concepts are still useful in analysing the dynamics of cities. (Nelson, 1971, p.78)

Ribbon development seems as a result of centrifugal forces at first. But it could not be qualified as a decentralisation or sprawl process at all. Both centrifugal and centripetal forces are effective in this development. Plants and houses escape from the central zone

by the effect of centrifugal force. On the other hand, they can not abandon the advantages of inner city such as functional convenience and cheap infrastructure costs and tend to locate along the main roads under the influence of central city.

### 2.4.4. Urban Growth:

The physical expansion of an urban area may involve expansion due to population growth as well as redistribution of activities within the urban area. Much of what has been termed sprawl or decentralisation are, in fact just growth. The amount of land needed per unit of time to accommodate the outward expansion of urban area will depend on the size of the urban area, its rate of growth, the proportion of demand channelled into suburban preferences, and the density of new development. (Goodall, 1972, p. 185)

The idea of moving out to seek the health and enjoyment of air and sunlight has been a natural reaction to the noise and dirt of the cities, but the endless spreading of cities has resulted in pushing the country farther and farther away. As a result, those who seek the restfulness or the beauty of the countryside must constantly move outward to avoid the progressive waves those who continue the escape from older blighted districts. This unplanned suburban development has resulted in the sprawl of large cities, the lengthening the journey to work, and growing difficulty of moving around. (Owen, 1966, p. 20)

#### 2.4.4.1. Sprawl

The pattern of outward expansion has frequently been described as the scattering of urban settlement over the rural landscape. Gottomon says "Where two cities are close together the intervening rural space becomes peppered with new developments." (Harvey & Clark, 1971, p. 476)

Sprawl occurs in three major forms: the first of these, low density continuous development, it is the lowest older of sprawl and to many, the least offensive. The second type is leap-frog sprawl, which is the settlement of discontinuous, although

possibly compact, patches of urban uses. And the third type of sprawl is ribbon development sprawl. It is composed of segments compact within themselves but which extend axially and leave the interstices undeveloped. At the time of development ribbon development may be more expensive than low density sprawl. (Harvey & Clark, 1971, p.476)

Sprawl, lying in the advance of the principal lines of growth is most noticeable when urban areas in general are expanding rapidly and around the fastest-growing urban areas. Expansion involving the initial improvement of vacant land is usually confined to residential and industrial land uses. Expansion follows lines of least-resistance – essentially major radial roads- out of the urban area. Ribbon development occurs when land on either side of such a main road, for considerable distances into the countryside, is converted to urban use. (Goodall, 1972, p.186)

The areas where ribbon development sprawl is occurred have heterogeneous pattern, with and overall density greatly less than that found in mature compact segments of the city.

Ribbon development sprawl occurs because it is economical in terms of the alternatives available to those firms and households deciding on rural-urban locations. Ribbon development is largely determined the scattering of manufacturing plants away from areas already too crowded by such plants and into districts with good transport facilities and within easy reach of one or more large urban areas. The motor-car has provided the essential condition for residential sprawl since it has allowed easier, but not necessarily cheaper, commuting.

**2.4.4.2. Decentralisation and suburbanisation**

At the beginning of decentralisation process planners thought it was possible to prevent the negativenesses of the cities caused because of congestion by forming industrial and residential areas at the suburbs. A strong linkage between the inner city and outer settlements was needed for this type of decentralisation. The only solution of distribution was along established rail lines or in co-ordination with spreading highway

system. Thus the planners distributed central areas by opening up new traffic ways and creating new open spaces carefully allocated to enhance existing property values.

According to Frank Lloyd WRIGHT, "the deadline for decentralisation has been so shortened by the threat of nuclear warfare that the urbanite must either be willing to get out of the city or be resigned to blowing up with it. Protection against enemy attack is no longer to be found in banding together in cities, and the possibilities of arriving at a more even distribution of the population over the unused areas of the country have been vastly increased by recent innovations. This is especially true of developments in transportation. In the light of these considerations alone, it may be that "further centralisations of any American city are only postponements of the city's end." (Owen, 1966, p.18)

The automobile has made it easy to move away and leave our problems behind. Suburbanisation policies by the help of the transportation technologies has not been effective in the solution of urban problems. Because escape from the central cities to the suburbs has turned out to no escape at all. In the disorganised retreat made possible by the automobile we have transported slums to the suburbs. Suburban blight is spreading from the cluttered and unsightly roadsides into once pleasant neighbourhoods. The natural beauty of the countryside is being thrown the bulldozers.

People who have fled to suburbia are beginning to wonder why. They moved out to find more pleasant surroundings., only to be overtaken by thousands of others with the same idea. Their very numbers depriving them of the life they thought they could find. Thus the suburbs that appeared to offer an answer to the weaknesses of the city have created weaknesses of their own. They are often crowded and disorganised, lacking in public services or adequate play space, monotonous and unattractive. Endless sprawl has made suburbia the negation of the city. (Owen, 1970, p.5)

Suburbanisation enlarges the boundaries of human activities due to the shortening of travel times between the regions, thus encouraging people to live in a distant suburb. However, when most houses are located in a sprawling fashion and therefore effective or adequate public transport systems cannot be provided., mobility of suburbs is forced

to depend heavily upon car use. This obligation will definitely further accelerate motorization. It is therefore illustrated by the comparative history of urban development study that the coexisting negative feedback of suburbanisation and motorization have a mutual or reverse multiplier effects thus booting continuous increase in transport energy consumption.

Especially, in big congested cities, developers prefer to build along the main roads, rather than building their own roads. They leave areas undeveloped in the interior of the blocks. Meanwhile very few distributor roads build. Thus these cities consist of numerous large blocks containing many little access roads, usually unplanned and unconnected except to the main roads, and lacking distributor roads. Urban areas geographically expand rapidly, following the access roads. And these roads become lined with ribbon development.

As a result both the central city and suburbs have lost their attractiveness.

The future predictions about decentralisation and suburbanisation processes by the effect of new technologies are changing according to writers.

In contrast to these outer expansion processes in urban areas YAVITZ sees indications of a return of centralisation. "The increasing use of computers in business, for example, has converted many city offices into "paper factories" that provide new kinds of white-collar employment for the unskilled. Computer technology also encourages some organisations to recentralise, and research and development work is probably best carried on in cities since it generally does not require much open space. Finally city-based plants seem best suited to newer industries like electronics, which produce small instruments and components." (Yavitz,1968, p.46,47)

Other writers take a different view of the effects of recent technological changes on the course of urban development. John KEMENY, for example suggests that expanded use of computer technology will allow the city to become a depository of information, "a major node in the computer-communication network." Business could be transacted through this network and "tens of millions living in surrounding small towns will have

continual access to these services by means of computers, television, and video phones. But they will not have to go the city." (Kemeny, 1967, p.49)

KAIN, MEYER and YAVITZ agree that changes in the nature of production technologies, improvements in transportation and the shift from heavy to light and service industries have brought about the movement of jobs and population to the suburbs. But while KAIN and MEYER see this trend as continuing, YAVITZ contends that there is "some indications of a new shift back to centralisation Computer technology, he suggests, has encouraged some organisations to recentralise their enterprises and has opened up new kinds of unskilled white collar employment in the city. KAIN argues to the contrary that not only is the suburbanisation trend unlikely to be reversed, but that jobs are moving to the suburbs at a faster rate than the population. If the trend continues, employment will be in the periphery and the workers' homes in the central city. MEYER projects a more even suburban growth pattern. The society will be increasingly urban, but both population and work places will be evenly spread throughout the urban area and "a few very large multi-city conurbations "will emerge. In a somewhat similar vein, WEBER sees modern day urbanism as being "no longer tried to a particular city base." In our post city age, the city is increasingly becoming an information exchange point and inhabitants of the core cities are "bypassed pre industrial locals" New communication and transportation technologies will accelerate this trend.

Cities will decentralise or recentralise in the future. But it is certain that the mobility of urban areas will continue by the effect of new technologies.

**2.4.5. Speculation:**

Speculation produces withholding of land for development. Speculation is also blamed for the premature subdivision. On the other hand it is a motivation of growth process. All incremental additions to the urban fringe are speculative ventures. The independence of placement and timing of the ventures permits a sprawl pattern. It is the lack of co-ordination of the decision to speculate which produces sprawl and not the speculation itself. (Harvey & Clark,1971, p. 476)

An investor may hold securities and dispose of them at a generally regarded optimum time in the market; the same investor dealing in land may find the measurement of performance in the market a great deal more difficult than in the case of the organised security markets. In addition; many restraints on the disposition of land are emotional. The institutional attitude of land hunger, that is, a deep desire for the ownership of soil, leads to what many observers would describe as irrational behaviour in the holding of land. (Harvey & Clark, 1971, p.477)

Under the price system all incremental additions to the outer urban areas are speculative ventures. Landowners hold a variety of expectations about the future and demand a variety of rates of return .(Goodall,1972, p.188)

From this situation transportation facilities greatly effect the land prices. Because of those individual expectations, the frontage parcel costs increases. "Imperfection of knowledge is especially important in the sub-market for developable land, and herein lies the opportunity for speculative profit. Thus land in substantially the same locations may be bought and sold at different prices according to the experience or lack of experience of the buyer." (Goodall,1972, p.64)

If there is a development expectation by the effect of the additional factor such as an accessible road, the lands are bought by the individuals who have some advantages to be near that facilities. For instance some small or medium sized industries have some locational advantages to be settled along an accessible road. Such speculative demands bid up the level of prices in the short run. This level in the land costs changes according to the correctness or incorrectness of the speculation.

### 2.4.6. Public Regulation :

Public regulation causes ribbon development by imbalancing the attractiveness of competing areas. The differences in land use controls between the inside and outside areas, make the lesser controlled area more attractive. If the standards of building and land use within the controlled area are greatly more stringent than common practices in

the building industry, the standards themselves may impel the development of housing units outside the controlled area and thus contribute to sprawl. (Harvey & Clark, 1971, p.477

On the other hand; planning and construction permission process could be more difficult. There may be many bureaucratic handicaps and these play withdrawing effect on the investor. Generally it is easier to take place which are not just planned and under the control of local authority.

But; sometimes entrepreneurs choose to locate somewhere under the control of central authority and try to take land use permission after construction by using their political relationships.

In addition; development amnesties have risen in the places where are less controlled. Lands under the control of central government authority are generally very large. On the other hand; there are not enough staff or effectual systems to control the developments on those lands.

All of these complex public regulations which have different characters according to countries' local and central authorities have caused the increasing of ribbon development as a form o sprawl.

**2.4.7. Regional and socio-economic policies**

For the solution of unhealthy areas in big cities it was thought to be the long term solution must be decentralisation of cities.

Transportation is a strong link between urban and rural areas. It is the most effective tool for changing and development. "transport policies have been devised both to sustain, and encourage, further growth in development regions and to use transport as a means of spreading economic benefits to those areas with little involvement, in the successful industries of the 19$^{th}$ and 20$^{th}$ century." (Hall, 1996)

An improved and co-ordinated highway system was essential to the prosperity of the city, yet no matter how planners drew co-ordinated transportation lines, the poorer towns and suburbs had no means to construct them. State highway aid continued to be allocated to rural areas and avoided in corporated towns. No surprisingly, then, transportation, traffic and long term solutions formed the hearth of most regional strategies in 1920s.(Boyer, 1983)

The planners thought that by these strong linkages between rural and urban areas the integration of both society would be possible. But as result; the rural influences neutralise the town. Urban influences neutralise the country. In a few years all becomes neutrality. The rural properties such as the softer beauty, the richness, the fruitfulness of that mother of men, the countryside, are debased into one sterile, hermaphrodite beastliness. The aim of integration of rural and urban areas appears as a new unidentified society, different from its social roots. New way of life based on automobile have occurred. "tradition has broken down. Taste is utterly debased. If there is no enlightened guidance or correction by the authorities environmental features will be damaged in a short time." (Hall, 1996)

"Under capitalism the relationship between developed and under developed areas is the most obvious and most central manifestation of uneven development. (By uneven development is often meant the self-evident truth that societal development does not take place everywhere at the same speed or in the same direction.) and occurs not just at the international scale but also at regional and urban scales." (Smith,1996, p.77)

"In terms of geographical space the expansion of capital and the equalisation of conditions and levels of development are what lead to the so-called "shrinking world" or to "space-time compression"." (Harvey,1989). Capital derives to overcome all spatial barriers to expansion and to measure spatial distance by transportation and communication time." (Smith,1996, p.78)

"At the height of the optimism of post-war expansion Melvin WEBER developed the concept of new technologies, especially in communication and transportation, many of the old forms of social difference and diversity were being broken down. For an

increasing number of people economic and social propinquity had became emancipated from spatial propinquity, with the exception of the poor, he argued, urbanities had freed themselves from the restrictions of territoriality. Weber's notion of "non-place urban realm" was given a wide and appreciative airing, not just because its optimism and idealism were wonderfully in tune with the times and because it seemed to express the rising liberal vision of the urban planning profession, but also because, however nebulously, it did express a real, concrete tendency in post-war urban development." (Smith, 1996, p.80)

At the urban scale, the main pattern of uneven development lies in the relation between the suburbs and the inner city. The crucial economic force mediating this relation, at the urban scale, is ground rent. It is the equalisation and differentiation of ground rent levels between different places in the metropolitan region that most determines the unevenness of development. Of course there are other social and economic forces which are expressed in the ground rent structure. Wage and income levels are certainly expressed in class and race segregation in a city's housing market, but these differences are mediated through ground rent. Or the transportation system, for example makes some locations more accessible and therefore more favourable, leading a higher land prices which represent nothing but more highly capitalised ground rent. But there is an obvious chicken-and-egg question here: does a new transportation system restructure the ground rent surface, hence leading to new development, thus necessitating new transportation systems? Certainly at the urban scale, the latter is the norm where fundamental alterations are concerned. This is the difference between suburbanisation and ribbon development. Suburbanisation of course more fundamental process in urban growth. On the other hand, ribbon development is considered to be relatively ephemeral although clearly enhanced and encouraged by the development of the means of transportation. Suburbanisation is the product of deeper and earlier forces. But when we compare both development process according to the impacts on the inner city such as, ribbon development has formed more evident damages in cities and on society. At first it has damaged the planning by its uncontrolled character. In addition, it has caused people to live in unsecured, undeveloped places far away from the public services with a full of noise. These impacts also causes some physiological problems on the people living there. (Smith, 1996, p.80,81)

### 2.4.8. Location criteria of industry

By the changes in production technologies and consumer tastes, the general shift from extractive and heavy industry to light and service industry and changes in transportation technology many of the industrial firms have chosen to locate out of the city.

The industries of the twentieth century are oriented toward markets and labour sources in the city. They no longer need to locate beside the natural resources and water point that determined location of nineteenth century industry. At the same time changes in transportation, communication, bookkeeping, manufacturing and retailing technologies have made different parcels of land within urban areas equally attractive. It is no longer necessary for a factor to locate in the center city for economic reasons; the outer parcels will do just as well, or better. (Meyer, 1966, p. 18)

Most of the near sites suitable for manufacturing have been appropriated by industry of an earlier era, thus expanding, and particularly, new industry in an urban area has a resort to more and more distant sites. Such intra-urban decentralisation reached a new maturity as improvements in transportation broke the locational monopoly of central sizes and was accelerated by technological developments in production.

As the automobile has given mobility to the worker, many firms engaged in light manufacturing have moved away from the center of the city to the suburbs where land is inexpensive, and large tracts facilitate one story plants, storage areas, and parking lots. Sites near the highways are very desirable. Many wholesale, too, have been attracted to similar locations. (Nelson, 1971, p.82)

Heavy industries has almost entirely moved out of the inner city. The development of railroad and trucks permitted industries to leave the central areas. Seeking extensive sites for sprawling factories, parking lots, and storage facilities, large manufacturing complexes are now characteristically found in outlying locations. (Nelson, 1971, p.82)

The development of space-extensive technology has reduced the demand for central

location, for the urban block represents an obsolescent site for modern plant. The increasing ratios of land per plant and per worker associated with new production techniques favour large sites as do the high disinvestment cost which prompt firms moving to the suburbs to buy large areas of land to safeguard future expansion prospects.

For urban manufacturing the choice of sites is being increasingly widened by transport improvements with regard to material assembly product distribution, and journey to work. This allows productive activities to take advantage of economies associated with modern techniques in new buildings on large sites away from congested urban centers. Most firms, therefore, have reasonably free choice of site within an urban area and all, except external economy industries and certain local market industries, have been favouring open space. Industries are growing most rapidly and industries with large plants have been dealing to move urban periphery.

Briefly; the influence of transportation factors on intra-urban manufacturing locations is reflected, particularly in choice of sites by heavy and light industry. It can be said that heavy industries locate alongside the route affording the cheapest transport. Light industries such as food processing and electrical goods that depend on motor transport for material assembly from and product distribution beyond the urban area prefer to locate along the rail roads. Small manufacturing firms tend to locate on the areas where they minimise their transport and labour costs and also the value of land. Radial roads which connect the inner city with suburban and rural areas by energy lines preferred by these firms for minimising many of the locational costs.

In addition; many of these firms attract the workers. So it could be possible to see workers' houses near the factories and along the roads. They tend to minimise the commuting costs and also infrastructure costs. As a result of these locational factors ribbon development has occurred by the influence of industries along the roads.

These Fordist locational criteria for heavy and light industries have changed by the end of twentieth century. In the twentieth century until the end of 1970s classical industrial locational theory based on the minimisation of transportation costs was effective. In the

Weber's model optimum site for industries is the intersection of lands where is close to raw materials and to marketing areas. (Ocakçı, 1997, p.30)

As a result of these locational preferences in the industrial sector, big portions of world capital agglomerated in big cities. By the effect of Fordism, the industries, which achieved a certain level of specialisation, took place in urban areas with a distinctive zonning. Those industries needed a big amount of labour force. So a migration from rural areas to those urban areas where the industrial sector agglomerated, began. As a result of this migration process the population of big cities increased very rapidly. Houses for workers were constructed around the industrial areas. This situation caused the increase of regional disequlibrium. A centre-periphery separation was realised in the world economy. (Ökten, 1997, p. 27)

Although technological developments and advanced industrial production agglomerated in the metropolitan cities of developed countries, the industries which produce the raw and subsidiary materials for those industries with simple production techniques located in the undeveloped periphery countries.

In Fordist mode of economy firms have some oligopolistic advantages supported by customs. By the economic crises in the world economy because of the huge increase in petrol prices in 1973, those industrial management could not marketing their products. It was realised that mass-production techniques of the Fordist economy were not profitable and flexible. It was necessary to minimise the scale of the industrial management in a way which could easily adopted to the changing conditions in the world economy. The developments in the communication and transportation techniques make the flow of information and capital easier and faster with minimum costs. In other words; the importance of transportation costs decrease in the total costs. This situation changes the locational criteria of industrial establishments. (Ökten, 1997, p.27)

After 1980s, by the effect of Post-Fordist economy, the capital decentralise to rural areas where land prices and labour costs are low. This decentralisation policies causes another dilemma from planning perspective; the cities which could not be industrialised because of Fordist mode of economic locational criteria, are now competing for taking

a portion from the world industrial capital . Post-Fordist organisation not only changes the classical industrial location theories but also changes global competition. By the minimisation of the scale of management the production units of a firm separate into sub-units. This situation increase the flexibility and decrease the risk factors. Reorganisation of industrial locations by the impact of globalisation of course affect the ribbon developments. The importance of highway transportation decreases by the technological developments in communication techniques. Industries may locate in the center of cities or they may decentralise .at the end of this process. Therefore the adaptation of the existing industries to the space and planning the cities according to those changing economic conditions necessitate to develop new approaches from planning perspective.

## 2.5. COSTS OF RIBBON DEVELOPMENT

### 2.5.1. Uneconomic extension of utilities

Ribbon development is usually accepted as being inordinately costly to the society. Cost per unit early in the development span of an area obviously tend to be greater than the cost per unit after the area has reached maturity. Quite often the development cost of the periphery are high because of the necessity for the development of a new private utility such as a sewage disposal system because of the system serving the main segment of the settled area cannot be expanded for technical or financial reasons. (Goodall, 1972, p.198)

Such development could be qualified as the waste of the national sources especially in undeveloped or developing countries. Capital should be used optimally according to the national development strategies. The most common case in urban development is the extension of utilities to new, not fully developed areas. The immediate cost of development, the ultimate number to be served and cost per user should be calculated at the beginning of the development process.

According to Harvey and Clark; "Capital costs associated with land development and

utilisation can be shifted from the land owners to society only in those peculiar cases in which publicly owned utility corporations are willing to install sewer and water systems for the benefit of the individual occupants without levying a charge sufficient to cover the costs of the installation. In order for the cost of development to be shifted to society under such circumstances, there would have to be maladministration in the public sector. By far the most common equitable approach to the payment for the installation of urban capital facilities is for the developer to pay to the utility company, whether it would be publicly or privately owned the actual costs of installation." (Harvey & Clark, 1971, p.481)

If an area is developed as a ribbon without adequate public services the costs of actual construction typically are paid by assessments levied against the property owners served by the new facilities. Poor administration or the absence of public administration produce costs to society which might properly be borne by the individual.

### 2.5.2. Loss of agricultural lands

Potential urban development is alleged to be a threat to the existence of agriculture in the rural-urban fringe. However; the seriousness of long-term agricultural shortages depends primarily upon a race between technology and population. The loss of agricultural land in the short run can hardly be considered a blow to society.

Development is generally concentrated on those lands most readily and economically available. Site characteristics influence the development costs; thus sites with developmental handicaps, such as liability to floods or excessive slope are avoided and those with positive qualities, such as sandy soils, are preferred. Indeed many of the physical qualities making land valuable for agriculture also make it valuable for urban use. Ribbon development as a form of sprawl is developing in the better farming areas, because uses are buying accessibility – to roads, public utility services, etc. – and these are more readily available in the better farming areas. Thus agriculture has little success in stemming urban growth. (Goodall, 1972, p. 188)

On the other hand; there is nothing precious about the area of any particular use;

allocations for agricultural purposes are determined by market forces. Moreover; if the price of special products or some other agricultural speciality became sufficiently high to yield a return on the land higher than that earned under an urban use, than a transfer from urban to agricultural uses would take place in contrast to that typically occurs. (Harvey & Clark, 1971, p. 481)

Land is not primary but also the source of food intake and losses in this case can be considered irretrievable since it takes 150 years for only 1 $cm^2$ of first class agricultural land to mature. (Saraçer, 1978)

A new road attract the urban functions around itself. And if it is constructed on rich agricultural lands, the loses will be more than it is supposed before construction. Ribbon development causes to loss in agricultural products also by damaging the compactness of agricultural lands. So the success of agriculture decreases gradually against ribbon development.

The loss of agricultural lands is a result of inadequate public control and also insufficient planning decisions. Cost studies should be done before allowing an agricultural land to highway use. Gains from a land which is under the agricultural use or urban use should be analysed in the long-term.

### 2.5.3. Decrease in the capacity of roads

By the increasing of car ownership in the cities and suburban areas, much of the streets and highway systems have became obsolete in design, inadequate in capacity and inefficient in operation.

The automobile problem in urban areas derives principally from the fact that cities and their street layouts were designed for the most part before the requirements of the new vehicle were visualised. The result today is an absence of good circumferencial distribution in the outer areas and a concentration of vehicles that cannot be accommodated in the downtown section.

In suburban areas where new road building has progressed quite rapidly, the results have not been much different. Many miles of these highways have been encroached upon by commercial and residential uses that causes ribbon development have reduced the capacity of the travelled way and increased the rate of traffic hazards. The disorderly strips of commercial development along the roadsides have at the same time created condition of blight that have subtracted from the financial ability of the community to build modern facilities. (Owen, 1966, p. 39)

Most cities continue to settle for the unfortunate compromise of furnishing main highways to serve the dual purpose of moving traffic and providing access to land. These two functions cannot be supplied adequately by the same road. Numerous points of entrance and exit along the roadside and the traffic they generate seriously interfere with fast moving vehicles and reduce both the capacity and safety of the highway. (Owen, 1970, p.21)

The death rate on conventional highways without control of access is generally two to four times as high as on roads with access control. Speeds of vehicle operation on controlled access facilities in urban areas is much greater than an ordinary street. Owen points out the results of a survey which was done on 12 highways. The survey indicates that with full control of access the speed of travel was 47 miles Per hour both in cities and in rural areas. Without access control average travel speeds in urban places fell to 26 miles per hour, and in suburban areas to 39 miles per hour. (Owen, 1966, p.41)

Because of these reasons ribbon development is also alleged to jeopardising the highway investments.

### 2.5.4. Damage in scenic quality

Another cost of ribbon development is damage of scenic quality. It is generally occurred as an anaesthetic and unsightly development that damaged the scenic quality.

Because of its being unplanned, thus uncontrolled and of course unwanted development process there is no order or an architectural quality.

Commercial properties strung along the highway right-of-way have caused the progressive deterioration of adjacent residential properties, the value of which has been reduced by bordering of land uses that are frequently unsightly and generally incompatible with their surroundings. The expectations that roadside commercial and industrial establishments will ultimately eat into contiguous land as population growth creates the need for further expansion has discouraged property owners from undertaking adequate maintenance and hastened the blight that uncontrolled ribbon development makes inevitable. (Owen; 1966, p.41)

In addition to these patterns we could add the monotony of community developments that have transplanted the patterns of obsolete cities into the roadsides. Industrial and commercial developments, poorly kept and scattered willy-nilly over the landscape, contribute to the unpleasant panorama. These developments themselves do not cover much of the land, but the surrounding areas left vacant are hardly suitable for anything else. Many business concerns still fail to recognise the relation between plant aesthetics and public relations. (Owen, 1970, p. 21)

The result is "the kind of degraded urban tissue that is growing up around our great metropolitan areas, neither urban nor rural, not vegetable, animal or mineral. It is a mixed-up kind of community in which there is reason to prefer one patch of the urban blight to another." (Owen, 1970, p.21)

### 2.5.5. Environmental and socio-cultural damages

Erroneous use of lands for highway transportation brings the area new settlements and industrial developments with all it's infrastructural costs thus ribbon development occurs But this causes damage in the land use pattern of the area completely resulting with ecological and socio-cultural problems both in short and long terms. However, use of resources in rural areas has to be done in the frame of sustainable land use approach concerning conservation of ecological values and development together in the same resource management program. (Akpınar, Kurum, Selimoğlu, Duman, Haktanır, 1995, p.649)

A new road directly effect the environmental balance. It causes erosion, landslide and air pollution. In addition it damages the quality of subterranean water resources, and the other natural resources which directly feeding from these water resources.

Especially it effects the natural landscape. For example, the factors such as separating of the land, splits and fillings, changing surface water routes, being the surfaces impermeable by asphalt are effects the ecological system directly. Ribbon development rises these effects to high levels. As a result of these damages in ecological system , the hydrologic cycle changes by the decrease in the amount of surface and underground water and This situation directly effects the quality of forests, pastures and agricultural lands. (Akpınar, Kurum, Selimoğlu, Duman, Haktanır, 1995, p.651)

Industries, working with poor technology and weak infrastructure, along the roads have influenced production negatively and are leading to pollution of environment. In addition to water and soil pollution a road is also the source of noise and air pollution in urban areas. Automobiles, trucks and other vehicles working with gasoline are threat for the ecological system. These problems on environment, by the effect of roads and ribbon developments along them have risen to high levels by rapid urban growth, population increase and sprawl all around the world. Because of this reason; sustainable development –World Commission on Environment and Development defined it as development "that seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future"- have been the solution of the environmental problems by achieving economic, ecological and social objectives in a balanced and integrated manner. (Ambio, 1996)

These are the problems of not only undeveloped or developing countries but also the developed countries. Uncontrolled and unplanned ribbon developments that destroy the agricultural lands, tree-plantings, natural structure of the lands (surface water route, topography, permeability) have forced the planners to develop strategic plans through sustainability and ecological planning.

In addition; ribbon development causes some socio-cultural problems in rural areas.

People living in rural areas have a different way of life generally depend on the agricultural economy. By ribbon development the communication between rural and urban areas increases. New sectors such as industry and services appears on rural lands and many people begin to settle in the villages. There may have some social conflicts between the old and new inhabitants can be appeared.

On the other hand, the rural inhabitants especially the young generations begin to work in these establishments and the economic life changes very rapid way. It may have seen as a positive fact for the integration of rural and urban society. But every rapid social changes cause many problems. If these changes does not depend on any social integration projects, the damages will be more severe.

# CHAPTER III

# CASE STUDY : RIBBON DEVELOPMENTS IN AYDIN ALONG IZMIR-DENIZLI HIGHWAY

## 3.1. GENERAL REVIEW OF STUDY AREA

In the previous chapter, the causes and the costs of ribbon developments are examined. The formation of such developments and their impacts are given by referring the two developed countries –the United Kingdom and The United States of America- where ribbon developments was first realised in the world. It is clear that Turkey is also experienced the same developments, but it has not been seriously handled yet as a planning policy issue. The impacts of ribbon developments on the rich agricultural lands and the losses in the national economy because of that uncontrolled development process have not been taken seriously into consideration in planning decisions.

So, it is aimed at this thesis to take up that problem and exemplify the causes and the costs of ribbon development on an agriculturally rich area of Turkey, where, at the same time, is subjected to a rapid urbanisation by the effects of national and regional dynamics such as migration from rural areas to urban areas and by the highway and railway lines connecting the study area to Izmir, the third biggest metropolitan city of Turkey.

The study area (Aydın) is located on one of the most fertile plains of Turkey. The north and south side of the province is covered with mountains. The Menderes River takes place between these mountains and many of the cities and the villages are settled on the plain as a pearl necklace on the highway. (Fig. 2) These lands are the most fertile plains of Turkey. Agricultural products cultivated from this fertile plain is the main source of income for the people of the area. As a result of this economic structure Aydın is known as an urban center of agriculturally rich area.

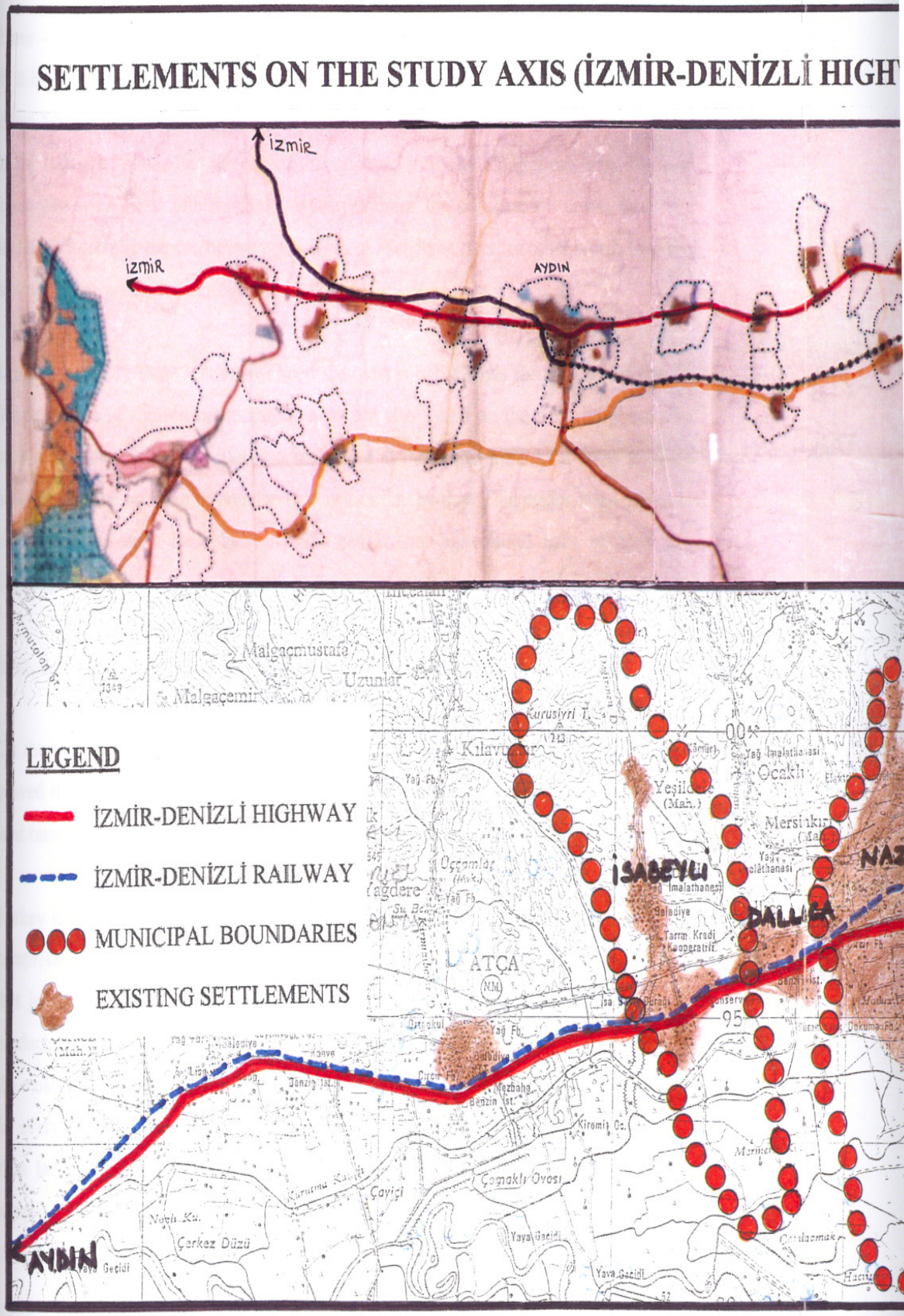
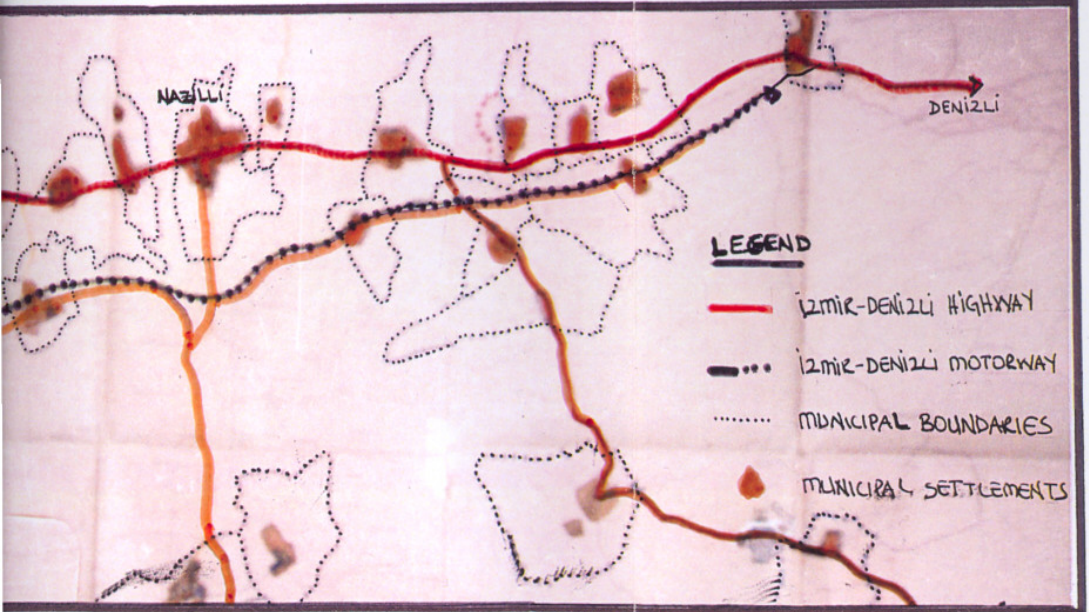
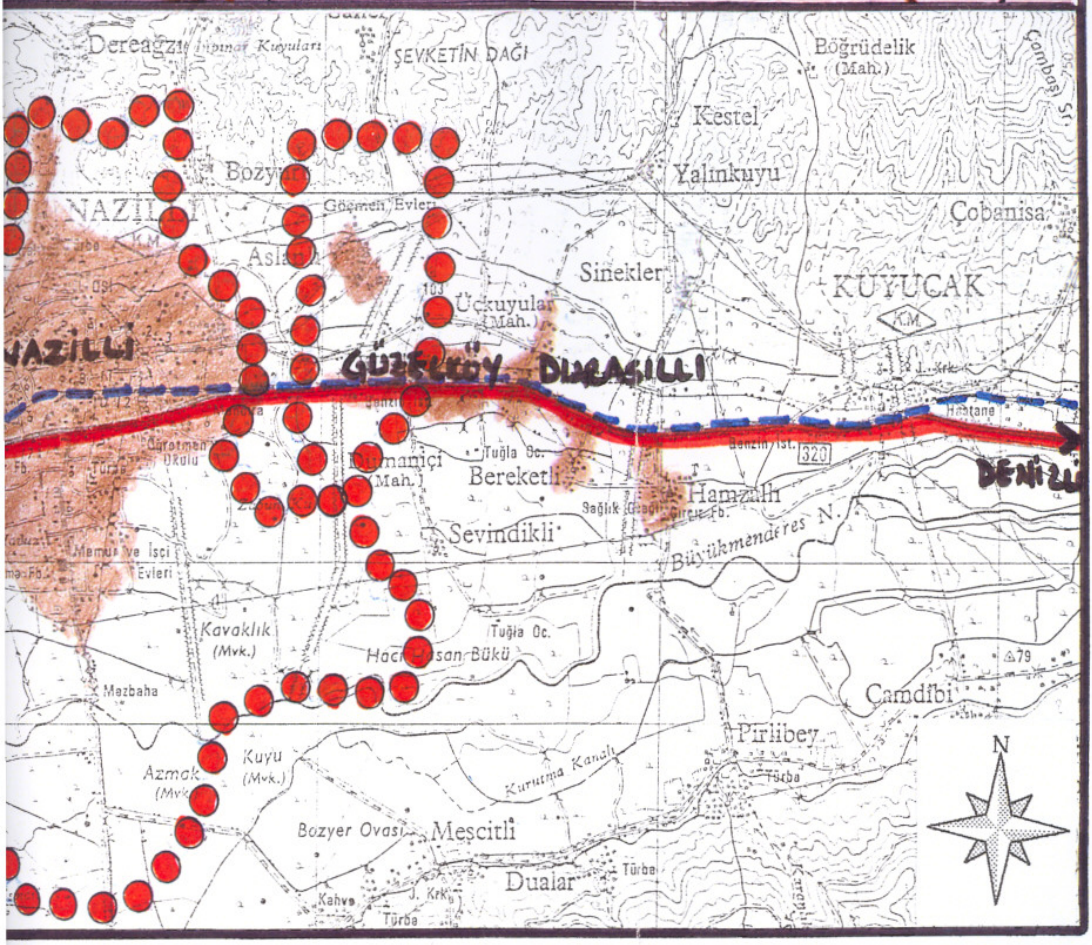



*Figure 2: Settlements on the study axis.*

GHWAY)



İzmir – Denizli highway acts as a powerful magnet that attract urban functions around it. It is generally cheaper to construct transportation networks on these flat lands. On the other hand; various urban land uses, such as; commercial establishments, residential areas, industrial plants and the other functions tend to locate along these lines, because construction on sites with minimal slopes minimise the construction costs. Such flat lands are generally the catchment basin areas of Menderes river, in other words they are also very convenient for agricultural production.

During its history these lands have been the most suitable lands for the settlements. In Turkey, some of the big metropolitan areas are also found on those fertile plains. By rapid urbanisation due to population increase and migration from rural areas to these areas caused the increase in population densities day by day. This means large amounts of agricultural lands have been transformed to non-agricultural uses without any limitation.

### 3.1.1. Agricultural Structure of the study area in Turkey

On the contrary to the opinion that our country have large agricultural lands, it was proved that Turkey is in the category of the countries which consume the agricultural land reserves with the other 19 countries in the world. (Ark, 1970)

Turkey is topographically quite mountainous with land having slopes of 15% or less - comprising only 20% of its total land area-, and again only 34 % of its total land area, that is, 26,5 million hectares, is being devotable to the production of agricultural products. (Ark, 1970, p.29). The first, second and third class cultivable land meaning the most viable in terms of soil, climatic and hydrologic conditions and thus available for every type of production comprise only 24,8% or 19,3 million hectare, and fourth class land unsuitable for the production of most crops but available for other uses comprise 9,3%, that is 7,2 million hectare, of again the total national land area. (Saraçer, 1978, p.35)

| LAND CLASSIFICATION OF TURKEY | | | |
|---|---|---|---|
| | Class | Area (ha) | % |
| i | I | 5 012 537 | 6,4 |
| i | II | 6 758 702 | 8,7 |
| i | III | 7 574 330 | 9,7 |
| i | IV | 7 201 016 | 9,3 |
| i | TOTAL | 26 546 585 | 34,1 |
| ii | V | 165 547 | 0,2 |
| ii | VI | 10 238 533 | 13,2 |
| ii | VII | 36 288 553 | 46,6 |
| ii | TOTAL | 46 692 633 | 60,0 |
| iii | VIII | 4 557 909 | 5,9 |

i: Cultivable land

ii: Land not suitable for cultivation

iii: Land not suitable for agriculture

***Table 1:*** *Land classification of Turkey*

According to the Table 1, 60% of Turkey's total land area is unsuitable for cultivation. On the other hand, irrigated agricultural land, that is land ready for cultivation with the least investment, comprises only 7,1% of it whereas the same ratio is 19,6% for Greece, 69,1% for China and 8,5% for the United States. (Saraçer, 1978, p. 36). Therefore, prime agricultural land is a scarce and limited resource in our country not only quantitatively but also qualitatively.

Aydın have a mountainous topographical structure. Although 72% of the province' land is covered with mountains the other 28% is the most fertile land of the country. The land classification of the province is shown in Table 2.

| LAND CLASSIFICATION OF AYDIN | | | |
|---|---|---|---|
| | Class | Area (ha) | % |
| i | I | 54297 | 7 |
| i | II | 49171 | 6 |
| i | III | 73884 | 9 |
| i | IV | 48060 | 6 |
| | TOTAL | 225412 | 28 |
| ii | V | 0 | 0 |
| ii | VI | 102802 | 13 |
| ii | VII | 464298 | 58 |
| ii | TOTAL | 567100 | 71 |
| iii | VIII | 8302 | 1 |
| | TOTAL | 806915 | 100 |

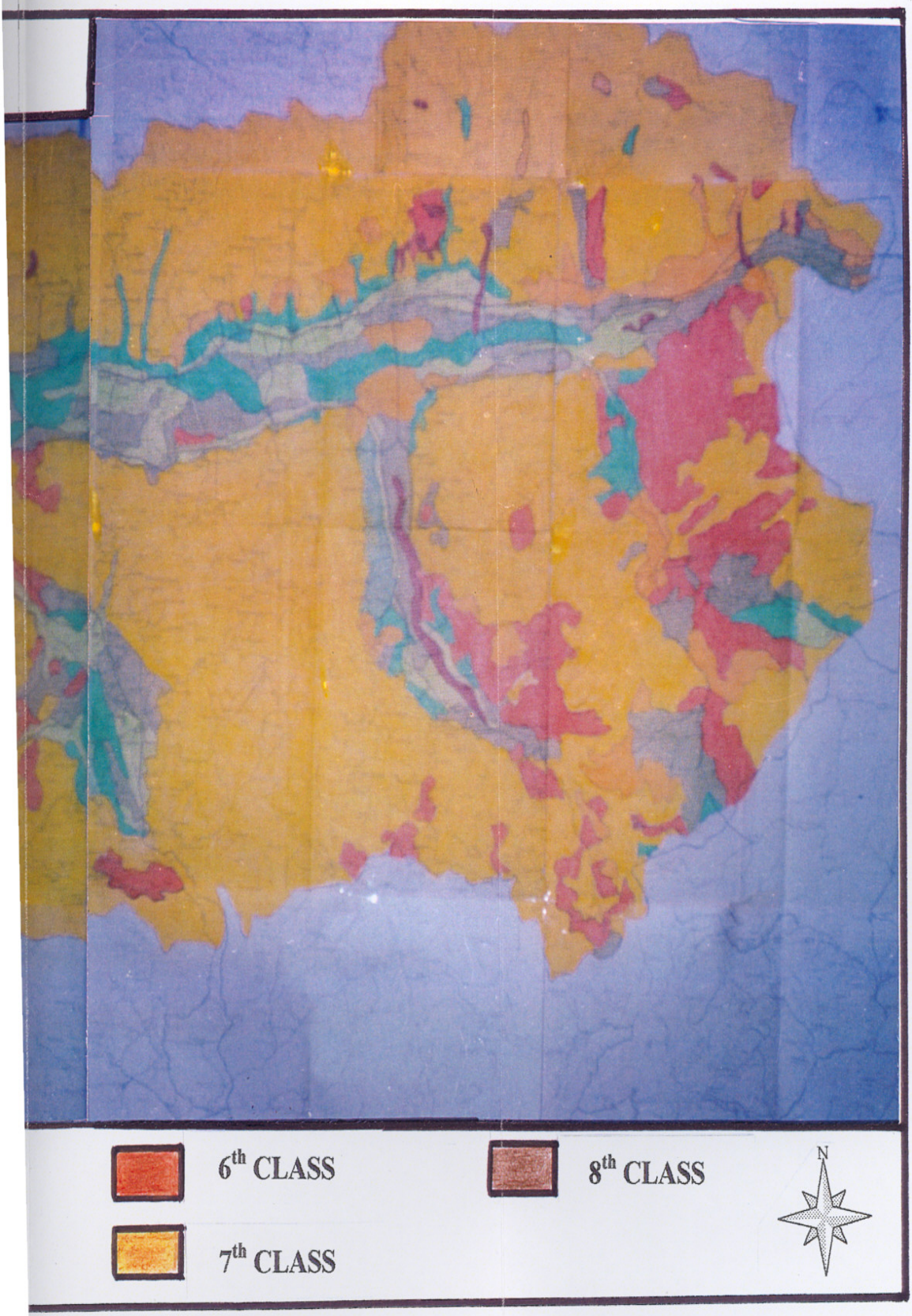
***Table2:*** *Land classification of Aydın*

According to these values in Table 2, only the lands which are under the scope of 20% are 1st, 2nd, 3rd and 4th class cultivable lands in Aydın. (Fig. 3, Fig. 4) In other words; all additional urban functions which will come to this area means the loss of agricultural lands. Since that lands of agricultural production are under the attack of residential, industrial and commercial areas, a special planning perspective which mostly depend on the conservation of the agricultural lands and on the development of agricultural economies should be developed.

### 3.1.2. Development process of transportation and industrialisation in Aydın

Transportation has an important role in industrialisation. The highway and the railway passing through the middle of Aydın from east to west are the main catalysts of Aydın economy. The railway which connects Izmir metropolitan city to Aydın and the other eastern cities was constructed in 1866 by an English firm. In the middle of the


*gure 3: Land classification of Aydın*


6th CLASS
8th CLASS
7th CLASS
N

nineteenth century English textile industry had fallen into impasse because of the American interwar. So they had looked for alternative markets for the raw material – cotton- which the textile industries need most. Menderes plain was an alternative for cotton production. But there should had been strong linkage for the transportation of cottons to Izmir port. In that case, it was decided to construct Aydın-Izmir railway as a part of the commercial project between England and Ottoman Empire.

The economic structure of the region was really affected by this railway line. The agricultural product was increased nearly at a rate of 20% after its construction. As a result of those economic growth, the ratio of Aydın's income in the gross national product (GNP) was reached at a rate of 15% in 1910. But after that time by the effect of World War I, the economic life of the region got worse as parallel to the national economy. (Aydın Valiliği, 1998, p.65)

At the early years of the Turkish Republic, the central government gave importance to the railway investments all over the country in a comprehensive planning perspective.

Then the private sector has became effective in the national economy after 1950s as parallel to the changing political approaches in the country. In that period the transportation policies was changed into a manner of developing highways. Thus new highways was constructed all over the country. Izmir-Denizli Highway was constructed between 1950-1960. Those changes in the political preference that support private sector and in the transportation policies have made cities to grow along the highways. Developers have chosen places especially along the highway lines where they minimise their construction, transportation and marketing costs.

Central government have supported all the industrial establishments without any limitation. At the end of that process the big cities and the important roads those connecting the big markets have covered with industrial establishments. Especially the Marmara Region has became the hearth of Turkish economy as a result of these policies. But the capacity of the region had came to an end at about 40 years. In this period, although İzmir and Denizli had became industrial cities in Aegean Region, there had been a slow industrialisation process in Aydın till 1980s. By the rapid population

growth due to migration from eastern regions of the country to west, the agricultural production of Aydın have became insufficient for the local population. New sectoral development was needed for the economic development of the province. So many of the local entrepreneurs have directed their investments to industry. On the other hand; Aydın is very suitable for the other entrepreneurs who cannot find a place on the most industrialised regions of Turkey. By the construction of big dams, the most serious infrastructural problem of industry has also been solved. So the area has became very attractive for industries by the low infrastructure and transportation costs, low land values etc.

These were the local conditions that have caused the ribbon developments on Izmir-Denizli axis in Aydın. The entrepreneurs have established their plants according to their personal preferences. Industrialisation was seen as the only way for development and progress by local and central governments. So they have connived at the location industries along the roads which pass through the fertile lands and those which have strong linkages to big market areas.

### 3.1.3. Legal provisions taken for the preservation of agricultural lands and environment

It is generally accepted that the constitution and the laws have many loopholes.. But when we examine them it is seen that there are also many positive resolutions about land use and environment. For example; in the constitution that became effective in 1982;

- (Concerning Article No: 56)Everybody has the right to live in a healthy and balanced environment. It is the duty of state and citizens to develop the environment and to prevent the environmental pollution.

In this article it is obviously proclaimed that the governments and the citizens have to protect environment and avoid any act that destroy it. It is a citizenship duty.

-(Concerning Article No: 169): Governments should take the required precautions and

acts to protect and develop forests.

-(Concerning Article No: 23): Citizens' freedom of settlement could be limited by laws for the formation of healthy and systematic urbanisation.

-(Concerning Article No: 35): Everyone has the right of inheritance and property. These rights could only be limited for public right. The use of property rights cannot be against the public rights.

It is very clear that the public rights that is the main principle of healthy urbanisation is supported by the constitution. In other words; there is no legal limitation for the planner to form healthy and balanced settlements in which all the public utilities is existing.

There are also other articles about the preservation of agricultural lands in the constitution. For example in the 44$^{th}$ article, it is said that "governments take the necessary measures for the effective usage and development of land and prevent the loss of lands by erosion."

And in the article numbered 45, it is expressed that "Governments help the farmers and husbandries supplying their tools, materials and the other inputs easily for reducing the aimless usage (usage for non-agricultural activities) and damage of agricultural lands and pastures and for increasing vegetable and animal production."

All of these articles of the constitution show us that all the necessary recommendations and decisions for better urbanisation process and protection of environment (forests, agricultural lands, pastures, etc.) have been taken.

In addition to these articles in the constitution there are special laws about each subject. For example there is an "Environment Act Numbered 2872" which became effective in 09/08/1983. In its first article the aim of the act is explained as "The aim of this act is to regulate the rural and urban land use, to protect and to supply the rational usage of natural resources according to legal and technical principles."

Another special act about agricultural lands is "Agricultural Land Reform Act Numbered 3083 About the Regulation of Irrigated Lands." It has been effective since 22/11/1984. "The aim of the act is (concerning article no: 2) to regulate the appropriation of agricultural and irrigated lands where the Council of Ministers decide it is necessary to their using for another uses."

This Act sometimes could be used against its aim without any adequate cost-benefit analyse and these land could be seen as appropriate for non-agricultural usage by the politicians. For example they could decide to give permission or to support industrial establishments on a very fertile land. However; there may be more appropriate lands for industrial usage in the surrounding areas.

In addition to these acts; there is a by-law about the protection of agricultural land that is "By-law About the Usage of Agricultural Lands for Non-agricultural Purposes" which became effective in 11/03/1989.

The lands which never appropriated into non-agricultural usage are determined in this by-law. (Concerning Article No: 7) These lands are;

a) 1st and 2nd class lands depend on precipitation and 1st , 2nd, 3rd and 4th classes irrigated and planted lands which are economically productive,
b) The stony and salty lands which are in 3rd and 4th classes because of inadequate drainage, however, that can be changed into 1st and 2nd classes by agricultural reforms,
c) The lands which are unavailable for agriculture but on the other hand they are in the scope of any drainage irrigation, land protection projects, or the land which is not in the scope of any project but in a position to destroy the wholeness of project, or to effect the agricultural activity on the adjacent lands in case of using it for another activities.

By these subsections the limitations for the appropriation of agricultural lands for non-agricultural usage is determined comprehensively. It could be so easy to protect the agricultural lands by taking only that article of the by-law mentioned above into consideration. But in the next article (No:8) it is said that "if there is no alternative lands, the land depend on precipitation in any class could be appropriated for non-agricultural usage in the conditions such as:

a) for the planned development of villages and the other small rural settlements.,
b) for residential use in the boundary of adjacent areas.
c) for industrial areas and commercial centers in and out of the boundary of adjacent areas,
d) for education, health and recreational usage in the boundary of adjacent areas,
e) for tourism in and out of adjacent areas,
f) for national defence out of the boundaries of adjacent areas,
g) for airports in and out of the boundary of adjacent areas.

Today; it could be possible to take land-use permission for those uses on the agricultural lands without any adequate research for alternative areas and local and central authorities connive at such developments.

After the examination of these articles it cannot be said that the constitution or laws are inadequate for the conservation of agricultural lands in Turkey. The main problem is insufficiency of detailed analyses for every kind of land uses and lack of preservation conscious.

### 3.1.4. Specification of case study area

In order to examine the ribbon developments in Aydın two site surveys have been conducted: one for the service and industrial establishments –including 30 questions- and the other for the houses –including 15 questions.

The study area of this thesis is in the boundaries of Nazilli county. Nazilli is the second biggest county in Aydın province and its population is 141 000. (D.İ.E. 1997). It has 4

municipalities and 58 villages. 3 of these municipalities and the 6 of the villages are settled on İzmir-Denizli Highway.in the boundary of the county. The survey was conducted in 9 km long distance at the east and west side of Nazilli central city.

This selected 9 km axis has the most representative social and the economic structure of Aydın province. On the other hand, the changes in the economic structure of the settlements on the axis is almost realised. The sectoral distribution of working population in central city is; 56% services, 31% industry and 13% agriculture. But when we both urban and rural areas of the county are considered as a whole it can be said that the rates of sectoral distribution of working population are nearly the same as the general working population distribution in Aydın province. (63% agriculture, 24%services, 13% industry). (D.İ.E.,1990)

Nazilli is primariliy under the influence of the cities of Aydın and Denizli. The highway which connects Izmir to Denizli and other eastern cities is passing through the middle of the existing settlement area of Nazilli. The population density is very high on this axis. The topographical features of the city enforced the development along this route through east to west because of its north and the south side being mountainous lands with a slope of more than 20%. (Fig. 4))

In this thesis, the study area is mentioned not specifically as Nazilli, but as Aydın, because the settlement of Nazilli represents the general properties of the other settlements locating on the axis in Aydın.

The main aim of these surveys is to determine the social, economical, environmental and legal factors which causes ribbon development in Aydın and also to determine the properties of the establishments settled on the case study axis.

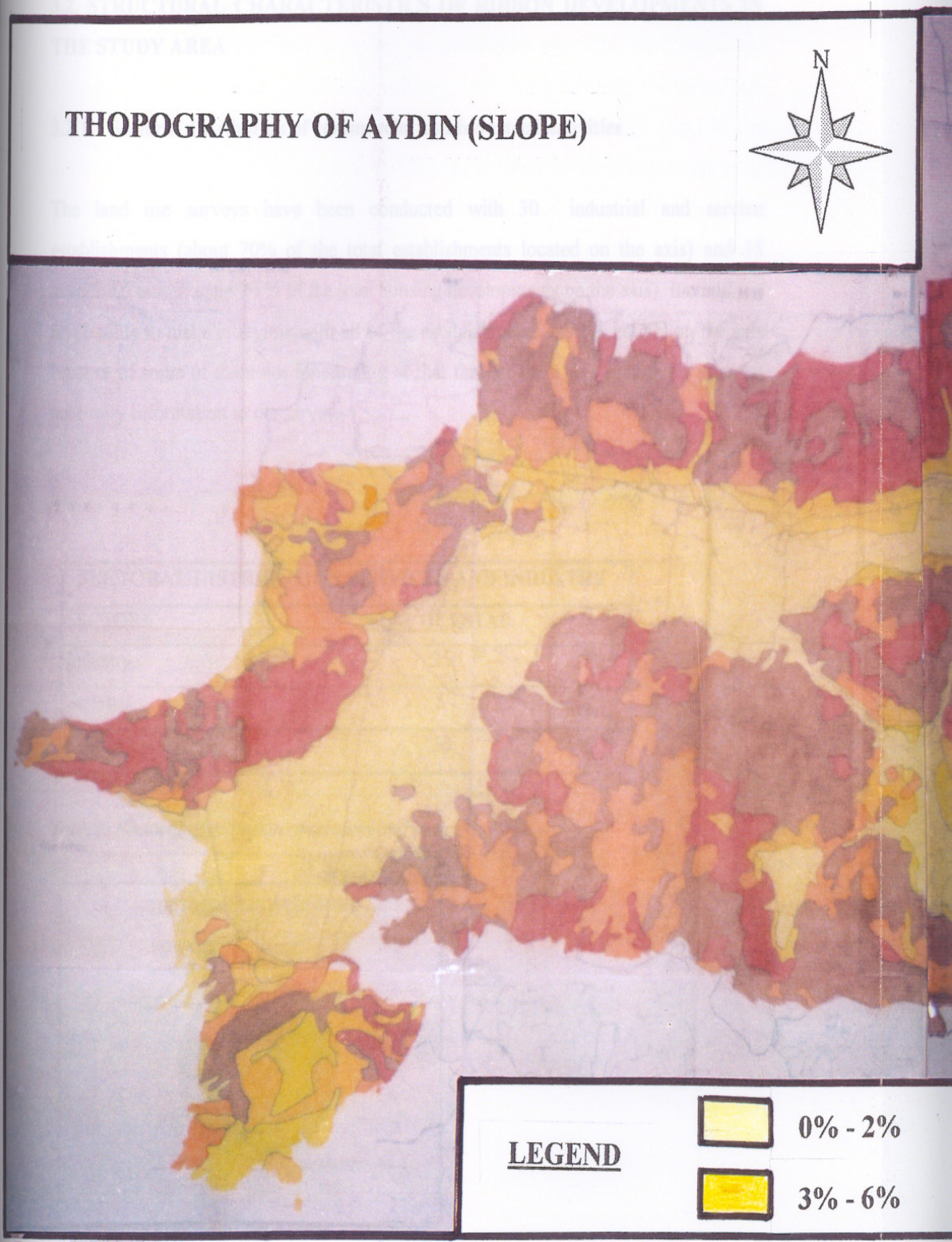
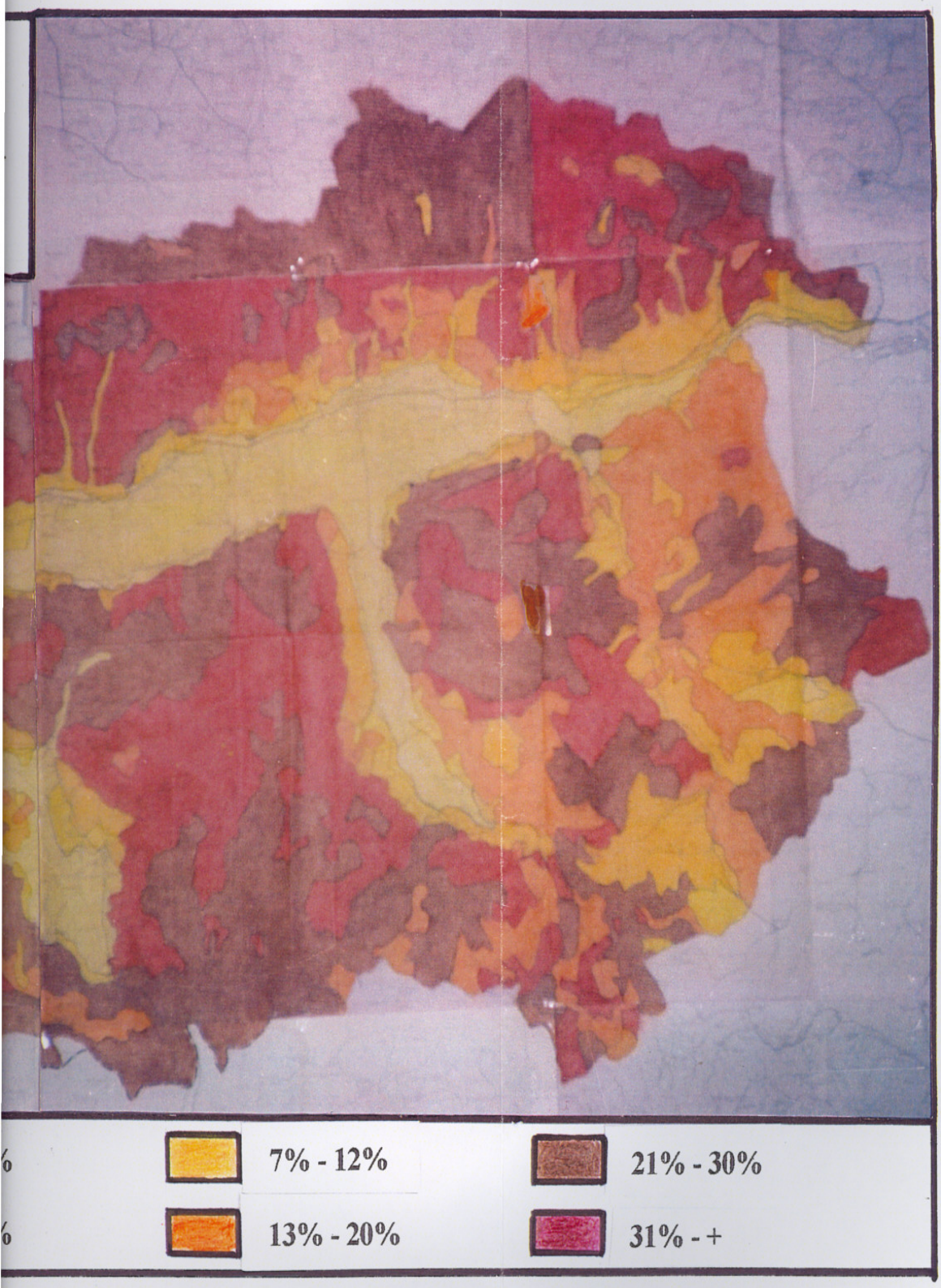



*Figure 4: Topography of Aydın*


7% - 12%
13% - 20%
21% - 30%
31% - +

## 3.2. STRUCTURAL CHARACTERISTICS OF RIBBON DEVELOPMENTS IN THE STUDY AREA

### 3.2.1. Sectoral distribution of commercial and industrial activities

The land use surveys have been conducted with 30 industrial and service establishments (about 70% of the total establishments located on the axis) and 15 residential unit. ( again 70 % of the total housing developments on the axis). It could not be possible to make interview with all of the establishments and the houses on the axis because of some of them not functioning at that time or there was nobody to give the necessary information to the survey.

| SECTORAL DISTRIBUTION SERVICES AND INDUSTRY | |
|---|---|
| **SECTORS** | **NUM. OF ESTAB.** |
| Industry | 25 |
| Services | 5 |
| TOTAL | 30 |

***Table3:*** *Sectoral distribution of services and industry.*

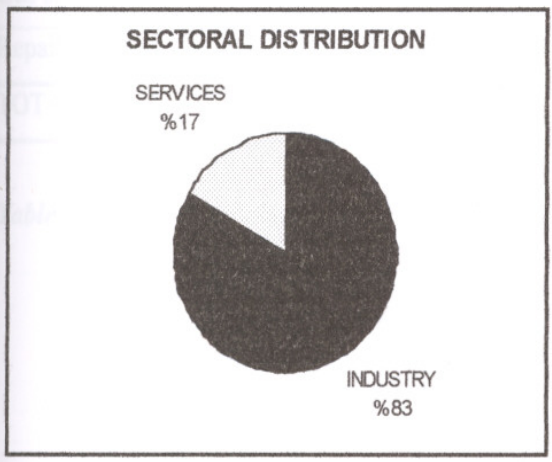



***Figure 5:*** *Sectoral distribution of services and industry*

17% of the establishments are services and 83% are industry in the survey area . (Fig. 5) When we examine the results according to sub-sectors are: 30% food processing industry, 17% construction components industry, 10% textile industry, 7% agricultural product industry, 3 % chemical industry, and 3% mechanical industry. (Fig. 6) The analysis indicated that the dominant sector that cause ribbon developments in the study area is manufacturing industry. 67 % of these industries used the existing agricultural product of the region as a raw material. These are small or medium sized plants which generally prefer to locate on the areas where they minimise their infrastructural costs.

| SUB-SECTORAL DISTRIBUTION OF INDUSTRY AND SERVICES | |
|---|---|
| **SECTORS** | **NUM. OF ESTABLISHMENTS** |
| Food processing industry | 9 |
| Agricultural product industry | 2 |
| Textile industry | 3 |
| Construction components industry | 5 |
| Mechanical industry | 1 |
| Chemical industry | 1 |
| Restaurant | 3 |
| Lumber | 3 |
| Gas station | 2 |
| Repair shops | 1 |
| TOTAL | 30 |

***Table 4:*** *Sub-sectoral distribution of industry and services.*

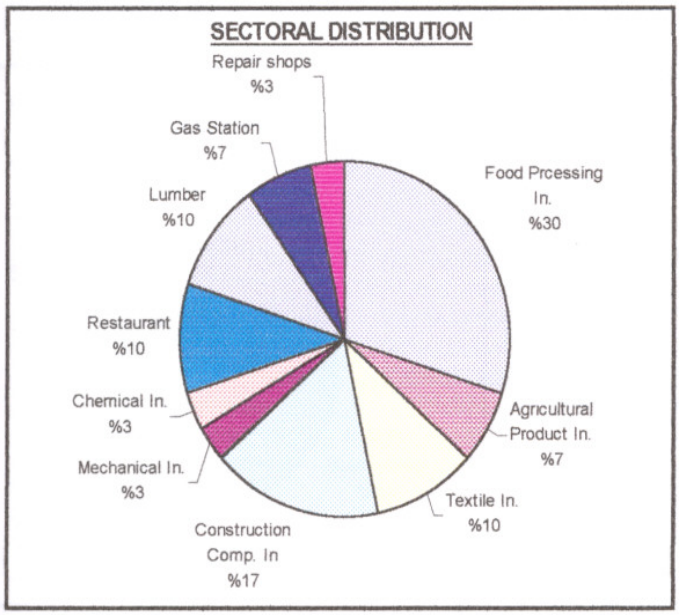



***Figure 6:*** *Sub-**sectoral** distribution of industry and services.*

### 3.2.2. Legal status

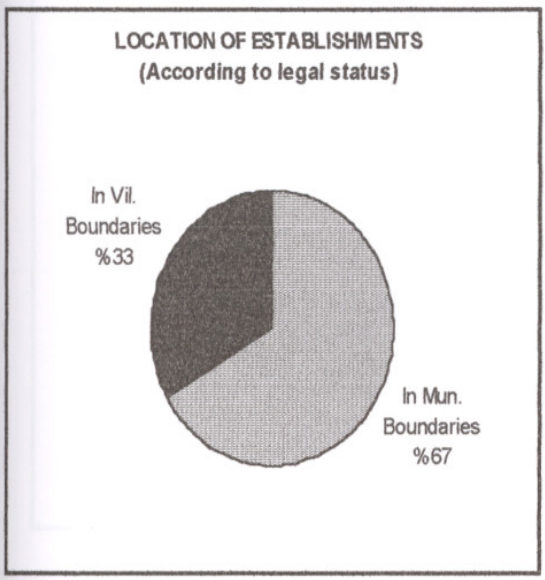
67 % of the establishments are located in municipal boundaries of Nazilli and İsabeyli (Fig.7) (53% are in the municipality of Nazilli and 14% in the municipality of Isabeyli) and the rest(33%) is located in the villages. ( 20% in Dallıca, 7% Durasıllı,7%in Güzelköy) (Fig.8)

| LOCATION OF ESTABLISHMENTS (According to Legal Status) | |
|---|---|
| In Village Boundaries | 20 |
| In Municipality Boundaries | 10 |
| | |
| | |
| TOTAL | 30 |

***Table 5:*** *Location of service and industrial establishments according to legal status*

| LOCATION OF ESTABLISHMENTS (According to the names of the places) | |
|---|---|
| Nazilli Municipality | 16 |
| İsabeyli Municipality | 4 |
| Dallıca Village | 6 |
| Durasıllı Village | 2 |
| Güzelköy Village | 2 |

***Table 6:*** *Location of service and industrial estab. according to the names of places*



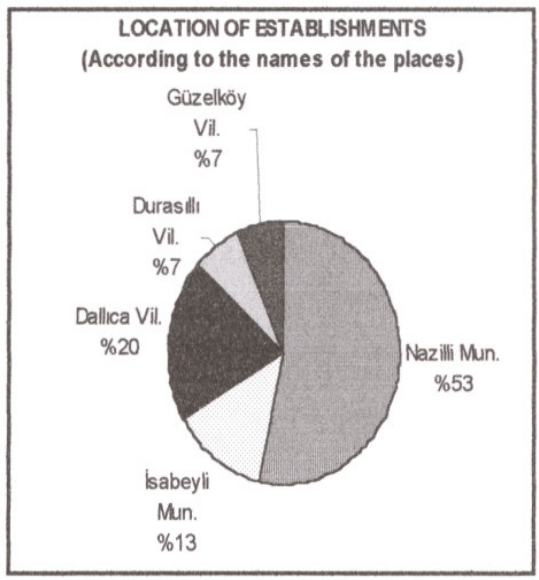




***Figure 7:*** *Location of service and industrial estab. according to legal status*

***Figure 8:*** *Location of service and industrial estab. according to the names of places*

90% of these total establishments have construction licences.(Fig. 9) 52% of those having construction licence, were licenced by local government agencies (by the municipalities) and 48% were licenced by the central government agency (Directorate of Public Works and Settlements). (Fig. 10) But 30% of these establishments which were licenced by central government agency are now under the control of local authority. This means that the municipality boundaries were enlarged through this axis. So the legal status have changed as a result of boundary expansion.

| LEGAL STATUS OF SERVICE AND INDUSTRIAL ESTABLISHMENTS | |
|---|---|
| Licenced | 27 |
| Unlicenced | 3 |
| TOTAL | 30 |

***Table 7:*** *Legal status of service and industrial establishments*

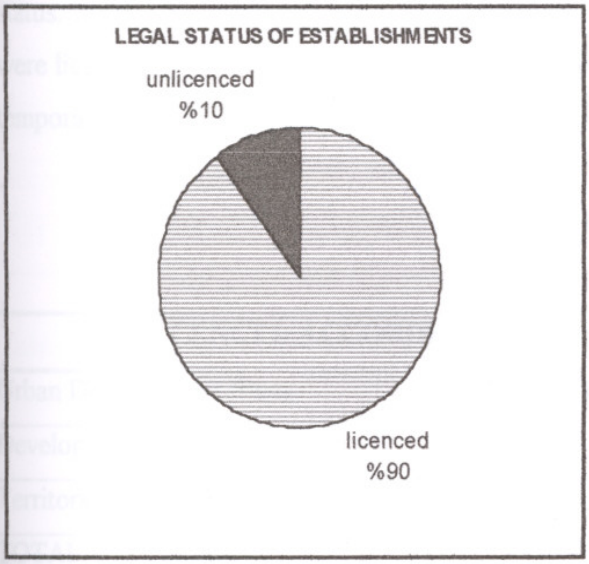



***Figure 9:*** *Legal status of industrial and service establishments*

| LICENCED BY | |
|---|---|
| Central Government Agency | 13 |
| Local Government Agency | 14 |
| TOTAL | 27 |

***Table 8****: The distribution of given licences between central and local governments*

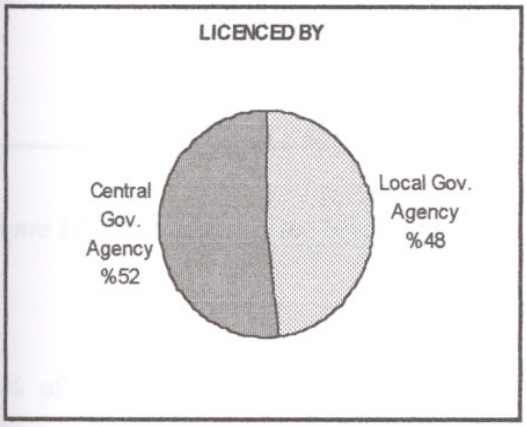



***Figure 10:*** *The distribution of given licences between central and local governments.*

On the other hand; the licenced establishments were legalised according to different status. Most of them (63%) were licenced by urban development plans, 11% of them were licenced after Development Amnesty Act Numbered 2981 in 1984, and 26% have temporary licence ( the licences which are given only for 5 or 10 years periods) (Fig.11)

| LICENCED ACCORDING TO | |
|---|---|
| Urban Development Plans | 17 |
| Development Amnesty | 7 |
| Territory Licence | 3 |
| TOTAL | 27 |
| Unlicenced | 3 |
| TOTAL | 30 |

***Table 9**: Legal status of licences*

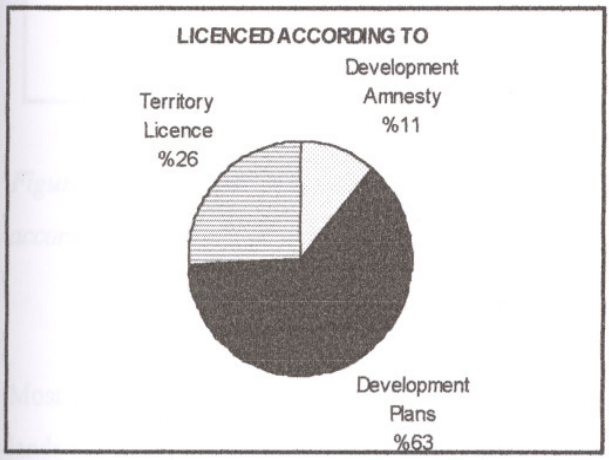



***Figure 11**: Legal status of the licences.*

65% of the licences prepared through the urban development plans were given according to partial plans and 35 % were given according to 1/1000 detailed plans. (Fig. 12).

| TYPES OF PLANS THAT THE ESTABLISHMENTS LICENCED ACCORDING TO | |
|---|---|
| According to 1/1000 Detailed Plans | 6 |
| According to Partial Plans | 11 |
| TOTAL | 17 |

***Table10:*** *Types of plans that the industrial and service establishments take licences according to.*

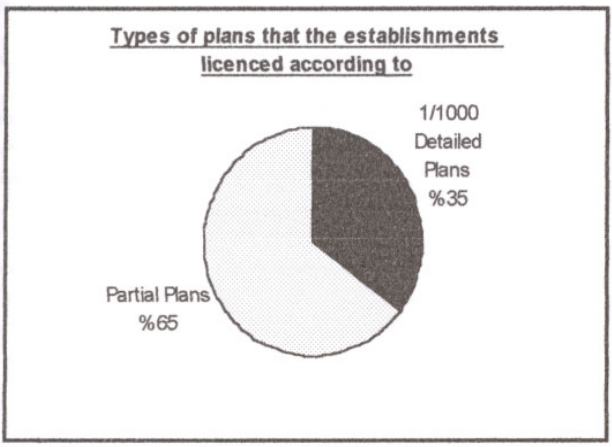



***Figure 12:*** *Types of plans that the industrial and service establishment take licences according to.*

Most of the plants which have temporary building licences were settled down on the lands allocated for administrative functions or housing on this axis. Though their period of licence has expired they continued to exist. Their construction types are not a temporary or prefabricated style. Most of such establishments have settled on the axis as a temporary building at first, but after a while they have forced to alter the existing plan decisions. At the end of this process these uses changed into industrial or commercial areas by plan alterations and the axis has experienced unconscious, unrecognised ribbon developments.

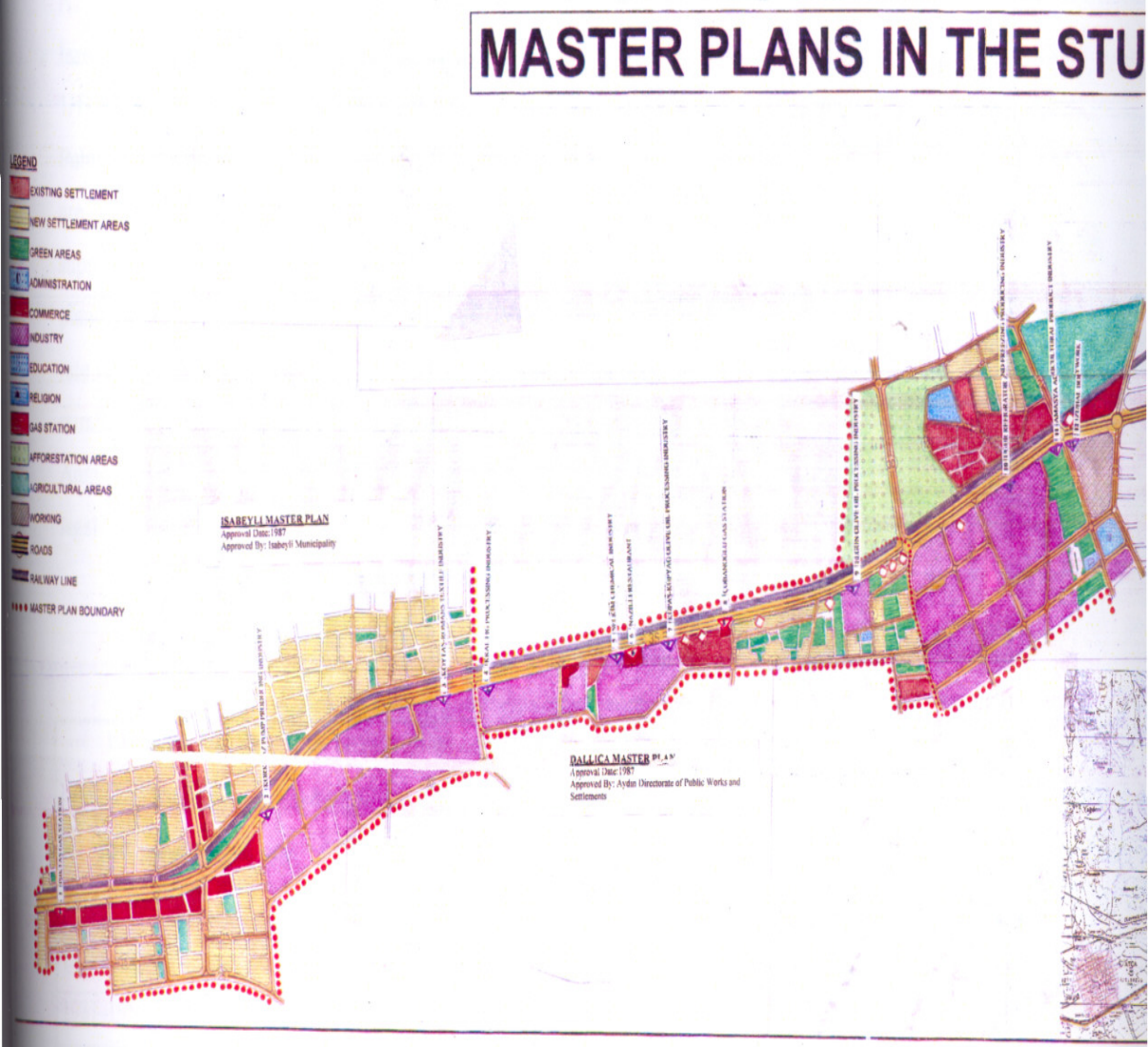


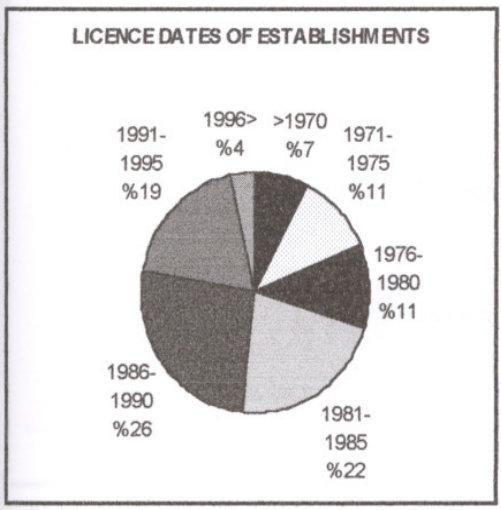

*Figure 13: Master plans in the study area.*

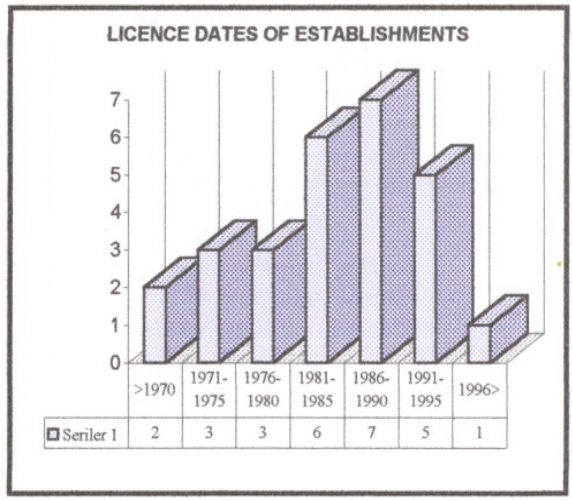
# HE STUDY AREA

When the licence dates are examined; 26% of the establishments were licenced between 1986-1990, 22% of them between 1981-1985 and 19% were between 1991-1995. (Fig. 14, 15) The high rates of licence on these periods depend on different reasons. There are three urban development plan (detailed plan or master plan) on our case study axis. Nazilli 1/1000 detailed plan (prepared by Nazilli Municipality in 1978 and 1993), İsabeyli 1/1000 detailed plan prepared by İsabeyli Municipality in 1987 and Dallıca 1/1000 detailed plan prepared by central government agency ( Aydın Directorate of Public Works and Settlements) in 1987. In these plans industrial and commercial areas are located along those axis. (Fig. 13) In other words; industries and services have been supported to locate on the axis as a ribbon by these plans. After the approval of the plans some of the unlicenced buildings located on the axis were also licenced. So the rate of licence dates between 1986 and 1990 is higher. The reason for the rise in the number of licenced buildings in the period 1981-1985 is because of the Development Amnesty Act Numbered 2981 in 1984. After that law some of the illegal plants became legal.

| **LICENCE DATES OF INDUSTRIAL AND SERVICE ESTABLISHMENTS** | |
|---|---|
| > 1970 | 2 |
| 1971-1975 | 3 |
| 19776-1980 | 3 |
| 1981-195 | 6 |
| 1986-1990 | 7 |
| 1991-1995 | 5 |
| 1996< | 1 |
| Unlicenced | 3 |
| TOTAL | 30 |

***Table 11:*** *Licence dates of industrial and service establishments.*

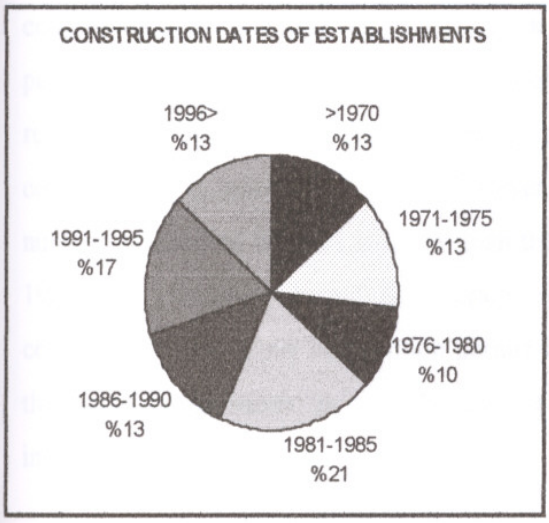


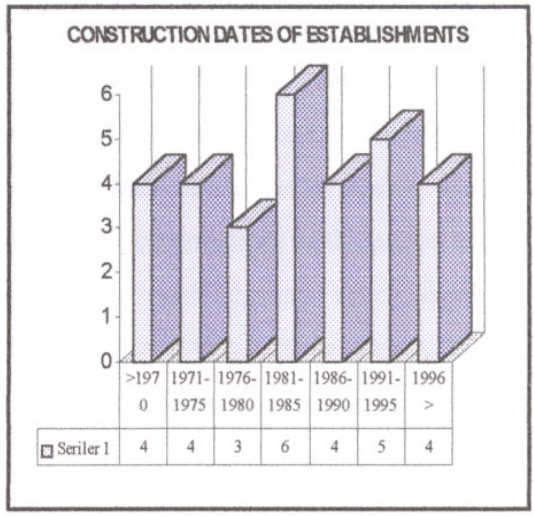




***Figures 14, 15:*** *Licence dates of industrial and service establishments*

| CONSTRUCTION DATES OF INDUSTRIAL AND SERVICE ESTABLISHMENTS | |
|---|---|
| > 1970 | 3 |
| 1971-1975 | 3 |
| 19776-1980 | 5 |
| 1981-195 | 5 |
| 1986-1990 | 5 |
| 1991-1995 | 7 |
| 1996< | 2 |
| TOTAL | 30 |

***Table12:*** *Construction dates of industrial and service establishments.*




***Figures 16, 17:*** *Construction dates of industrial and service establishments*

In this survey the construction dates of the establishments are also examined. (Fig. 16, 17) According to the results there is an increase in the number of establishments between 1981-1985. The rate is 21%. There is a certain increase in the period in spite of the rate is about 10% in the previous period. (1976-1980). It is mostly because of population increase in Aydın. When we looking at the population statistics it can easily be recognised that there is a relative correlation between these two options. (The population increase rates in Aydın between 1976-1980 is 13,51% and between 1981-1985 it is 26,09%).

The rate is also high between 1991-1995. In that period, the entrepreneurs noticed that the capacity of Marmara Region for industrial establishments was completed and new alternative places was needed for their investments. Aydın had all the necessary factors which they wanted. The land values in the district were lower than the other districts. On the other hand; the availability of qualified labour force and transporting the raw materials and the products by the railway and highway lines easily were the main reasons of the establishments to construct on the axis in that period.

It is also important to determine the establishments which have became legal after their illegal construction. For that reason, the construction and the licence dates of the establishments are compared according to time periods. (Fig. 18) That comparison

shows that the 33 % of the plants which have licences had taken their licences after the construction. It is also seen that there is not a positive correlation between them in most periods. In a legal and ordinary development it is expected that these two lines are required to be parallel to each other. But in the figure 18 it is seen that the number of constructions is generally higher. However, as illustrated in the below figure, the number of building licences is higher than the number of constructions in the period of 1986-1990. Because, during that period, some of the establishments which were constructed without any constitution permission had a chance to take their licences by the planning decisions as the allocation of agricultural lands to commercial and industrial uses

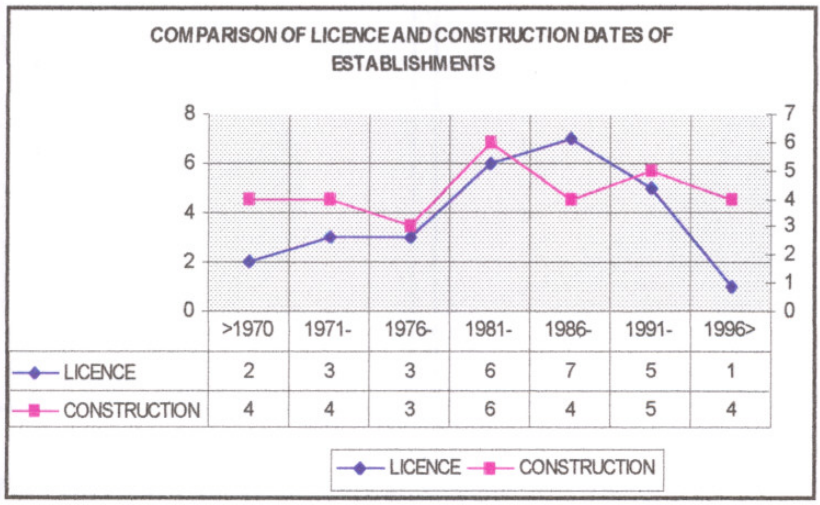
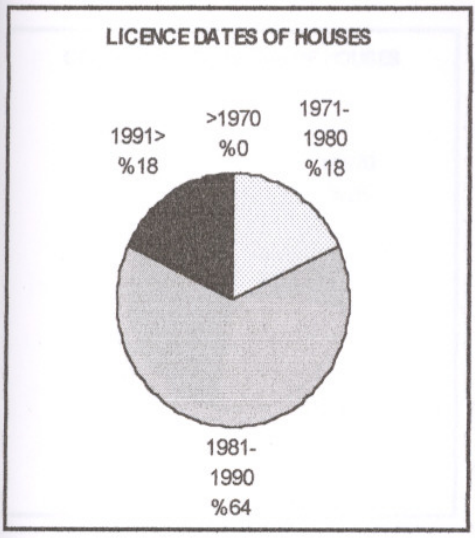


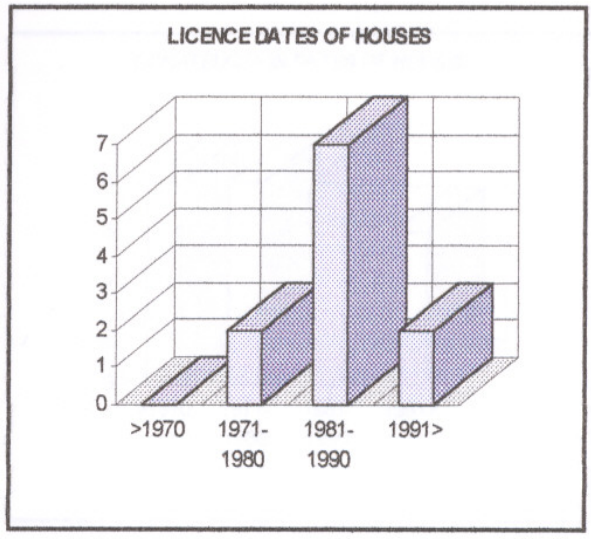

***Figure 18:*** *Comparison of licence and construction dates of indust. and service estab.*

According to the housing survey results; 73 % of the houses have licences. 45 % of these licenced buildings have taken their licence from the municipality and the other 55% from the central government agency (Directorate of Public Works and Settlements). Most of these licences (64%) were given between 1981-1990. Similar to the licence rate of industrial and service establishments, by the approval of urban development plans and the Development Amnesty Act Numbered 2981 being valid, the number of the housing licence has increased in that period. (Fig. 19, 20)

| LICENCE DATES OF HOUSES | |
|---|---|
| >1970 | 0 |
| 1971-1980 | 2 |
| 1981-1990 | 7 |
| 1990< | 2 |
| Unlicenced | 4 |
| TOTAL | 11 |

***Table 13:*** *Licence dates of houses*




***Figures 19, 20:*** *Licence dates of houses.*

The rates of construction dates of the houses in these periods are invariable in opposite to licence dates. (Fig. 21, 22) The houses constructed before 1980 are mostly detached houses with one or two floors. The houses constructed after 1980 are mostly small apartment buildings with 3 or 4 floors. And the ones constructed after 1990 are the apartment blocks which are constructed according to urban development plans. Some of the people living in these houses are workers and they are the renter in the houses. They prefer accommodating near to their jobs. And some of them are retired persons. They are living here because they are the owners of the houses. They had only afforded those houses locating out of the central city due to the low prices.

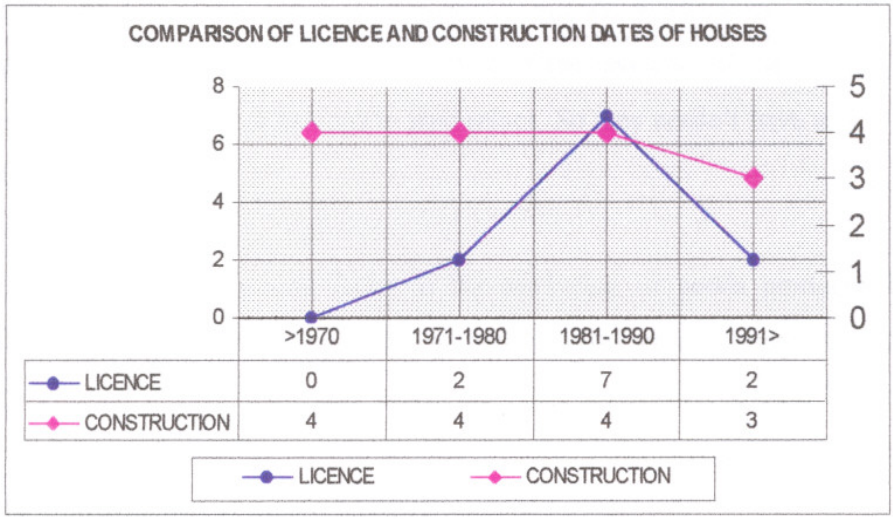



***Figure 23**: Comparison of licence dates and construction dates of houses.*

In a legal and ordinary development it is expected that these two lines (licence dates and construction dates lines) are to be parallel to each other or to fit into each other. But there is no correlation between them. In spite of the fluctuations in licence dates, there is a stability in the construction dates. The number of licences reached its peak value between 1981-1990. It is because of some legal arrangements in that period such as development amnesty and plan approvals.

### 3.2.3. Locational preferences of industrial and service establishments and houses

Location criteria of the industrial and service establishments can be explained by eleven factors. These are; physical structure of the land, the size and value of the land, public encouragements, transportation, water, electricity, raw and subsidiary materials, market, agglomeration economies, labour and advertisement.

The most important factor for the preference of locating in the study area is transportation possibilities. (25%). Transport costs generally takes big portions of the total cost for small sized plants' outputs. Therefore, they tend to locate on the main roads where they can easily transport their raw materials and products.

The size and cost of the land is another main factor which effects the location of these establishments (18%) along this route. Most of the investors of these establishments choose the land because it belongs to themselves. So they needn't have to pay an extra land price.

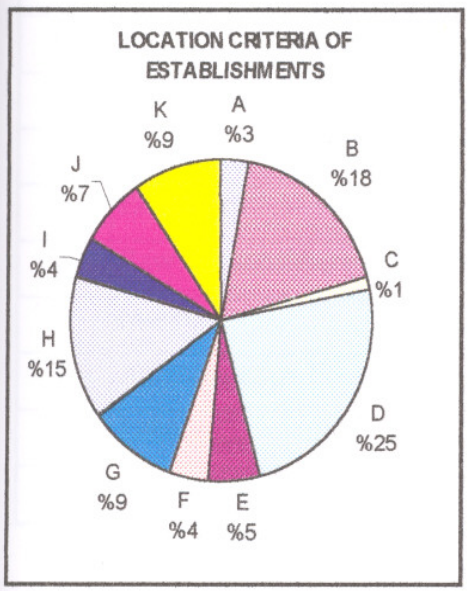
The third important location factor is the marketing of goods produced by these establishments. Generally, such small or medium sized establishments tend to locate nearer to urban centers where they could easily sell their products. They have aimed to sell their products also to people travelling along these routes. As the traffic flow increase the tendency of such establishments will increase too.

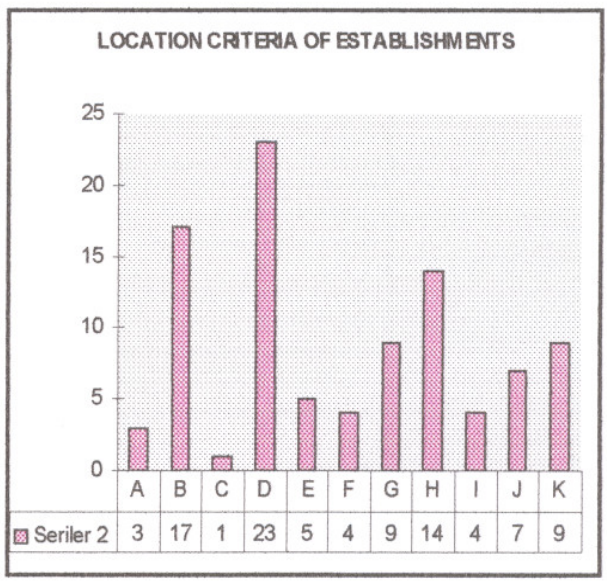
Proximity to raw and subsidiary materials and advertisement possibilities have also effected the location of these plants. The rates of these two factors are equal, 9%. (Total:18%) The sum rates of the industries which are supplying their raw material from the district is 53%.To process the raw material as soon as possible is very important factor for agricultural products industry and food processing industry. But being small or medium sized industries they have to minimise their advertisement costs. By locating on the main traffic routes they have an advantage of noticed by each person travelling on the road.

On the other hand; such roads have an infrastructural advantages for these plants. It is easy to supply water and electricity cheaply. If they had located far away from the road and urban areas these infrastructure costs would have risen their location costs to higher levels. (Fig. 24, 25)

| LOCATION CRITERIA OF INDUSTRIAL AND SERVICE ESTABLISHMENTS | | |
|---|---|---|
| **A** | Physical Structure of Land | 3 |
| **B** | Size and Value of Land | 17 |
| **C** | Public Encouragement | 1 |
| **D** | Transportation | 23 |
| **E** | Water | 5 |
| **F** | Electricity | 4 |
| **G** | Raw and subsidiary Materials | 9 |
| **H** | Market | 14 |
| **I** | Agglomeration Economies | 4 |
| **J** | Labour | 7 |
| **K** | Advertisement | 9 |

***Table 15:*** *Location criteria of industrial and service establishments*



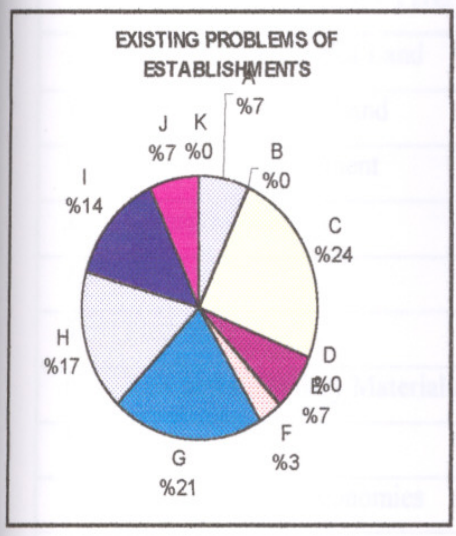

***Figures 24, 25:*** *Location criteria of industrial and service establishments.*

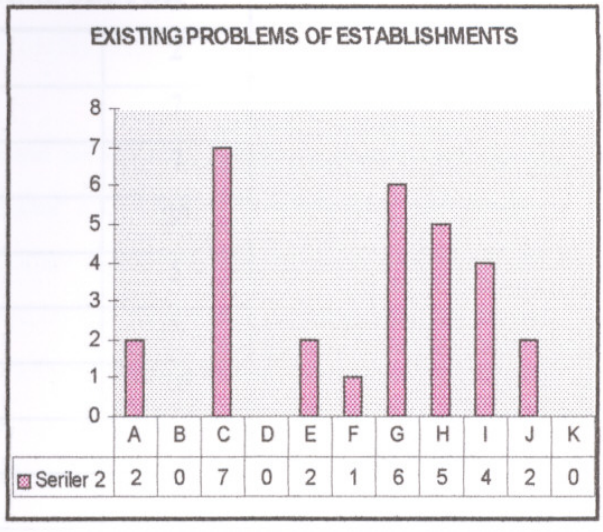
In spite of the many advantages of locating on this axis the establishments are also facing some difficulties on nowadays. Especially they are complaining about the local and central government agencies not supporting their investments in Aydın (24%). Most of the entrepreneurs think that it is a very difficult and a long process to take planning permission from central government agency . They are facing the same difficulties when they enlarge the planning area.

They also have difficulties in the supply of raw and subsidiary materials (21%) and marketing (17%) Because of the increase in the number of such establishments their ratio in the market have decreased. This factor also increases the competition between these establishments. (Fig. 26, 27)

| EXISTING PROBLEMS OF INDUSTRIAL AND SERVICE ESTABLISHMENTS | | |
|---|---|---|
| **A** | Physical Structure of Land | 2 |
| **B** | Size and Value of Land | 0 |
| **C** | Public Encouragement | 7 |
| **D** | Transportation | 0 |
| **E** | Water | 2 |
| **F** | Electricity | 1 |
| **G** | Raw and subsidiary Materials | 6 |
| **H** | Market | 5 |
| **I** | Agglomeration Economies | 4 |
| **J** | Labour | 2 |
| **K** | Advertisement | 0 |

***Table 16**: Existing problems of industrial and service establishments*




***Figures 26, 27:*** *Existing problems of industrial and service establishments.*

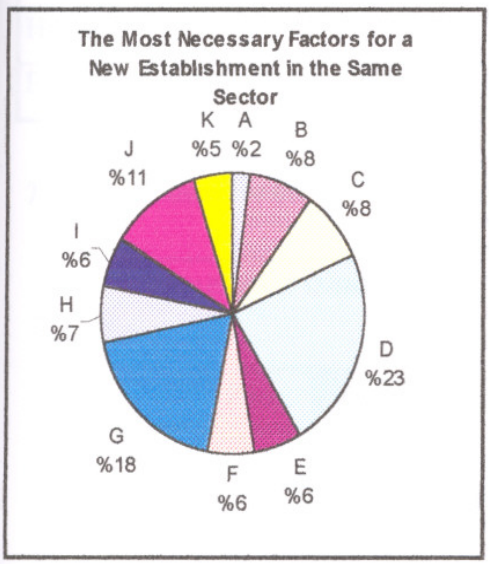
In addition to the location criteria and the existing problems of the establishments locating on the case study axis, the most necessary factors for a new plant to locate on the same axis is also examined by this survey.

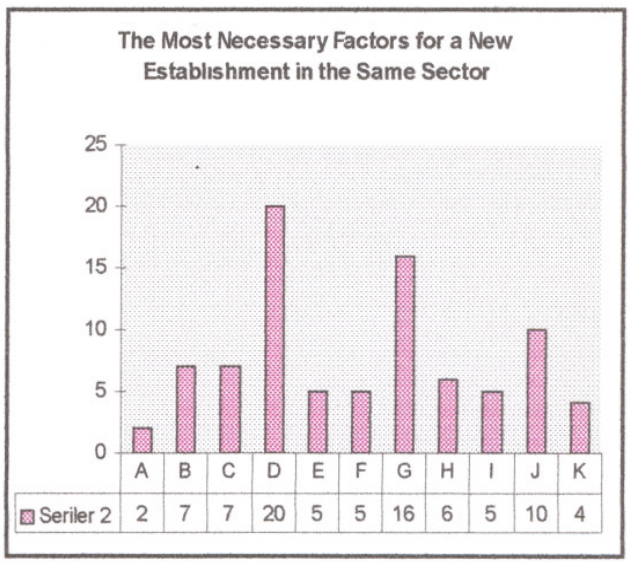
According to the findings; transportation is the most desired factor for such new establishments. (23%) Secondly, supply of the raw and subsidiary materials is also very important (18%), because their products depend on the agricultural crop of the district. And if the supply of these crops become difficult, the success of the establishments will be difficult too. Labour is the third main factor (11%). Labour costs must be low. So they must be supplied from the nearer settlement. (Fig. 28, 29)

All of these findings show that transportation is the main factor in the ribbon developments in the study area. In spite of many problems caused because of the economic structure of the country, most of these establishments have locational advantages to be on this axis.

| THE MOST NECESSARY FACTORS FOR A NEW ESTABLISHMENT IN THE SAME SECTOR | | |
|---|---|---|
| **A** | Physical Structure of Land | 2 |
| **B** | Size and Value of Land | 7 |
| **C** | Public Encouragement | 7 |
| **D** | Transportation | 20 |
| **E** | Water | 5 |
| **F** | Electricity | 5 |
| **G** | Raw and subsidiary Materials | 16 |
| **H** | Market | 6 |
| **I** | Agglomeration Economies | 5 |
| **J** | Labour | 10 |
| **K** | Advertisement | 4 |

***Table 17:*** *The most necessary factors for a new establishment in the same sector.*




***Figures 28, 29:*** *The most necessary factors for a new establishment in the same sector.*

When we examine the location criteria for the households, it is seen that the employment is the dominant factor with a rate of 53%. 40% of the households have

preferred to stay in Aydın because of their existence here from their childhood (native-born).(Fig. 30) Settling down near to the working places is the most effective factor in the preference of locating along the road (47%). (Fig. 31)

The analysis showed us that the plants and the houses effect each other in locating on the axis. Transportation is the main factor for both the establishments and houses. Labour costs generally become an important factor in the location of such small and medium sized plants. So they also locate on the land where they minimise the labour costs. On the other hand; workers, working in these plants tend to stay at the places where they go to their job on foot. ( the survey results have also show that 70% of the households living in these houses go to their work on foot.) (Fig. 32)

| REASONS OF LIVING IN AYDIN | |
|---|---|
| Native-born | 6 |
| Employment | 8 |
| Health | 1 |
| Education | 0 |

***Table18:*** *Reasons of living in Aydın.*

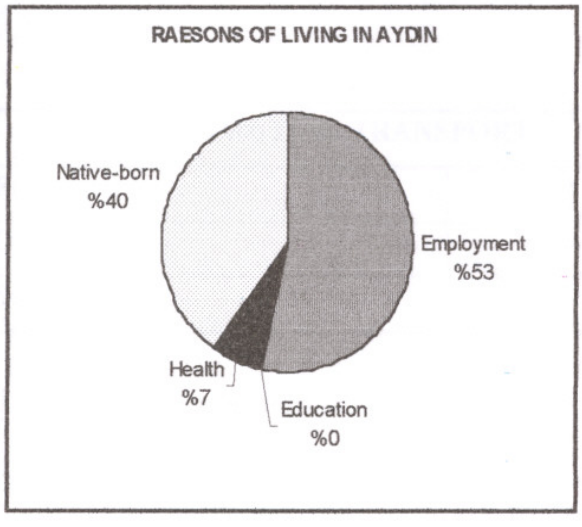



***Figure 30:*** *Reasons of living in Aydın.*

| REASONS OF PREFERRING THE HOUSE | |
|---|---|
| GARDEN | 1 |
| CHEAP RENT | 2 |
| NEARNESS TO JOB | 7 |
| OWNERSHIP | 5 |

***Table 19:*** *Reasons of preferring t□e house.*

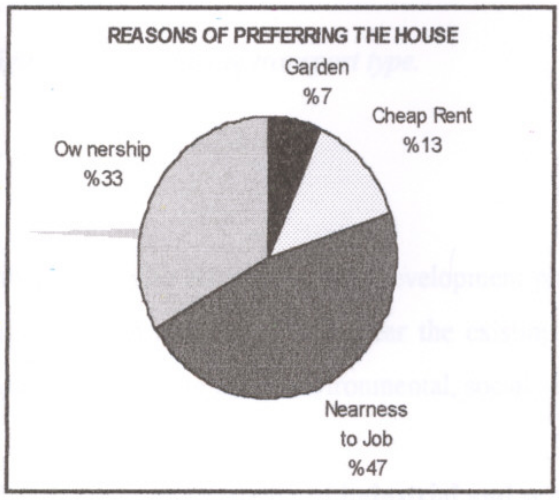



***Figure 31:*** *Reasons of preferring the house.*

| COMMUTING TRANSPORT | |
|---|---|
| Private car | 2 |
| On foot | 9 |
| Service | 2 |

***Table 20****: Commuting transport.*

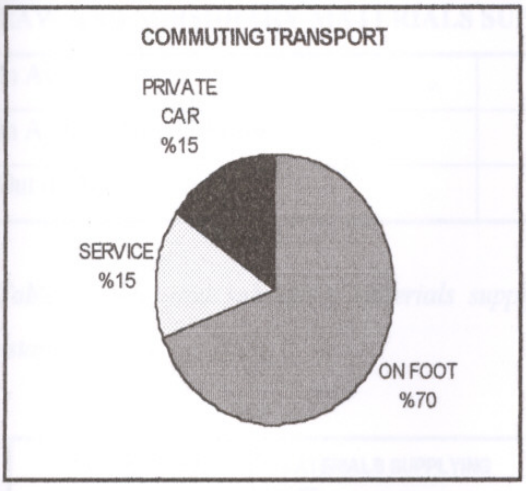



*Figure 32: Commuting transport type.*

This process also effect the urban development plans. In these plans planners generally ought to form residential areas near the existing industrial and commercial areas for these people despite many environmental, social and physical disadvantages.

### 3.2.4. Locational flexibility of industrial and service establishments and houses

For the determination of locational flexibility of those service and industrial establishments, their dependence on the urban space must be determined in advance. For that, it is necessary to determine the reasons of their locational choice in the study area. So, when we examine the places where they provide raw and subsidiary materials, it is revealed that 30% of the plants provide them only from Aydın, 23% provide them from Aydın and some other cities, and 47% provide from out of Aydın. This shows 53% of the plants have an advantage to be on this axis according to the provision of raw and subsidiary materials.

| RAW AND SUBSIDIARY MATERIALS SUPPLYING PLACES | |
|---|---|
| In Aydın | 9 |
| In Aydın + Out of Aydın | 7 |
| Out of Aydın | 14 |

***Table 21:****Raw and subsidiary materials supplying places of industrial and service establishments.*

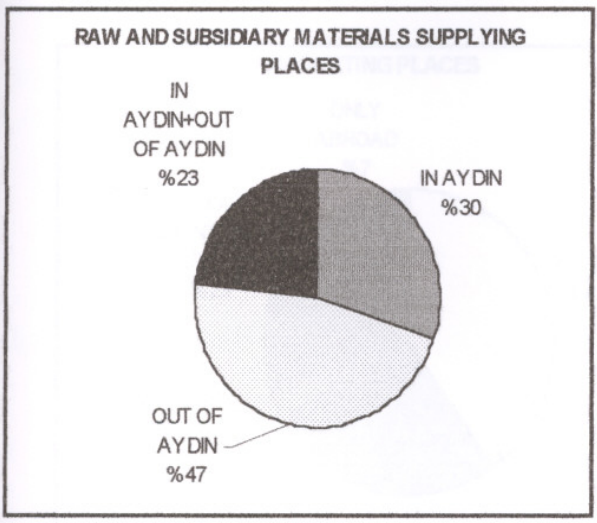



***Figure 33:*** *Raw and subsidiary material supplying places.of industrial and service establishments.*

Market is another factor for the dependence of the establishments on the space. Marketing the products with minimum transport costs in several markets is too important for such establishments. According to the survey results; 40% of the plants marketing their products only in Aydın ( in the cities and the villages or from the factory), 27% of them in Aydın and some another cities, 3% in Aydın and all over Turkey, 23% in abroad and in many cities in Turkey, and 7% of them marketing their products only in abroad. Briefly; 70% of the plants marketing some or all of their products mostly in Aydın.(Fig. 34) In addition; 57% of them sell their product from the factory directly and 40% from factory partly. These results mean that they depend on the place because of market advantages. (Fig. 35)

| MARKETING PLACES | |
|---|---|
| Aydın | 12 |
| Aydın +Some other cities | 8 |
| Aydın + Whole country | 1 |
| Whole Country + Abroad | 7 |
| Only abroad | 2 |

***Table 22**: Marketing places.*

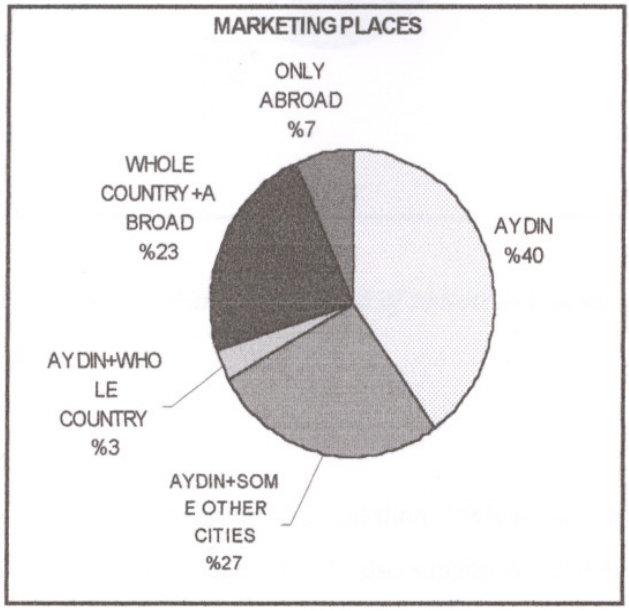



***Figure 34**: Marketing places*

| SELLING POINTS OF PRODUCTS | |
|---|---|
| Directly from the factory | 17 |
| Partly from factory, partly by wholesale distributors | 12 |
| By wholesale distributors | 1 |

***Table 23**: Selling points of industrial and service establishments.*

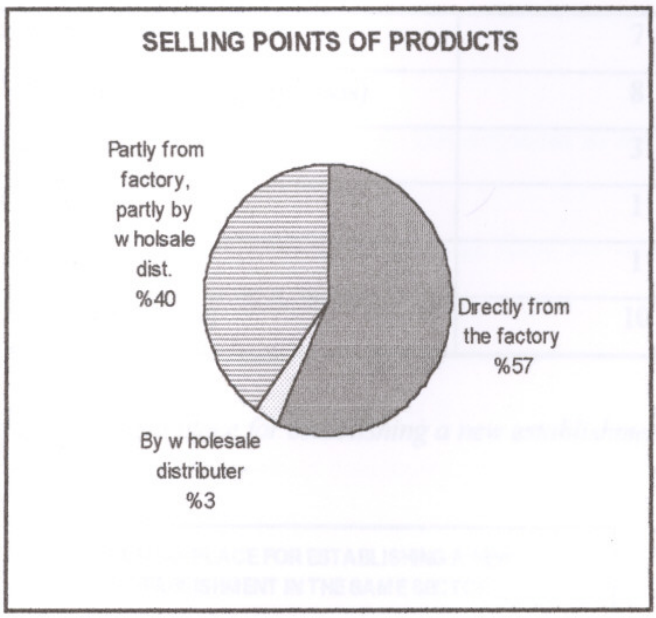



***Figure 35:*** *Selling points of products of industrial and service establishments.*

The answers taken from the question "Where do you prefer to found a new establishment in the same sector?" also support the above results. 23% of the investors prefer to establish such an establishment on the same place and 27% of them on another point on İzmir-Denizli Highway in Aydın. In other words 50% of the investors do not think to invest in another city except Aydın. 34% of them never think to establish such an establishment anywhere nowadays because of the economic crises in the country. (Fig. 36)

| OPTIMUM PLACE FOR ESTABLISHING A NEW ESTABLISHMENT IN THE SAME SECTOR | |
|---|---|
| The same place | 7 |
| Another place in Aydın (on the axis) | 8 |
| İstanbul – İzmir | 3 |
| Another city | 1 |
| Abroad | 1 |
| Nowhere (not establish) | 10 |

***Table 24:*** *Optimum place for establishing a new establishment in the same sector.*

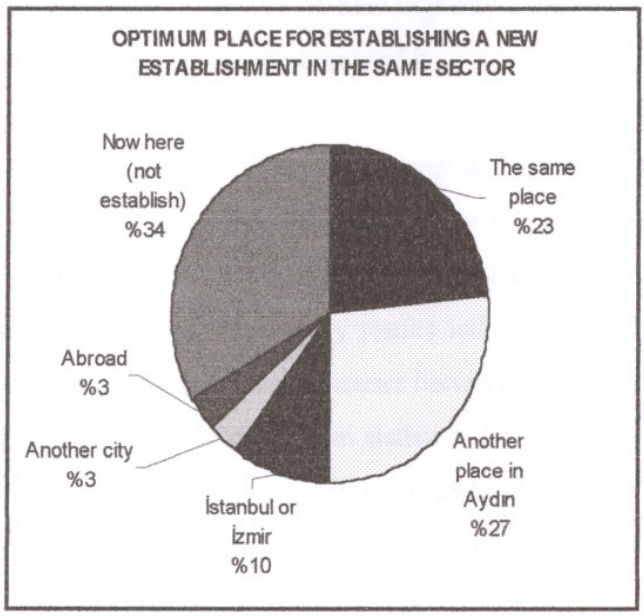



***Figure 36:*** *Optimum place for establishing a new establishment in the same sector.*

83% of the establishments do not move to another place. So; the locational flexibility of these establishments are very low. In spite of the economic crises in the country , it is certain that their locational advantages still effective for those industrial and service establishments. But there is a reality that to establish such a plant is not so easy for a new plant as before.

The locational flexibility of houses is a little higher than the establishments. 33% of the households want to move another place in the city center because of noise pollution, lack of security and services.

### 3.3. Evaluation of Results of Ribbon Development in the Study Area

The results of this empirical study show that there are many interrelated factors that cause ribbon developments in the study area.

Changes in transportation technologies is the dominant factor in the appearance of such developments in Aydın. Ribbon developments were first realised after the construction of İzmir –Denizli Highway. A new highway generally acts as a powerful magnet that attracts all the urban functions around it.

Congestion in the central city by the population increase is the another dominant factor which give rise to ribbon developments in the district. When the population increase rates are examined, it is easily recognised that there is a positive correlation between these two variables. The survey results indicate that there is a certain increase in the number of establishments and houses between 1981-1985 on the axis. Indeed, the trend is almost the same in population statistics. For example the population increase rate is 13,51% between 1976-1980, while it is 29,9% between 1981-1985. This sudden growth in the population have brought about ribbon development sprawl in the district.

In the ribbon development process, both the centrifugal and centripetal forces have been effective. Although by the effect of centrifugal forces -such as high land costs, high taxes, lack of available space for development- the establishments and the houses spread through the periphery, the centripetal forces –such as marketing advantages, qualified labour force, technical and social public utilities- limit their leaving all the amenities of the central city. Under these circumstances, the front parcels along the highway at the periphery of the city have been very suitable and attractive for those industrial and residential functions.

Development expectations on the axis by the way of land speculation also support the

entrepreneurs and households to prefer locating along the road. Public regulations also affect the process in a complex way. Generally the establishments tend to locate to less controlled areas. So, the demands are generally concentrated on the lands under the control of central government agency. But taking land use permission being very long and complex process, sometimes forced them to prefer locating on the lands under the control of local government agencies. The options also changes according to the scale and future expectations of the establishment. If the entrepreneur think to develop and enlarge the establishment, then the large parcels, far away from the inner city under the control of central government agency, are favoured.

Classical location theory, based on the minimisation of transportation costs, still valid in the location of industries on the study area. In the Weber's model the optimum site for an industrial plant is the intersection of the lands which are close to the markets and raw material supplying places. In addition to this, amount and cost of land, cost and quality of labour, agglomeration economies, availability of electricity and water, advertisement possibilities, are the factors that explain the presence of industrial establishments along the road in Aydın.

These factors that cause ribbon developments in the study area mostly depend on the social, environmental, geographical and economic structure of the area. But there are many other components of ribbon developments which arise from the planning mechanism and political approach in the country and the global trends in the world.

Lack of co-ordination between the authorities, lack of regional plans and inadequacy of structure plans that aim to control urban developments, personal preferences without taking into consideration the environmental features, political approach that support industrialisation and highway transportation, spreading of capital by globalisation and decentralisation of industries to less industrialised districts by the effect of post-Fordist economies are all of those macro contributing factors of ribbon developments in Aydın.

This empirical study results also represents that ribbon developments have some attributes on environment and planning practice.

The outcomes of the survey indicated that the ribbon developments cause uneconomic extension of utilities in the study area. The industrial establishments cause many environmental problems if the water and sewage systems are not adequate. So, local government agencies try to construct these systems for the industrial establishments, which are locating on the axis, before all else. Industrial developments with their huge impacts on environment forced the governments to construct the infrastructure systems along the road immediately. On the other hand; people living in the houses on the axis need some socio-cultural infrastructures such as, schools, parks, markets, etc. Thus, in the urban development plans, lands are allocated for such uses along the road. Planning discipline aims to supply some of these public utilities in a certain distance to each user. It is necessary to use the public financial sources optimally in a way to service a good deal of people in the city. But such uncontrolled developments causes the unequal distribution of public financial sources to those less densely areas.

Another cost of ribbon developments is the loss of agricultural lands. There is no need to do detailed analyses to determine this attribute of ribbon developments in the study area. It is very obvious because all of the industrial and service establishments and the residential units on the axis are located on the 1st and 2nd class agricultural lands. The total plot areas of those establishments which the questionnaire survey was conducted is about 30 hectares. On the other hand; by the effects of ribbon developments about 400 hectares of lands were allocated to urban uses by urban development plans after 1987. All of those lands are first, second and third classes cultivatable lands which must be used for agriculture. In addition, the vacant lands between the establishments have became unsuitable for agricultural uses. And by the speculative reasons and low land prices than the inner city, these lands are turned into industrial and residential parcels. The next step of ribbon developments are generally compactness. The development of a highway system often creates parcels economically unsuited to farming and encourages an unfortunate heterogeneity of uses.

If the price of special products became sufficiently high to yield a return on the land higher than that earned under an urban use, than a transfer from urban to agricultural uses would take place. However; in the existing economic structure, industry is one step ahead against agriculture. Although the study area is being on the most fertile plains of

the country, the industrial income is higher than the agricultural income in the region. The high trend in population increase by the migration from eastern parts of the country cause the agricultural lands break into small pieces, and as a result, the income gained from agriculture per family decreases. That situation draw the farmers to invest and work in industry and service sectors. The front parcels along the road are very suitable for those small entrepreneurs with their transportation, marketing, raw material provision, water and electricity and advertisement advantages. All of these locational criteria for those industries cause the loss of agricultural lands in Aydın.

Furthermore the ribbon developments cause the decreasing of the road capacity. The study axis (İzmir-Denizli Highway) was, at first, constructed for the transit traffic between the provinces. But by the effect of ribbon developments the highway became an inner road on which the urban and rural settlements located as a pearl necklace. If the necessary measures do not taken, the role of roads can be changed from an outer road to inner road in a short time. The same process was realised in the study area. By the location of those industrial and service establishments and residential units along the axis, the road have became to use for the transfer of the workers in addition to the transfer of raw and subsidiary materials and products by the industries. The survey results indicate that the main location factor for those establishments is the transportation with a rate of 25%. Besides; they have some other advantages to be on the road: 97 % of the industrial establishments are selling whole or some of their products directly from the factory and it is also possible to advertise their firms and products to the people travelling on the highway without paying an extra price.

Most of the workers, working in those industrial and service establishments, are travelling on the study axis. The total number of the workers, working in the establishments which the questionnaire survey was conducted is 2234. That means , everyday at least 2000 people are added to the traffic on the road. On the other hand; people living in the houses along the road are using the road for shopping, education and the other socio-cultural activities because of the lack of those social infrastructures yet. These demands have affected the public transport. Number of minibuses (dolmuş) have increased due to the increase in the number of working and living population on the axis. Everyday 350 minibuses are travelling between the counties and villages in

addition to the public transport vehicles, private cars, inter-urban busses and transit trucks. Moreover; 40 % of the firms are operated vehicles to convey their employees to or from work.

Enlarging of the road did not solve the traffic problems on the axis. Because of that reason it was decided to construct İzmir-Denizli Motorway for the transit traffic in the region. İzmir-Aydın part of the motorway was completed in 1998 and the other Aydın-Denizli part will have finished by the year 2003. This motorway is projected as parallel to İzmir Denizli Highway. In other words; it is passing mostly through the Menderes plain in Aydın. The project because of the inadequacy of the existing road -that is mostly the result of ribbon developments- have also caused the uneconomic extension of national resources and the loss of agricultural lands in the region.

Damage in the scenic quality is the another cost of the ribbon developments on the study area. The industrial, service and residential developments along the axis are realised in the boundary of the local government agencies and central government agency. Thus; the construction permits are changing according to the authorities. It is possible to see buildings, constructed in different heights and codes on the study axis. The height is changing according to the technological requirements for the industrial establishments also. Those irregular building heights and types causes complexity in the scenic quality

Furthermore, ribbon developments have damaged the natural environment in the region. By the effect of the highway that was constructed on the plain in a way separating the agricultural lands into pieces, the natural landscape of the district was destroyed, the catchment basin area of the Menderes River was deteriorated and the permeability of the land was damaged. The traffic increase due to ribbon developments have caused air and noise pollution in the study area. On the other hand; industrial establishments have affected the environmental quality. (The rate of industrial establishments which the questionnaire survey was conducted is 83%) The inadequate technical methods in production process are all the sources of pollution in the district. According to the survey results; 40% of those industrial establishments are working with poor technology that should be developed, and only 8% of them working with high (advanced)

technology. (Fig. 37) These rates show that a great deal of establishments have been a threat for the environment. The location of industrial and service establishments and houses along the road as a ribbon and the growing of the settlements through the axis by planning decisions have risen these negative aspects on the ecological system to high levels. The highway have changed the direction of urban developments. It attracts all the functions around itself. Not only new settlements areas are allocated through the axis, but also, existing rural and urban settlements far from the road have moved along the road. The old city centers have lost their functions and those central activities are gathering on the road.

| TECHNOLOGICAL LEVEL OF INDUSTRIAL ESTABLISHMENTS | |
|---|---|
| HIGH(Advanced) | 2 |
| WELL | 7 |
| INTERMEDIATE | 6 |
| POOR (Should be developed) | 10 |
| TOTAL | 25 |

***Table 25**: Technological level of industrial establishments.*

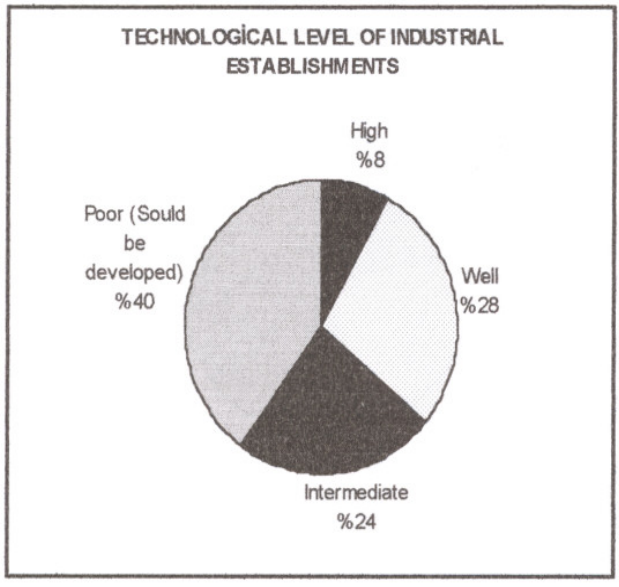



***Figure 37**: Technological level of industrial establishments.*

In a rational development in such regions which have hot climatic features, the settlements should locate at the foots of the mountains. Besides; the wind flow direction must be taken into consideration before deciding the new development areas of settlements. But the highway have neglected all the planning criteria and limitations by its huge attractiveness. Because of those reasons, the environmental problems such as air, noise and water pollution have appeared in the region. Of course, these situations, caused unsatisfaction according to the people living along the highway. The survey results indicate that 45% of those people are complaining about their being far from public services, 22% from lack of security, 22% from noise pollution and 11% from environmental pollution. (Fig. 38)

| REASONS OF UNSATISFACTION | |
|---|---|
| Far from public services | 4 |
| Security | 2 |
| Environmental pollution | 1 |
| Noise | 2 |

***Table 26:*** *Reasons of unsatisfaction. from the district.*

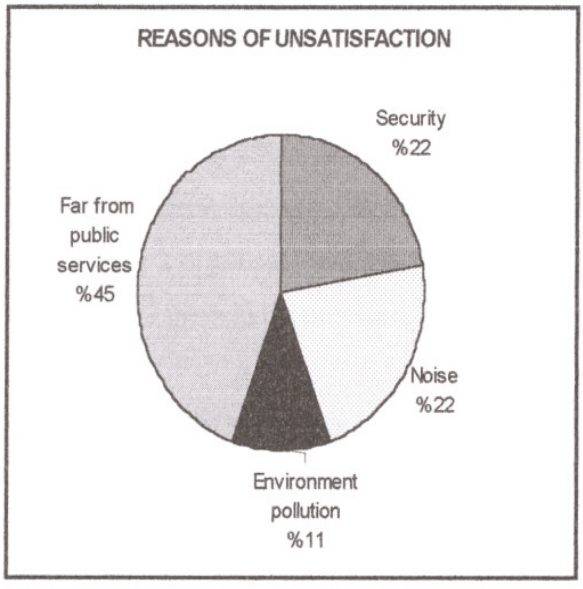



***Figure 38:*** *Reasons of unsatisfaction from the district.*

Briefly, all of these results of the empirical study show that the main reason of the ribbon developments in study area depend on the transportation possibilities, the size and the value of the lands. In addition, the way of speculation and high taxes in the inner city plays catalyst role in the characteristics of ribbon development in the area. This development seems not to be supported by the governments. But in the development process the local governments have caused to ribbon developments by the plan alterations. Plan decisions are given according to the existing development trends. The frontage plot areas are planned as industrial and commercial areas along the road. The fact that quite a few settlements settling nearer to each other has also effected the ribbon development process because of the possibility of finding cheap labour force. The Development Amnesty Act Numbered 2982 that makes some of the unlicenced buildings, legal and the territory licences are the other factors which support and encourage the location of the service and industrial establishments as ribbon on the axis.

Besides, central and local governments affect this process in a different way of by not providing organised industrial districts for entrepreneurs. The main aim of organised industrial districts is to collect industrial establishments on the same place which is more available for such usages. In other words, it is a way of controlling the development of industries. By this way industries will have some advantages of agglomeration economies also.

The construction of the first organised industrial district in Aydın is decided by the Council of Ministry in 1976. But it could not to be realised until 1990. During that period industrial establishments have taken place according to personal preferences. Today, there are 2 organised industrial districts in Aydın and in addition to them it is decided to form 3 more in the province.

As a result, today; the study area is filled with industrial establishments mostly. These establishments and the other services such as restaurants, gas stations have also attracted the houses for the employers. Many of these establishments are small or medium sized. 40% of them are working in low technological level. Only 8% of them are working with advanced technology. 83 % of these plants have no relationship with any research group

or university and 73% have no production development project. These results, at first, seem as there is no future expectations of these establishments. In other words, the entrepreneurs may move to another place and use their investments in a different sector. But 77% of them do not think to sell the plots. It may be because of speculative reasons.

Consequently; in the light of these findings, it is possible to reach two basic conclusions; one of them is; ribbon developments have affected the environmental and economic structure of the region, and the other is; the planning mechanism on the agenda, political approaches and market based economy have accelerated such developments in the study area.

# CHAPTER IV
# CONCLUSION AND RECOMMENDATIONS

The urban and rural fabric are the two forms of settlements which the mankind has lived in for 5000 years. Only about 200 years ago the structure and the role of these patterns began to change under the impact of the process known as "industrial revolution", that is the application of scientific method to material production, resulting in rapidly growing productivity, ever increasing division and specialisation of labour and, as a corollary, ever increasing interdependence and exchange of goods and services. (Blumfeld, 1971, p.231) These developments in the production techniques has greatly affect the urban and rural areas. A big migration process from rural areas to cities was occurred. As a result cities became crowded and compact in the nineteenth century. Many of the urban problems were caused because of the congestion in big cities in that period.

Technological developments in transportation has began to give us alternatives to move out of those crowded cities. At the end of the nineteenth century street-car gave way the big cities to expand. Cities formed around the stations. The development of cities could be controlled and directed by planners. But automobile removed all the time and distance limitations and controlling mechanism. In the twentieth century by the help of automobile the activities and population spread to nearby suburbs and outlying locations.

This process (spreading of cities) have examined by geographers, planners, economists in many different outlines such as sprawl, outer expansion, suburbanisation, decentralisation etc. Ribbon development as a kind of those developments have not been handled by city planners comprehensively although it has huge effects in the shape of cities and on environment. This is mostly because of its being the first and specific step of these expansion types. Because of the next step of the ribbon development being compactness it is generally seemed as a temporary process. Transportation played and

plays a key role in ribbon development.

In this thesis, ribbon developments and their impacts on the development of urban areas and on agricultural lands is studied along İzmir-Denizli Highway. In the structural evaluation of ribbon developments in the case study area a questionnaire survey method is used on the axis. The study area is about 9 km long at both east and west side of Nazilli settlement. Nazilli is the second biggest settlement of Aydın with an urban population of 102 000 (D.İ.E., 1997). With such an empirical study the causes and the costs of ribbon developments on an agriculturally rich area of Turkey is also analysed. In addition, how the developments in transportation and planning mechanism on agenda affect the process of ribbon development is justified.

The literature surveys and the empirical study results show that there are many complex and interrelated factors in the appearance of such developments, and the structure and the impacts of the ribbon development is changing according to the environmental, social and economic characteristics of districts, political approach of governments, and location criteria of establishments.

The changing technology of the 20$^{th}$ century -from Fordism to Post-Fordism- affects the concepts in planning. Fordist mode of economic development in 1960s and 1970s based on international spatial division of labour in the industrial sector and regulatory state intervention has been changed by a new, more competitive market based economy. (Berry & McGeal, 1995)

Under these circumstances 'end-state' planning, the preparation of a comprehensive plan intended to guide the community's future development lost its dominance in planning profession. The role of the planner has also been changing. Instead of being the modernist kind of planner, who is well educated, know the legal procedure well, and designs the cities according to them, the planner became more democratic, considering the needs of local groups in a negotiator position. In modernism departments were motivated by an ideology of 'futurism' and planners took no notice of local residents.

However the post-Fordist economic developments by 1980s, sustaining the flow of

world capital in global scale by the developments in communication techniques have also caused environmental problems all around the world. Recreating the city's identity and preservation of environment through the mix of land uses and functions is emerging as one of the important debates of the 1990s. In this context sustainability and ecological planning approaches have greatly supported in planning literatures. Sustainability is meeting present needs without compromising the ability of future generations to meet their needs. These planning approaches can be regarded as a return to modernism and comprehensive planning approach.

The environmental problems are not limited by administrative boundaries. In that case, planners are looking for operational alternatives. The structure plans-policy statement instead of frozen land allocation maps and flexible 'action' planning became useful tools for those new system. In many countries, the sites which have the same environmental properties and thus need preservation are handled with together. In other words, natural boundaries have been the planning boundaries. Action plans are prepared for these districts for controlling and directing the developments according to sustainability. (Gökbulut, 1995)

Of course by population increase, big cities grow vertically or enlarge through the periphery. Planning discipline aims to control and to direct the development of urban areas to optimum spaces. Transportation is an important tool for changing of the structure of cities and for directing urban development. But ribbon development is considered to be the reverse of good planning, it is inefficient in the use of land, since, much potentially valuable land either not used or used only for small-scale farming, it is highly uneconomic in the use of transport, since, it simultaneously causes obstruction of the main roads themselves and it produces deplorable living conditions for the people who live and work along roads. (Hayashi & Roy, 1996, p. 32)

It is mentioned in Chapter III of this thesis that Turkey is in the category of countries which consume the agricultural land reserves. Only 34.1% of its total area is available for agriculture. Aydın is located on the most fertile region of these agricultural areas. The loss of agricultural lands because of ribbon development is emphasised in this thesis and the necessity of their preservation is indicated in the example of the study

area.

Loss of agricultural lands have been a subject which is handled by many researchers – those are economists, planners, geographers, agricultural engineers.- and over 50 researches, thesis, seminars, etc. have prepared about the subjects in our country since 1960. All of those researches point out that agricultural lands must be preserved against urbanisation, industrialisation, tourism and big highway projects. However, the required and effective measures have not been taken till now.

In Aydın case, all of these types of land uses have been located in the ribbon development axis. The city of Aydın is under the influence of Izmir Metropolitan Region. It has rich agricultural products which are the raw material for food processing and agricultural industries. It is easy to find qualified labour force and strong transportation facilities, such as railway and highway. In addition, high population densities on the transportation axis have increasingly encouraged the industrial sector to locate in Aydın.

In our country industrialisation has been a national development policy since 1960s. Therefore, industrial investments have been supported by the governments without any limitation. Transport policies have been parallel to that industrialisation policies. It has been thought that industrialisation is the only way for national development and highway transportation is the main tool for the development of industrialisation.

It is a chance for Aydın and for the country that the industrialisation process is developing more slowly than many other urban regions having the same conditions. For instance; Bursa which once have the most fertile plains of Turkey have completely changed at the end of this industrialisation process. The historical, cultural and economic character of the city that mostly depend on the agricultural products are now changed into an ordinary industry city character as a result of ribbon developments along the main roads which are passing through Bursa plain . This ribbon development process brought about the compactness around the roads after a while. On the other side; Adapazarı-Izmit-Istanbul axis became the hearth of Turkish industry by the support of governments. The same processes are realised on İstanbul-Tekirdağ axis,

Ankara-Eskişehir axis and on Adana-Mersin axis. All of these regions have the most fertile plains of Turkey. The agricultural lands now change into industrial and residential areas on these regions. If those developments had been directed to the non-agricultural areas which is 65,9% of the total land area of Turkey, the economic and social inequality between the east and west regions would have reduced and the development of those regions would have been obtained.

Such developments in the country make us to think that there is no limitation for urbanisation, or any caution for the preservation of agricultural lands against urbanisation. But when we examine the constitution and laws it is seen that there are many articles for the preservation of environment and agricultural lands. The main problem is putting these laws into practice. Besides, the lack of co-ordination between local and central government agencies cause the reflection of personal preferences on lands which have cheap infrastructure and labour costs, advertisement possibilities and marketing advantages. The entrepreneurs who have small capital and who make generally simple production, whose educational level is low, and whose decision making process is bounded to external effects are current. Personal preferences of those entrepreneurs that are bounded to capital structure , show a satisfactorial character instead of rational decisions. Locational preferences have also the same rank order which are dependent on occurrence of manufacturing site places. (Yurteri,1986). In addition, lower transport costs usually favour the growth of firms which have largest markets. Transportation costs have a big portion in their total costs. Therefore, decreasing of these costs supports their growth and development. (Goodall, 1972)

A carefully designed urban development would be marked by the attributes of house-styles, winding roads, generous gardens, tree-plantings and grassed verges. But often the speculative ribbon developments lacked any overall plan, being developed by the partial plans or according to behavioural decisions. The result of such activity was generally a long sprawl of industrial and commercial establishments and houses which are constructed with different heights, codes and types. (Hall, 1996) Sometimes, this diversity in buildings cause complexity along the roads, or sometimes, the continuous developments on the same route form a monotonous landscape.

Because of the urban development plans prepared according to the existing development trends, the desired concentration of activities could not be achieved. This reality that damages in the scenic quality along the roads by the affect of ribbon developments resulting from the lack of validity of planning and architecture disciplines. Thus some of the architects (Clough Williams Ellis and Octopus (1928)) wrote of ribbon development as the drain, like lice upon a tape-worm. (Hall, 1996). The commercial and industrial establishments and houses cause complex, irregular and sometimes monotonous landscape along Izmir-Denizli Highway too. These unsystematic urbanisation both, damage the scenic quality and make difficult to distinguish the settlements from each other in the district.

Spreading of houses, commercial and industrial establishments as a ribbon have greatly resulted in air, water and soil pollution in addition to the loss of agricultural lands and the damages in scenic quality. The capacity of treatment falls short of the demands, thus environmental quality become worse. The pollution levels have increased due to the inadequate energy on technical methods used in the production processes and to poor disposal practices for industries. (Ambio, 1996)

The empirical study results in this thesis show that only 8% of those industrial establishments on the axis are working with high technology and most of them (73%) have no production development project. These rates means that a big amount of the establishments are the sources of environmental deterioration in the district.

In terms of air pollution, the automobiles and industries are the sources of pollution in the study area. Traffic have caused the noise pollution in urban areas also. Especially the transit truck traffic have risen the level of noise up to average values. On the other hand; the permeability of land were destroyed by the asphalt. These means that ribbon developments along the highway have affected the natural sources completely in a rapid and uncontrolled way. Under these circumstances it is essential to develop strategies through sustainability for the physical expansion of urban areas. Planning and economic development of industrial and other enterprises should take into consideration the environmental costs of their activities.

Urban–rural sustainability is closely related to cultural, economic, behavioural, ecological patterns, all of which need to be taken into account when addressing development issues. It is necessary to plan the urban and rural areas by taking into the environmental qualities. We are now facing with the environmental problems mentioned above as the result of post-Fordist concept that disregard the planning discipline. Ribbon development as a reflection of personal preferences and uncontrolled unplanned development is one of the fundamental factor that damage the environmental quality. Our planning practices through the existing development trends that generally aim to legalise the illegal developments are increased the level and costs and make the solutions more complex and difficult to adopt.

From this point of view, ribbon developments on the study axis have been supported and encouraged by governments despite their negative impacts on urban-rural fabric and on environment. These supports generally result from the problems in our planning system, political approaches and global trends.

Transportation sector have an important role in the economic development and socio-cultural activities of the nations. Highways have the greatest portion in this sector. For instance; in Turkey, 94% of passenger transport and 91% of goods transport have done by highways, in other words; only 6% of passengers and 8% of goods have been transported by railways and airways. (OECD,1994). These ratios mean that there is a great accumulation on the highways. This situation have also influenced the economic life of the roads. The loss in the national economy because of diminishing the economic life of roads is about 1000 million dollar in our country. (Akpınar, Kurum, Selimoğlu, Duman,Haktanır,1995) In developing countries, the demand on highway transport generally causes the construction of new ones. The empirical study in this thesis gave the evidence that İzmir-Denizli Highway is in the same way. There is an important decrease in the capacity of the road due to ribbon developments on it. This highway was constructed for the transit traffic between the cities and it was passing out of the settlements. But it attracted residential, commercial and industrial activities by its high accessibility. As a result it became an inner road on which the inner city traffic (public transportation, private car transportation), intra-urban traffic and transit truck traffic accumulated. Because of this situation, the number of the accidents on the road and the

travel time span between the counties and provinces have increased. These damages in the security and road capacity forced the governments to project İzmir-Denizli Motorway for the transit traffic. If there had been a rational comprehensive planning approach, the national financial resources could be used for the other investments in the country. From this point of view, the construction of the motorway could be considered as the uneconomic extension of utilities due to ribbon developments in the district.

It is necessary to handle the transportation system as a whole with railway, highway and airway lines. Although there is a railway line which is passing parallel to the highway in Aydın, it is loosing its efficiency gradually. In opposition to the railway, the highway has became more activated by the increasing of the number of automobiles and trucks. Aydın is loosing its socio-economic and agricultural identity. The identity of the province could be revitalised by reorganising the transportation networks. The railway lines must be renewed and developed as the main public transport in the province. On the other hand; truck traffic in Aydın on Denizli-İzmir Highway should be prohibited as the line has became an inner road by the ribbon developments and by the concentration of rural and urban population on it. In the future, by the population increase, the negative aspects of transit traffic on this route will rise to high levels. Therefore; the transit transport could be directed to İzmir-Denizli motorway. The construction of İzmir-Aydın part of this motorway was completed, and in the near future the other part of the way will be finished. This motorway should be used as a tool for preventing ribbon developments on the axis.

In Turkey, highway construction and industrialisation have been seemed the only ways of economic development by the governments. So, they have connived at the industries locating along the roads which pass through the fertile lands. As a result the Marmara and Aegean Regions in the country having strong linkages to national and international markets have attracted the big portions of industrial capital. The post-Fordist economic developments around the world, that causes the spreading of industrial sub-units in the global scale for decreasing the risk and for increasing the flexibility have risen the industrialisation in those regions in Turkey. Cheap labour costs, informational capacity, connectivity to the network of major metropolitan centers at the national and international level have made the regions very suitable for the industries. These are the

factors that determine the productivity and competitiveness of cities. (Berry & Greal, 1995)

A new highway generally acts as a powerful magnet that attract residential, commercial and industrial activities around it. Construction of new highways and adaptation of all the new technologies to the cities have never been the solution of urban problems. Technology must fit the city rather than vice versa. In contrast it may cause many other complex problems.

More technology does not always mean better life conditions. The technology should fit the structure and characteristic features of settlements. And there must be an effective administration system that direct and control the adaptations.

Many of the problems of cities and the ribbon developments are caused because of the problems in the integration of new technologies on land by governments. The administration system has not been changed or developed despite the changes and developments in society and in cities by the effect of new technologies

In our country many of the urban problems are generally caused because of the lack of co-ordination between the government agencies and the lack of public participation in planning. Each ministry is responsible to put into force of different laws about environment and urbanisation. But there should have been co-ordination between them, because urbanisation is a complex system and any change or development in any part of the system effects the system as a whole. Hence, the system must be handled by a single agent that co-ordinate the urbanisation. There must be sub-units which are responsible for the application and control of the urban projects and they must have been directed by this central agency. For example; in our country there are three ministries which are responsible for development plans (their application, control and making law about it). The laws are enacted by Ministry of Public Works and Settlements, they are applied by local governments (municipalities) and these applications are controlled by Ministry of Interior where there is not enough technical staff in the capability of understanding and developing solutions to the urban systems.

On the other hand; there are not enough technical staff in many of the municipalities either. In that case, mayors act according to their personal preferences without any technical or social knowledge. Such political applications caused many environmental and urban problems. In addition, there can be some difficulties in the application of complex and many sided infrastructural projects because of lack of co-ordination between the local and central authorities.

Another reason of the negative impact of ribbon developments is the lack of comprehensive planning approach in the country. Comprehensive planning approach necessitate to think and handle the urbanisation gradually from national scale to urban design scale. It is a big deficiency that there is no regional plans in the country. Because of that reason, national resources are distributed inequitably through the country. In Turkey, State Planning Organisation (SPO) is responsible for the preparation and application of regional plans according to the national development plans which are decelerated every 5 year period. By these regional plans social, economical and environmental objectives are determined. For example big highway or expressway projects should be proposed in those plans. The main aims of these plans are to decrease the difference between the regions according to the existing national programs and to co-ordinate the ministries according to their concerning subjects. But SPO does not carry out its function related with above considered subjects.

The next step of regional plans are 1/25000 Structure Plans which are prepared by Ministry of Public Works and Settlements according to the regional plans. Land-use, such as existing and former residential areas according to the development rates of cities, conservation areas, tourism areas, recreational areas, etc., are determined in these plans. The route of a highway project is planned more detailly. These plans also should control the ribbon developments which usually are located on the areas, under the control and responsibility of those kind of plans.

The following steps of planning hierarchy are preparing of 1/5000 master plans and 1/1000 detailed plans. They are prepared by local governments. They must be in accord with those regional and structure plans by law, but usually they don't. This is an another reason of negative growth in ribbon developments.

That planning hierarchy of 1960s aimed to examine the planning decisions comprehensively in different scales. However in that planning system local authorities are not effective in planning process. The central government agencies are authorised to prepare the regional and structure plans and local authorities have to obey those planning decisions in the local scale. The negative effects of such a centralised system disregarding the local decisions appeared in a short time. Especially, by globalisation local authorities have take place seriously in planning. Globalisation and localisation have directly influenced our planning system. It became visible that the success of the plans depend on the negotiation between central, local authorities and private sector. By the effect of those developments SPO have not prepared regional plans after 1980s. Besides, the structure plans which prepared by Ministry of Public Works and Settlements consist only about 1 / 4 of the total land area of Turkey and they have been unframed by private sector investments.

On the other hand; it is seen that in many instances local authorities could act against these structure planning decisions. They enlarge their boundaries mostly through the main roads without taking into consideration the quality of the land around these roads. Besides; another factor -that is partial plans- have destroyed the integrity of plans. Partial plans are the reflection of personal preferences of private investors on the land use. These preferences are generally contradicting to the public rights and the planning decisions.

Partial plan is considered to be the reverse of comprehensive planning perspective. Most of the commercial and manufacturing establishments and housing developments located along the main roads in the areas under the control of central government agencies have located according to partial plans. The lack of co-ordination between the central government agencies, local governments and private sector can be noticed obviously in partial plan approval process. An entrepreneur who wants to establish a plant along the main road (or somewhere else in the boundary of central government authority) should take pre-approval permit from Directorate of Public Works and Settlements in the province. This directorate have asked opinions of other central government agencies about the plant and its location according to the laws. (Some of these agencies are;

Directorate of Tourism, Directorate of Environment, Directorate of Health, Directorate of State Hydraulic Works, General Directorate of Highways, General Directorate of Village Works, etc.) If there is no conflict according to any law the entrepreneur can take pre-approval permit. In this process there is not yet any urban planning notion. Because there is no relationship between these directorates. For example; the area that the plant will be established can be in the boundary of any irrigation projects of Directorate of State Hydraulic Works. But they are not authorised to say "the establishment must not be constructed in the determined place because of its being in the boundary of the irrigation projects." The amount of irrigation land which is lost by such developments is about 10% of the total irrigation areas in our country. This means both the loss of agricultural lands and national income. Besides, such developments along the main roads is the another aspect of uneconomic extension of public sources due to ribbon developments.

All of those experiences indicated that there must be co-ordination between central authorities, local authorities and private sector. It is also proved that the success of planning decisions depend on public participation. Especially the preservation of agricultural lands which are under the pressure of ribbon developments and related uses could not be achieved without public participation in the local and national scale.

Ribbon developments generally begin with the establishment of industrial plants along the main roads. These establishments attract the services and residential areas to themselves. They tend to locate along the main roads because of many infrastructural, marketing, advertisement advantages. These advantages and location criteria of industries are explained in the second and third chapters. The empirical study results also show that transportation is the main factor for industrial and service establishments to locate along the road.

These trends have formed a dilemma between industrialisation and agriculture. The governments have generally supported industrialisation and the planners have tried to preserve agricultural lands against industrial developments. Existing situations showed us that the winners of this struggles are the governments.

Sometimes; organised industrial districts (OID) have considered to be the only solution for controlling these trends and to reduce ribbon development along the roads. In the light of this vision many organised industrial districts are formed all over the country. Now there are two OID in Aydın and in addition to them, it is decided to form three more OID in the boundaries of the province. The places are defined and the parcelations and expropriations of them will have been finished in the near future.

Although OIDs could reduced the ribbon developments in Aydın, it will cause the loss of hectares of agricultural lands. Because there is not suitable land for such uses which are unsuitable for agriculture in the borders of province. The land except the $1^{st}$, $2^{nd}$, $3^{rd}$ classes are mountainous land with the scope of 20% and over. Allocation of OIDs in the province means applications against sustainability and ecological planning approaches.

In spite of these OIDs , ribbon development process is continuing in the province. The local and central government agencies are continuing to give permission for the industrial and service establishments and residential units along the main roads. Municipalities are enlarging their boundaries through the roads, and new residential, industrial and commercial areas are occupying.

Under these circumstances the solutions for preventing ribbon developments can be summarised into two groups;

1) The solutions at the local scale:

- Action plans should be prepared for the preservation of agricultural lands which are under the pressure of ribbon developments, urbanisation and industrialisation.
- Natural characteristics of urban areas locating along the roads should be planned and preserved against ribbon developments.
- Demands that causes ribbon development and loss of agricultural lands should not be encouraged by public authorities, in other words planning permissions in such areas should be prohibited.
- The industrial, commercial and residential lands that allocated by plan decisions and not constructed yet should be changed into agricultural land uses, in other words; the agricultural structure of the lands which was destroyed by plans and

uncontrolled ribbon developments should be changed into its original structure again by plan decisions.

2) The solution at the national scale:

- Enlarging of municipality boundaries without any detailed analysis through the main roads should be limited.
- Development plan alterations for legalising uncontrolled and unwanted developments should be prevented.
- Transportation must be handled as a system which is consist of highway, railway and airway lines, and they must be applied to land according to economic, ecological and historical structures of districts.
- The impact of a new transportation development on the environment and on the natural resources should be analysed. The long termed cost –benefit analyses should be done.
- Urban development plans should be done in different scales in a hierarchy. (Regional plans→ structure plans→master plans→detailed plans→urban design plans)
- Planning boundaries should not be limited with administrative boundaries. The sites which have the same characteristics should be handled as a whole.
- Local authorities should take place in the decision-making and preparation process of regional and structure plans.
- Before application of a big project, such as an accessible highway social integration projects should be prepared for the integration of rural and urban societies.
- Planning committees should be formed in every scale for directing the planning applications. (For approval and alteration of plans)
- Legal arrangements for property transfer in agriculturally rich areas should be done for preventing speculative developments.
- Tax increase can be a tool for directing and controlling the land-use.
- Vacant lands because of speculative reasons in inner cities can be taxed with high values. By this way, the spreading of residential areas along the main roads can be prevented.
- Local authorities should not give temporary licences that cause alterations in planning decisions in the future.

- Green belts can be allocated to control the development around the cities and along the major roads.

We are experiencing ribbon development because of the adaptation of transport technologies to the space. All the decentralisation and suburbanisation policies, the expansion of cities through the periphery - that is called sprawl or formation of fringe areas around the cities, and the ribbon developments are the direct results of technological developments. In other words they are the urbanisation features of twentieth century.

In the twenty-first century cities may continue to decentralise or they may be recentralise. The increasing use of computers and new technological developments in transportation, in industry, in construction and in the other communication techniques will shape the urban areas. By the effect of post-Fordist mode of economy the industrial location criteria have changed. Some of the writers think that by the new technologies the requirements of much open spaces will decrease, so many of the industries will return back to the city centers. On the other hand; the other writers have a different view about the impacts of technological changes on urban areas. According to them; new technologies especially the expanded use of computer technologies will make cities a depository of information So, space dependability will be ended and people will be living in the small surrounding towns.

Cities will decentralise or recentralise in the future. But it is certain that the globalisation will force the cities to compete with each other. In this competition they could only be successful by their local special features. Otherwise they will loose their attractiveness and will experience a decline in development process. According to this view; in the global market Aydın will have chance of competition by its natural resources; climatic features, seaside, national parks and the fertile agricultural lands.

Cities are the most complicated system known to men. Thus the problems and their solutions are also complex, and difficult to adopt. The main question is to determine the real problem. The real problem may be to have the kind of land we need where we need it, and to assure an orderly pattern of development that will best serve the interests of

living, working and playing. The important thing is that the land is used effectively, yet with care and pride. In order to find solutions for that problem the choices are simple. We can continue to destroy the land or we can lay plans on both the national and the local level that will guide us toward a more satisfactory urban environment. Common sense and the standards of living to which we aspire suggest the second course. (Owen, 1970)

Sometimes the answers are not clear for the planners because of the social variety of the community. Because we don't exactly know what we really want. We want to live in a small intimate community, yet we want to have all the amenities of great metropolis. We want a dwelling with a privacy, identity; yet we want the setting of a rich social life. We want to be near open country; yet we let the city spread endlessly. We want all the things that suburbia offers, but we also want the amenities of the downtown area. What we really want is Utopia, but we are not clear about what Utopia is. (Safdie, 1967)

Planners must learn to swim with the technological current, and not against it. By knowing where the technology is going, we can select targets that will yield the best results.

The sustainability of life depends on the sustainability of agricultural lands. The loss of agricultural lands and environmental deterioration by the impact of ribbon developments has been an important problem both at the local and national scale. Turkey must be in a position where it should start thinking how much more land can be made available for cultivation under the best use of technological improvements.

Now, we are at a point where to think the future of next generations and sustainability of our cities and environment, thus protect the natural, economic and cultural resources, in other words to make the planning discipline valid or to neglect all the limitations about the land-use and environment and let everyone to act as they want that is to say we can wait the society' finding the optimum solution by itself. Of course if there were nothing to loose or the losses have returned back in a short time the second course would have the best and easiest solution.

At the end of this thesis there may be some other related researches which could explain and complete the findings of the thesis in the scope of the theoretical background, the empirical study and the solutions. Some of these further studies can be thought such as;

- The effects of new technological developments in transportation and in production techniques on the ribbon development process in Aydın.
- The changes in the economic structure of Aydın by the changes in transportation types. The effects of İzmir-Denizli Motorway in the economic, social and spatial structure of Aydın.
- A comparison of two cities one of which have a growth process based on railway lines and the other based on highways (ribbon development process).

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# APPENDIX

## Appendix A
## BUSINESS QUESTIONNAIRE SURVEY FORM

1) FIRM NAME?
2) ADRESS?
   A) County:..... B) Villlage/Neighbourhood:.....

3)Map No: ..... Block No:..... Plot No: ..... Legal Status (In Municipality boundaries / InVillage Boundaries).....
   If in village boundaries was it established according to a partial plan?

☐ YES ☐ NO

4) Plot Size ($m^2$)..... Building Size ($m^2$).....
5) Construction Date?.....
6) Is there a construction licence? ☐ YES ☐ NO
7) Licence Date?..... Licenced By?.....
8) Establishing Date?.....
9) Activation Date?.....
10) Main Product?.....
11) Is there a sub-unit of the firm? ☐ YES ☐ NO Where?.....

12) 1: Which of those location criteria listed below was effective in the establishing?
   2: What are the existing problems?
   3 :What are the most necessary factors for establishing a new establishment in the same sector?

   (Please answer these three questions according to the table below)

| | Physical Structure of Land | Size and Value of land | Public Encouragements | Transportation | Water | Electricity | Raw and Subsidiary Materials | Market | Agglomeration Economies | Labour | Advertisement |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |

13) From where do you supply the raw and subsidiary materials?
   ☐ In Aydın ☐ Partly in Aydın partly from other cities ☐ Out of Aydın (Where?).....

14) From which source do you supply the raw and subsidiary materials?
   ☐ Retailer ☐ Wholesaler ☐ Factory ☐ Directly from people

15)Where do you sell the products?

☐ Directly from the factory ☐ partly from the factory, partly by wholesale distributors ☐ By wholesale distributors

16)How do you transport the raw and subsidiary materials and products?

By highway .....%

By railway .....%

17) What are the products producing in this establishment?

| Products | Amount |
|---|---|
| | |
| | |
| | |
| | |
| | |

18) Where do you marketing the products?

☐ Aydın ☐ Aydın and some other cities ☐ Aydın and whole country ☐ Whole country and abroad ☐ Only in abroad

19) How many workers working in this establishment and where are they coming from?

| Number of Workers | Coming Place |
|---|---|
| | |
| | |
| | |
| | |

20) Is the firm operating a vehicle to convey the employers to and from work?

☐ YES ☐ NO From/ To Where?.....

21)Working hours?.....

22) Where do you prefer to establish a new establishment in the same sector?

☐ The same place ☐ Another place on the highway in Aydın ☐ Another city

☐ Abroad ☐ Nowhere (Not establish)

23) Land and Building ownership? ☐ Owner ☐ Renter

24) Technological level of the establishment?

☐ Advanced ☐ Well ☐ Intermediate ☐ Should be developed

25)Is there a relationship with university or research group? ? ☐ YES ☐ NO

26) Is there a product development project? ☐ YES ☐ NO

27) Do you think to move the establishment to move another place nowadays?

☐ YES ☐ NO Where?.....

28)Is there a previous establishing place? ☐ YES ☐ NO Where?.....

29) Is the plot adequate? ☐ YES ☐ NO

30)Do you sell this plot? ☐ YES ☐ NO

## Appendix B

## HOUSEHOLD QUESTIONNAIRE SURVEY FORM

1) Construction date of the house?.....

2) Is there construction licence? ☐ YES ☐ NO

3) Licence Date?..... Licenced By?.....

4) Construction type?
☐ Reinforced concrete ☐ Brick ☐ Timber ☐ Other

5) House ownership? ☐ Owner ☐ Renter

6) How long have you been living here?.....

7) Why do you prefer living in Aydın?
☐ Employment ☐ Education ☐ Health ☐ Other

8) Why do you prefer living in this house?
☐ Transportation ☐ Nearness to job ☐ Ownership ☐ Cheap rent

9) Have you been thinking about to living another place? ☐ YES ☐ NO
Where? ☐ Another city ☐ Village ☐ City centre

10) What is your occupation?
☐ Farmer ☐ Employee ☐ Worker ☐ Other

11) If farmer are you the owner of the land? ☐ YES ☐ NO (Renter)

12) Commuting vehicle?
☐ On foot ☐ Service ☐ Minibus ☐ Private auto

13) How much is your salary?
☐ 0-75 million ☐ 75-150 million ☐ 150-300 million ☐ 300> million

14)Are you pleased to living here? ☐ YES ☐ NO

15) If not what are the reasons?
☐ Noise ☐ Security ☐ Environmental pollution ☐ Far from public services