the ISTANBUL MASTER PLAN summary
ISTANBUL MASTER PLAN

CONTENTS
1. ANALYSIS: METHODOLOGY 1
2. GEOGRAPHICAL POSITION 3
   2.1. METROPOLIS AND REGIONAL RELATIONSHIPS 6
   2.2. DEMOGRAPHIC CHARACTERISTICS 9
3. ECONOMIC ACTIVITIES 10
   3.1. THE INDUSTRIAL SECTOR IN THE ISTANBUL METROPOLITAN AREA 12
   3.2. TRADE AND SERVICES 16
   3.3. CULTURAL INDUSTRIES AND CULTURE-TOURISM 25
4. SOCIAL LIFE SECTORS 32
   4.1. HISTORICAL VALUES 32
   4.2. HOUSING AND QUALITY OF LIFE 32
5. FUNCTIONAL CONNECTIONS 41
   5.1. TRANSPORTATION 41
   5.2. URBAN LOGISTICS 47
      5.2.1. LOGISTICS SOLUTIONS 49
6. NATURAL RESOURCES 54
   6.1. UNDERGROUND STRUCTURE 55
   6.2. UNDERGROUND RESOURCES 63
   6.3. AGRICULTURAL RESOURCES 64
   6.4. FORESTRY RESOURCES 66
   6.5. ENVIRONMENTAL PROBLEMS 70
7. SYNTHESIS - ENVIRONMENTAL AND SPATIAL SUSTAINABILITY 76
   7.1. NATURAL THRESHOLDS 76
   7.2. MACRO FORM 79
   7.3. PHYSICAL DEVELOPMENT AND LAND USE 84
   7.4. PLAN APPLICATION 90
8. PLAN APPLICATION COMPONENTS 97
   8.1. PLAN AIMS, POLICIES & STRATEGIES 97
   8.2. VISION 100
LIST OF ILLUSTRATIONS

Figure 1. Geographical Position
Figure 2. Istanbul Metropolitan Area Terrain Structure
Figure 3. Geographic and Elemental Characteristics
Figure 4. Istanbul Metropolitan Area and Metropolitan Regional Boundaries
Figure 5. Functional Boundaries
Figure 6. Level II Nuts Regions
Figure 7. Axial Framework for the Marmara Region
Figure 8. Regional Economic Activities
Figure 9. Economic Activities Istanbul
Figure 10. Industrial and Spatial Developments
Figure 11. Total Labour Forces and Labour Force in Services Districts (1992-2002)
Figure 12. Increasing Rate of Labour Force in Services in Districts
Figure 13. Total Labour Forces Residing and Working In Districts (1992-2002)
Figure 14. Distributions of Shopping Malls
Figure 15. Projection of Labour Force in Services in Districts
Figure 16. Existing and Proposed Business Districts
Figure 17. Creative Industries as Economic Drivers
Figure 18. Cultural Triangle
Figure 19. Spatial Preferences of Cultural Industries
Figure 20. Numbers of Tourists Who Visited Turkey and Istanbul in the Last Decade
Figure 21. Conservation Areas
Figure 22. Cultural Industries, Culture and Tourism Strategies in Istanbul
Figure 23. Mass Housing High Rise – Ümraniye Sinan Neighbourhood
Figure 24. Formal/Planned Residential Area Low Rise - Bakirköy Şenlik Neighbourhood
Figure 25. Informal/Upgraded Residential Area Low Rise - Beyoğlu Fetihtepe Neighbourhood
Figure 26. Risk Analysis I and II
Figure 27. Spatial Distributions of Residential Areas
Figure 28. Spatial Projections for Residential Area
Figure 29. Current Linkages
Figure 30. Road Network of Istanbul
Figure 31. Rail Systems in Istanbul
Figure 32. Sea Transport in Istanbul
Figure 33. Logistic Zones Proposed For Istanbul Metropolitan Area
Figure 34. Specialist Logistic Zones
Figure 35. Airport Coordination and Integration
Figure 36. Present Water Resource Basins
Figure 37. Current and Prospective Water Resources in Istanbul
Figure 38. Seismic Risk Map
Figure 39. Synthesis of Earth Science and the Geological Suitability of the Settlement Area in the Province Of Istanbul
Figure 40. Existing and Potential Mining Areas in the Province of Istanbul
Figure 41. Agricultural Land Classification of Istanbul Province
Figure 42. Agricultural Land Use in Istanbul Province
Figure 43. Synthesis of Farming Areas and Natural Thresholds
Figure 44. Production Functions of Forests
Figure 45. Functions of Forests
Figure 46. A Management Plan for the Metropolitan Area of Istanbul
Figure 47. Air Pollution Levels
Figure 48. Supply Rates Amount of Drinking and Portable Water Sources
Figure 49. Amount Of Drinking And Portable Drinking Water Supplied to Istanbul City Per Year.
Figure 50. Büyükçekmece Lake Pollution Levels
Figure 51. Solid Waste Facilities
Figure 52. Natural Threshold Syntheses
Figure 53. Environmental and Spatial Sustainability Synthesis for Istanbul
Figure 54. Istanbul Metropolis Macro-Form Model
Figure 55. Proposed Sub Regions for Istanbul

LIST OF TABLES

Table 1. Projected Population Growth of Istanbul
Table 2. Road Utilisation
1. ANALYSIS: METHODOLOGY

Istanbul, a metropolis blending natural beauty and historic values, has unfortunately in recent years been subjected to unmanageable and illegal development initiatives. The result of which has been the successive elimination and partial curtailing of its intangible assets. It is of paramount importance therefore, that politicians, scientists and specialists alike positively promote Istanbul in the regaining of her historic and contemporary status through the application of planned approaches, which the city vigorously deserves. The Istanbul Master Plan provides recommendations to redress the balance of conflict between humankind and nature.

The methodological approach developed for the Istanbul Master Plan is based on addressing the economy - ecology conflict, in its spatial dimensions. Human beings have always been a part of the ecologic system and as a subsystem have always contributed to the global geography. Human ecology commenced as humankind formed stationary settlements.

Human Ecology – Nature Ecology Conflicts
Natural systems operate in an environment of integrity, in its own manner and with little compromise. The subsystem, composed of the activities of humankind, is set over and fed by the natural system. In other words, human ecology structures itself in order to benefit from the nature ecology and consequently, through this process affects the ecologic system.

Imbalance in relations between the natural ecologic system, the human ecology sub-system and humankind’s developing technology based interferences to the natural ecologic system, causes tensions and conflicts. Nature reacts to this process, through the diminishing and limiting of resources thus increasing the risk of disasters. To avoid these negative impacts, the human-nature conflict relationship requires harmonizing thus redressing the balance between the two systems. In doing so, harmful interactions between the two systems can be minimised creating complementary relations that feed one another. Thus conflict management becomes a key stakeholder in the sustainability processes.

Sustainability therefore, requires balancing of the relations between social life, economic activities and natural resources by applying the principles of reciprocal feeding and solidarity. Humankind can only survive and improve on existing quality of life by being sensitive to the nature.

There are two key factors affecting the relationship between natural environment and man made environment. Factor one is that spatial sprawl facilitated by population growth and demand. The outcome for the process of the increase in population and diversification of humankind’s needs is the exploitation of the nature. Limiting the population of the settlements in order to provide the sustainability of natural resources is the only way to resolve this demographic dilemma. This means the management of demographic size and development.
The second factor, affecting the relationship between natural environment and man made environment is the loss of the natural values and an increase in economic driven activities’ placing further pressure on the natural system. In order to resolve the conflict between economic and ecological requirements, practices and implementations that are sensitive to nature should be encouraged throughout economic activities that focus on production, distribution and consumption. As can be observed from the explanations, the basic philosophy of the Istanbul Metropolitan Master Plan is to remove and resolve the conflicts between the natural environment and the man made environment systems and to integrate relations between humankind and the natural resources, in order to provide a more sustainable future.

Planning, Reporting and Analysis
The planning, reporting and analysis of the master plan, firstly addressed the functional dimension and the structure of human ecology in terms of sectoral analysis, which followed the same approach used for natural structure characteristics and capacities. Synthesis and evaluations based on the analysis were made informing strategies and identifying areas of specific concern. Thus a foundation was prepared from which to present well informed sustainability driven solutions and outcomes. The legislation and the new arrangements required which constitute the tools for the management of the man made environment and the natural environment, are also contained in the report.

Issues undertaken in the context of socio-economic and spatial system, as the composers of the man made environment, are:

- Economic Activity - Industry, Trade and Services, Cultural Industries and Tourism Sectors
- Social Life - Historical Values, Housing and Quality of Life Sectors
- Functional Connections - Transportation and Urban Logistics, under the theme of

Conversely, issues undertaken in the context of ecologic system and life support systems, as the composers of the natural environment, are:

- Underground Structure (geology, geomorphology, hydrology, hydrogeology and natural hazard areas)
- Underground Resources (mining)
- Agricultural Resources (soil, climate and agricultural production)
- Forestry Resources (vegetation and ecologic structure)
- Environmental Problems (air, noise, water pollution, soil, and solid waste)
There are two basic determinants of the relations and the source of balance and conflict between socio-economic / spatial system and natural system and life support systems. These are, “demographic size” as a macro variable and “economy - ecology dilemma” as a political preference.

The type of relationship, between the system components determined in the system approach explained above, is of considerable importance in planning. This importance grows out of the necessity of stating the three basic differentiations in Istanbul, in a clear and definite methodological approach. After the sectoral analysis and synthesis processes are complete, what is then required is, explaining and determining the three factors highlighted below and presenting proposals to decision makers related to the management of these factors:

- Areas of Settlement
- Areas not suitable for Settlement (areas cannot be Settled)
- Areas suitable for Settlement

This opportunity (for the decision makers), can only be provided, by the evaluations that will be prepared in light of the analysis and the synthesis that are made.

In this context, through the analysis and synthesis of data, the settlement areas in Istanbul are determined via the threshold analysis as “areas suitable for new settlements” and “areas not suitable for new settlements”.

From these definite determinations, alternatives for priorities and the conditions of development in the areas that are suitable for new settlements are defined. These alternatives are also evaluated in order to analyze their advantages and disadvantages in this report, in order to provide the basis for the decision maker’s preferences.

2. GEOGRAPHICAL POSITION

Historically, Istanbul's location as the Gateway for north and south as well as east and west has meant that the city has become of strategic importance both nationally and internationally (Figure 1).
The topography of Istanbul provides a gentle and attractive geography with limited resources providing strong performance returns for a suitable settlement formation. Mountains slope northwards and southwards smoothly (Figure 2).

The settlement pattern lying under the southern slopes of mountains, downwards to the Marmara Sea enjoys sunshine, being protected by mountains from northern winds, the Bosphorus is regenerated by strong streams, energy is provided by local resources (Braun coal mines), vitality is gained from forests and water collection zones and air flow is supplied by natural thresholds (the Bosphorus, the Golden Horn, lakes, water resources, cemeteries, military zones, etc.), which restricts gradual expansion of urban sprawl (Figure 3).
Figure 3. Geographic and Elemental Characteristics

National Context
Turkey witnessed amazing growth in the second half of the 20th Century. Indeed, the population of Turkey increased from 21 million in the year 1950 up to 67 million by the year 2000 and within this period, Istanbul witnessed an increase in population from 1.1 million in the year 1950 to 10 million in the year 2000. Growth was not only limited to population with sector growth rates equating (over this period) to 325% for Turkey and 900% for Istanbul. With this growth came swathes of migrations from underdeveloped regions reflecting the relatively high population increase which took place in Istanbul. Indeed, despite attempts to curtail migration through regional development projects, migration of manpower still continues.

In accordance with steep population increase, rapid urbanization was also observed in Turkey. Consequently, 14% of the total population of Turkey resides in Istanbul and 32% of the economically active population of Turkey lives in Istanbul. Thus, 55% of trade volume of Turkey is realized in Istanbul, 38% of industrial enterprises in Turkey are located in Istanbul and 43% of the foreign trade volume of Turkey is managed by Istanbul.

However, past fame and present relative prosperity have left a legacy which has placed a strain on the natural environment which now requires drastic action in order to preserve the remaining resources.
2.1. METROPOLIS AND REGIONAL RELATIONSHIPS

The continuous expansion of the Istanbul Metropolis as a national growth pole has failed to take into account the demographic and socio-economic development differences with other significant settlements of the country. This has caused a lasting socio-spatial gap at metropolitan as well as regional and national scales. Whilst overgrowth of the Istanbul Metropolis endangers sustainability of the city in terms of natural and economic resources, rising production and service costs on the other hand hinder the cities position in terms of global competition. Therefore, in the system of competing metropolises, Istanbul requires strengthening structurally, excesses of the city core must be dispersed and urban cost reduced via engendering appropriate economies of scales based on a reasonable and successive decentralization policy.

Identification of Metropolitan Area and Metropolitan Regional Boundaries for Istanbul

The boundaries of the ‘Metropolitan Area’ of Istanbul reach from Silivri in the western extreme to Gebze in the east. The ‘Metropolitan Region’ on the other hand extends to Çorlu in the west, İzmit in the east and Yalova in the south (Figure 4).

Figure 4. Istanbul Metropolitan Area and Metropolitan Regional Boundaries (Source IMP 2005)
Definition of Sub-Regions
Boundaries of the ‘Functional Region’ (Figure 5) of Istanbul as
determined by provinces in relation to their functional linkages as well as
their involvements in spatial organisation policies and strategies at
national level include Kırklareli, Edirne and Tekirdağ in Thrace, Kocaeli,
Sakarya and Düzce in northern Çanakkale and Balıkesir in the south-
western Bursa with Yalova and Bilecik in the south-eastern parts of the
Marmara Region.

**Figure 5.** Functional Boundaries Source IMP 2005

Institutional Foundations for Regional Development
The western boundaries of the ‘Functional Region’ coincide with the
boundaries of the Level 2 NUTS Region ‘Western Marmara’ composed
of provinces Kırklareli, Edirne, Tekirdağ, Çanakkale, and Balıkesir. In the
east however, the Level 2 NUTS Region ‘Eastern Marmara’ also
contains the Eskişehir and Bolu provinces as well as Kocaeli, Bursa,
Bilecik, Yalova and Düzce provinces (Figure 6).

The Level 2 NUTS Region constitutes the basis for the demarcation of
the function and responsibility boundaries of the Regional Development
Agencies (RDA’s).

**Figure 6.** Level II NUTS Regions
The RDA’s are currently being established pursuant to the Law No: 5449 issued on 25.01.2006. When the central government adopts the polycentric development planning as a political principle, The Union of Municipalities of the Marmara Region and local representatives of the central government will constitute the institutional foundation for the commencement of regional development through the decentralization of Istanbul. The Regional Development Agencies, would also take their respective place in the process as soon as they are fully established. Local municipalities in the provinces, chambers of industry and commerce, professional associations of entrepreneurs and businessmen, NGO’s and academic institutions should perform their roles as integral parts of the collaboration framework.

In the process of decentralization of Istanbul, whereby the metropolis adjoins the local on a more concrete basis, the assessments and investigations on sub-regions and provinces need to be elaborated upon and projected into the future. Within this process, it is useful to sketch characterization profiles of the localities in order to further understand the diversity and integrity of the region. Sub-regional meetings in diverse localities are being carried out in cooperation with the ‘Union of the Municipalities of the Marmara Region’ in order to conceptualize local potentials.

When the region is viewed as a framework with the Marmara Sea located at the centre (Figure 7), two industrial and commercial development axes in east-west direction can be identified; the first one extending from Thrace to Adapazari in the north, and the other from Balikesir to Bursa in the south of the region. The west side of the framework that starts from Balikesir and extends into the Thrace over Çanakkale differs from other parts of the region with its ‘green’ pattern containing predominantly preservation areas, agro-industries, agriculture and animal husbandry. The eastern side of the framework is characterized by a harsh geography that does not ease allocation of economic activities, although it gets softer from Bilecik towards Adapazari.
The initial stance on this scheme in the context of decentralization of Istanbul and mobilization of the regional potential would be to preserve the green pattern that reflects a predominance of agricultural production in the west, whilst creating a vertical developmental priority axis in the east along Bozüyük – Bilecik – Adapazari. This would connect the two horizontal industrial and commercial development axes in the north and in the south. Such contemplation seeks to enhance the flow-motion from Istanbul to Ankara over Adapazari and Bolu with new destination possibilities towards Eskişehir and Afyon. Thus, the possible functional and spatial dispersion towards Anatolia could be improved for mitigating the over-concentration in Istanbul.

2.2. DEMOGRAPHIC CHARACTERISTICS

Unpredictable population growth is a key factor in the future development of the city of Istanbul. If necessary measures are not taken, it is estimated that at the current un-checked population growth rate, the population of Istanbul currently standing at over 12 million will increase to a staggering 22,037,990 by the year 2025. However, it is assumed that the population growth rate will steadily decline and reach zero growth in the year 2045 (Table 1). Thus, the population of Istanbul in the 100th anniversary of the Foundation of the Republic will be 16,888,671 and in the year 2025 17,396,595 respectively. The population range of between 16 and 17 million reflects an optimal size for Istanbul, which has to curtail the invasion of forests and water resource basins areas for urban expansion drastically in order to ensure future ecological-economical balance.
Table 1. Projected Population Growth of Istanbul

<table>
<thead>
<tr>
<th>Year</th>
<th>Un Checked Population Growth</th>
<th>Managed Population Growth with Zero% Growth Projection by 2045</th>
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<tbody>
<tr>
<td>2000*</td>
<td>10,018,735</td>
<td>10,018,735</td>
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<tr>
<td>2005</td>
<td>11,729,641</td>
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<td>2006</td>
<td>12,105,398</td>
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<td>2007</td>
<td>12,493,193</td>
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<td>2008</td>
<td>12,893,410</td>
<td>12,453,860</td>
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<td>2009</td>
<td>13,306,449</td>
<td>12,772,017</td>
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<td>2010</td>
<td>13,732,719</td>
<td>13,098,301</td>
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<td>2011</td>
<td>14,172,645</td>
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<td>2012</td>
<td>14,626,663</td>
<td>13,689,484</td>
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<td>2013</td>
<td>15,095,226</td>
<td>13,995,008</td>
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<td>2014</td>
<td>15,578,799</td>
<td>14,307,350</td>
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<tr>
<td>2015</td>
<td><strong>16,077,864</strong></td>
<td><strong>14,626,663</strong></td>
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<td>2016</td>
<td>16,592,916</td>
<td>14,906,026</td>
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<td>2017</td>
<td>17,124,468</td>
<td>15,190,725</td>
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<td>2018</td>
<td>17,673,047</td>
<td>15,480,861</td>
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<td>2019</td>
<td>18,239,201</td>
<td>15,776,539</td>
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<tr>
<td>2020</td>
<td><strong>18,823,491</strong></td>
<td><strong>16,077,864</strong></td>
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<td>2025</td>
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<td>2030</td>
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<td>20,367,423</td>
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<td>2050</td>
<td>48,476,480</td>
<td>20,367,423</td>
</tr>
</tbody>
</table>

3. ECONOMIC ACTIVITIES

Industry
Industrial activities have long been attracted to the Marmara region (Figure 8) and in particular Istanbul as it places them at the centre of largest market in the country with an abundance of cheap labour, easy access to raw materials, technical infrastructure and social facilities. Concurrently, however, agglomeration economies have moved in favour of a more decentralized economic model structure.
Throughout the 1980s, industrial decentralization has been a key policy objective aimed at providing a more balanced approach to development throughout the country. Therefore, it is proposed that improvement in the structure of the industrial sector in Istanbul by stimulating innovative and high value-added industries is required. This will increase the competitiveness of the sector, while rehabilitation and reorganization strategies should be developed for the existing industrial activities. In this respect, Istanbul has recorded a noticeable increase in the service sector, which is also expected to continue in the future (Figure 9).
3.1. THE INDUSTRIAL SECTOR IN THE ISTANBUL METROPOLITAN AREA

The aim of the sector studies undertaken is to analyze the development process of the industrial sector with its spatial dimension and to determine the potentials, limitations and trends in the Istanbul Metropolitan Area (IMA) and its surroundings. Due consideration is given to the industry in recognition of its role as a significant contributor to the local and national economy: In Istanbul, throughout the 1980s 52.2% of the total number of medium and large size industrial plants and 40% of the total industrial employment in Turkey was located in the metropolis.

The provinces of the Marmara Region are the most developed in the country with Istanbul, Kocaeli and Bursa being the main industrial agglomeration areas. Decentralization policies have a stimulating effect on the neighbouring provinces of Istanbul with their share of industry increasing. In terms of planned industrial development, most of the Organised Industrial Zones (OIZs) in the provinces of the Marmara Region are yet to reach their full capacities. Therefore, a re-evaluation of location criteria and existing problems of OIZs is required in order to attract potential investors.

The aim of establishing OIZs is to provide planned industrial development and to direct industrial investments to less developed regions in order to reduce interregional inequalities. OIZs in the IMA share common problems such as transportation and accessibility, high cost of initial investment and high cost of infrastructure, etc.

In order to provide a snapshot of the industrial profile of Istanbul, a number of key industry observations are illustrated below:

- Industrial employment accounts for 32% of the total active population in Istanbul
- 76% of total industrial employment is located in the west and 24% in the east of the metropolitan area
- The textile industry accounts for 43% of total industrial employment, whilst the establishments of this industry makes up 38% of industrial establishments
- Unbalanced spatial distribution of industrial establishments and employment capacities can be easily observed in the figures
- Large industries are located mainly in Tuzla in the east, and in Küçükçekmece in the west, while the number of establishments is increasing and space diminishing in the central districts.
**Key Intervention Areas**

Istanbul's unique location, the geographic configuration, natural thresholds, and the earthquake risk necessitate the establishment and administration of a sustainable and habitable population size. Equally, continued economic growth at national and region levels will be attained by increased productivity and efficiency in the economic sectors. In addition to estimated developments in services, cultural industries and the tourism sector, it is also anticipated that the reorganization of industrial production sectors within the city will contribute to the enhancement of quality of life. In order to increase the competitiveness of services, support is required to assist in their transition into advance technology based enterprise sectors.

A strategy is proposed for the decentralization of the industry in Istanbul. Within the strategy, the potential of the industries in the surrounding areas of Istanbul and its region should be evaluated, while mobilizing the local dynamics that stimulate balanced growth outside the region. Conditions for decentralization should be developed for the metropolitan as well as the surrounding areas. Priority should be given to the types of industries that are disadvantageous by location (e.g. within the watershed or central location) and to those that create pollution and are low in value-added production.

The evaluation of features, potentials and limitations of industrial activities in Istanbul identifies three main intervention areas for the Metropolis:

1. ‘Organized Industrial Zones’ should be reorganized in order to realize their full potential in order to alleviate existing problems (İkitelli, Tuzla, Dudulu, Beylikdüzü, Tekstilkent).

2. ‘Functional Transformation (Regeneration) of Industrial Areas’ are to be determined especially for the industrial activities located in central zones, which have expansion limitations and are in conflict with surrounding functions as well as loosing their viability in terms of increasing land values. The industrial areas in Zeytinburnu, İkitelli Axis, Bayrampaşa, and Kartal should be considered as potential transformation areas from industry to service activities.

3. ‘Rehabilitation of Industrial Areas within existing boundaries’. Policy envisages no new investments but allows betterment actions in these areas. The neighbouring regions of Istanbul should also be taken into consideration from the perspective of the metropolitan region. Gebze and Çerkezköy are the neighbouring districts of Istanbul in the west and east. These districts display not only the advantages of being close to IMA and consumption markets, but also have OIZs which are yet to fully utilise their capacities. Providing transportation and logistics facilities to these areas will accelerate the agglomeration economies for industrial establishments. Therefore, these regions should be planned and developed as industrial regions with problem solving intentions.
Key Principals and Strategies for Industrial Development

The key principals and strategies pertaining to industrial development are to:

- Encourage high-tech and high value added type industries for increasing the competitive power of industry on a global scale
- Support SME’s which potentially accelerate the transformation to high-tech and high value added type industries
- Increase impacts of Techno Parks in the Metropolitan region qualitatively and quantitatively
- Compose incentives for implementing High Technology Research Zones
- Strengthen collaboration between industry and university
- Support decentralization of industry from the Istanbul Metropolitan Area in order to mitigate the disadvantages of industrial agglomerations
- Promote local entrepreneurs in industrial zones outside of the IMA in order to diminish the pressure of industry on Istanbul
- Compose incentives to saturate the capacity of Organized Industrial Zone (OIZ) for decreasing imposition of industry on IMA
- Provide incentives for highly competitive industrial sectors by assessing their capacity development
- Reorganize industrial areas for environmentally friendly development through increasing the level of the quality of urban life

(Figure 10)

Key Principles and Strategies Pertaining to Spatial Development

The key principals and strategies pertaining to spatial development are to:

- Compose incentives to saturate the capacity of OIZs on both sides of the IMA
- Promote development of OIZs close to the boundaries of the IMA in order to create industrial buffer zones
- Transform industrial areas that are located (especially) in the central zones
- Determine industry areas that are located in the watershed boundaries as rehabilitation areas within their existing boundaries
- Provide incentives for OIZs located in the IMA in order to utilize their full capacities
Figure 10. Industrial and Spatial Developments
3.2. TRADE AND SERVICES

Engagement and Responsibility
Engagement in the assessment of commercial, financial and economic potentials of Istanbul as well as quality upgrading in service production and supply operations is of key importance to the future development of Istanbul. In this respect, a key focus area is social services encompassing education, healthcare, culture, administration, entertainment, recreation and sports activities and other available amenities. These services are directly associated with life quality and are of great relevance to (for example) the young generation in Istanbul who deserve to be adequately equipped and supported in order to respond to the mental and physical demands of the 21st Century.

Current Position
The State Institute for Statistics (SIS) states that there are 10,018,735 people living in the Istanbul province according to the general census carried out in the year 2000. The total number of the workforce is 3,471,400 equating to an activity rate of 0.34. Approximately 2,066,955 persons (59% of the workforce) are employed in the services sector. By the year 2025, it is projected that the activity rate in Istanbul will rise to 40% with the services sector accounting for 80% of workforce activity. An additional source of statistics, the 2002 workplace census which too was carried out by SIS, reflects employment in services sector as 1,090,985 for the year 2002. The workplace census does not take into account unregistered employment, thus explaining the disparity between the two censuses.

In terms of National Gross Domestic Product (GDP), in the year 2000, Istanbul accounted for 22.1% GDP. In the same year, the province achieved a development ratio of 62.9%. The services sector together with the construction sector constituted a very high portion of the provincial GDP in 2000, that is to say 71.5%.

Service Sector Overview
The quality, efficiency and affectivity in providing business services, which cover a wide range of multiple transactions between and among the companies and enterprises, is crucial in terms of strengthening Istanbul and the regions position at a global level against global competition. These services include banking, insurance, entrepreneurial management, real estate and investment consultancy, advertising, software development, juristic consultancy, architectural design and engineering respectively. In addition, the establishment and promotion of sub centres at district and neighbourhood levels, will encourage the decentralization process of the Central Business District (CBD) of Istanbul. Selected localities such as Kağıthane, Alibeyköy, Bakırköy, İkitelli and Silivri on the western wing (European Side) along with Haydarpaşa, Üsküdar, Kadıköy, Kartal, Pendik and Tuzla on the eastern wing (Anatolian Side) in Istanbul have been identified as possible future
CBD’s. Through this multi-central restructuring approach, it is envisaged that those selected locations are installed with vital functions and amenities to provide specific and differentiated services for broadened catchments area.

**Sectoral Specifications**

With reference to the services offered to individuals and to companies, service activities can be categorized in two groups, namely the Societal and the Business Services:

**Societal Services** - Refer to social infrastructure comprising of education, health, recreation and sports, culture and administration, etc., serving the general public directly and other sectors indirectly. Its sufficiency, quality and accessibility have a strong influence on quality of life. Studies on districts of Istanbul have shown that the provision of social services in residential areas is insufficient with respect to person-per-square-meter standards.

**Business Services** – Refer to advanced services (Finance and Management / Decision Units) and advanced production services serving also the former, such as property investment consulting, legal consulting, accounting, software development, advertisement, engineering, architecture, research and development activities are key components in the formation of the central business district (CBD) and play a significant role in the emergence of the international inter metropolitan network at a global scale. Therefore, the fields of activities outlined in this section have been identified for further spatial analyses.

Surveys carried out in 6180 advanced services companies and management sections of companies in the production industry have illustrated that 1/3 of the companies in the business services were planning to increase employment in the near future. Only 2% of the companies with their production and management units at the same location were planning to move either one unit to some other location.

**Spatial Tendencies: Employment and Current Centres Distribution**

There are two key areas to consider in terms of addressing citywide imbalances, they are the imbalance between European and Anatolian Istanbul and dominance of the Central Business District.

*The Imbalance between European and Anatolian Sides* - The analysis of the services sector in the Istanbul Metropolitan Area by districts and changes in the period 1992–2002 show that there is an uneven distribution of the services sector between the European and Anatolian Sides.
Continuing dominance of the Central Business District - Although there has been an overall increase in the services sector on both the European and Anatolian Side within the stated period (Figure 11), data from 2002 suggests that districts covering the CBD employ 1/3 of the total of the services sector. The Şişli district has the highest services employee ratios. In addition, the districts of Kadıköy, Beşiktaş, Eminönü and Beyoğlu support high numbers of services employees (Figure 12).

All districts apart from the Adalar (Prince Islands) have registered an increase in services employment in the period of 1992–2002 (Figure 13). Whilst employment rates in the periphery have been lower than the central areas, they have none the less witnessed significant increases in services sector employment. The districts of Büyükçekmece, Küçükçekmece and Bağcılar districts in the West and Sultanbeyli,
Beykoz, Kartal, Ümraniye and Pendik in the East are all credible examples in this respect. The increasing rate of employment in the Historical Peninsula and Beyoğlu is below the centre average for Istanbul whilst Şişli, Beşiktaş and Kadıköy have witnessed increases in excess of the centres average. Although it is evident that there has been a significant increase in the rate of employment in the periphery for the period 1992-2002, it is not possible to confirm a decentralization trend associated with the CBD.

**Figure 13. Total Labour Force Residing and Working in Districts (1992-2002)**

![Graph showing total labour force residing and working in districts from 1992 to 2002. The graph displays data for various districts, with bars indicating residents and workers.]
According to the results of the 2006 Land Use Survey, the surface area of Services is 15,565,934 m² and the number of companies in this area totals 115,072. In addition, Shopping Malls have spread in the Metropolitan Area during the last 10 years; the distribution of these can be seen in figure 14.

**Figure 14. Distributions of Shopping Malls**

<table>
<thead>
<tr>
<th>Area (thousand m²)</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–50</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td>51–100</td>
<td>13</td>
<td>50</td>
</tr>
<tr>
<td>101–200</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>201+</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>26</td>
<td>100</td>
</tr>
</tbody>
</table>

**Structural Transformation**

In order to efficiently manage the future structural transformation of Istanbul and to maximize outputs, a number of strategies have been identified as follows:

- In transforming Istanbul from an industrial city to a metropolis with a weight on services sector, employment in industry should be kept constant while opportunities in the services sector should be promoted in order to stimulate and raise international competitiveness. It has been projected that the activity rate of the services sector will rise to 40% and by the year 2025 will account for 80% of the total employment ratio.

- Efficient functionality of the services sector in the spatial organization of the metropolitan area is crucial. Therefore, polycentric urban development is necessary. Principally, development should be dispersed throughout the metropolitan area through centres, sub-centres and focal points.
• Advanced Centres should be developed for improving the position of Istanbul in the ranking of global metro poleis and achieving the status of a regional strategic metropolis. ‘Advanced’ stands for being in harmony with the dynamics of international activities and linking to economic global urban networks. Attractive centres with advanced services should be built for European and other global finance and management services. These centres should dispose of fast communications and transportation infrastructure for international access.

• Development of information economies should be supported. R&D opportunities of the universities in Istanbul with the participation of the private sector should be increased. Thus new opportunities for application of scientific knowledge should be created. Emerging sectors from these activities should be utilized as nuclei for the establishment of new centres. In this context health sector and techno parks are being considered.

• Sustainability parameters and quality of life define modern service standards and spatial standards. In this framework, accessibility to societal standards should be increased, nature should be protected and healthy living environments should be created.

Services Employment and its Distribution into Districts by the Year 2025
Scenarios have been developed for three different annual growth rates for the projection period of 2000 – 2025. While the first scenario predicts a 4% growth rate and disruption of the EU-Membership process already in progress, the other two scenarios predict 5% and 6% growth rates with continued EU-Membership progression, being normal and optimistic respectively.

In addition, possible increases in public services employment resulting from a possible increased demand arising from the progress in GDP/c have also been calculated and results have been calibrated accordingly.

In the worst-case scenario, the total increase in the services sector would be 40.5% and total employment of 2,581,530 persons. On the other hand, the best-case scenario predicts a rise of 52.1% and employment of 3,208,361 persons. Normal scenario expectations would result in a 46.6% increase and 2,879,344 employees, respectively (Figure 15).
Proposed Hierarchy of Centres
A hierarchy of centres in Istanbul is proposed with a remit of providing support in establishing the foundations and development of a polycentric urban structure on the basis of projections and predictions. The proposed hierarchy is dependent on a number of influences effecting services on national, regional and metropolitan scales (Figure 16). In addition, the tendency of constituting new centres, which is becoming more important in the globalization process, is considered as a major criterion. In this respect, the proposed hierarchies of centres in Istanbul come under three ranks of ‘Advanced Centres’, ‘Sub Centres’, and ‘Pull Centres’.

Advanced Centres (Centres of High Order Services)
These are the linkages of Istanbul to the global metropolitan networks. They claim to be attraction centres for EU and global finance, management and other advanced services. There are different advanced services under consideration for the new centres. Equally, the Central Business District (CBD) and Surroundings will benefit from the Advanced Centre model. The CBD extends from the historical peninsula to Maslak along the Büyükdere axis. Although it is commonly considered as a uni-polar centre, it is structurally divided into two:

*Historical Centre* - The Historical Peninsula-Beyoğlu-Şişli-Besiktas axis is developed as the spine of the conventional urban pattern. It harbours finance, management and advanced services. Historical Centres play the ‘locomotive’ role in the economic attraction of the metropolis, as can be seen in the comparative studies on metro poleis in the EU. Thus, without disturbing residential use and being sensitive to the surroundings, the allocation of advanced services and functional diversity should be encouraged in the historical centre.
**Büyükdere- Maslak** - This area has different peculiarities as part of the CBD. It has developed virtually spontaneously in an ‘unplanned / planned’ manner as a ‘prestige’ centre. This is a central area where advanced services are concentrated. However the continuing growth is characterized by oil stain type of development. Therefore this developing centre needs ‘to be spatially rehabilitated’. Büyükdere- Maslak and Kağıthane should be considered together in a network for orienting the CBD development. This would be the approach for preventing uncontrolled development to the North, where natural resources are located, and for diminishing the pressure on the Bosphorus.

**Advanced Centres for decentralization of the CBD in the East and the West**

*Kartal in the East* - This area has the potential for becoming an advanced centre, due to an industrial base already undergoing transformation, new transportation projects, and high connectivity with the European Side via sea-transport, proximity to the Anatolian Airport of Istanbul (Sabiha Gökçen) and proximity to the Gebze Industrial Zone.

*Yenibosna Basin Yolu in the West* - This area is proposed as an advanced centre depending on its connectivity with the European Airport (Atatürk) and similar specifications.

**Service Nodes**

These are specialized or mixed used economical development nodes (Zeytinburnu, Bayrampaşa Wholesale Market and surroundings, Giyimkent, Tekstilkent); or office and trade nodes placed outside the existing centres (Altunizade, Kozyatağı, Kavacık).
Figure 16. Existing and Proposed Business Districts
**Sub and Pull Centres**

*Sub centres* are trade and services centres serving the population in the vicinity. There are two grades of sub-centres:

- **Grade 1 Sub-Centres** - These are regional sub-centres on both sides of the Bosporus (Bakırköy-Bahçelievler, Kadıköy).

- **Grade 2 Sub-Centres** - These are district centres based in lower grade quarter centres. Proposals to establish centres at this level are only made when there is no established sub-centre in the given quarter.

- New pull-centres and development areas are proposed on the European and Anatolian Sides for the development of a polycentric metropolitan region. The utilization of clusters and accumulation economies for innovative sectors is proposed.

Development of the service sector should be restricted in forest areas and in locations posing a threat to water-basins. For this reason, due proximity to the forest areas, development of office areas for example at Kavacık located at the Anatolian Foot of the FSM Bridge, as in Maslak, should be prevented. Furthermore, the centre of Ümraniye is located adjacent to a boundary of ‘protected natural resources’. Sultanbeyli and Samandıra are located within forest areas and therefore development of trade and services in these settlements should be restricted.

### 3.3. CULTURAL INDUSTRIES AND CULTURE-TOURISM

Cultural industries, cultural/historical heritage and tourism are three closely related components that nurture and trigger the development of one another. The cultural industries open up opportunities for the development of the milieu that feeds cultural tourism, provide the means for the revitalization of run-down, deteriorated neighbourhoods and re-use of historic building stock including industrial heritage. They also play a crucial role in the ‘branding’ of cities and thus contribute to their capacity to become major destinations for cultural tourism. Additionally, they help to create an urban environment in which the tourists wish to stay longer and make return visits to the city.

**Cultural Industries**

Cultural industries generally associated with creative sectors, are considered to be among the most strategic sectors and capable of increasing the competitive power of cities vis-à-vis the dynamics of globalization. Thus, the Cultural Industries and Culture-Tourism Research Group carries out studies to explore the potential of these sectors in Istanbul and to develop strategies aimed to maximize their application as a driving force in re-profiling Istanbul and contributing towards a healthier structure in economic, social and spatial terms.
In today's global economy, cities compete with each other in order to attract passing capital and investments, highly qualified mobile labour and wealthy tourists. In this rather fierce climate of competition, cities develop strategies to re-structure their economies in which cultural industries or creative sectors are given a prominent role (Figure 17). In other words, cultural strategies play a significant role in the economic development and regeneration of cities and regions.

**Figure 17. Creative Industries as Economic Drivers**

Cultural industries include sectors which deal with the manufacturing, distribution and consumption of those products the economic value of which derives from their highly symbolic cultural values. Cultural industries play a crucial role in enhancing the image of cities making them attractive places for living, working and visiting. Furthermore, they contribute to the creation of a city climate conducive to the nurturing of creativity and individual initiative. Due to their low start-up costs and flexible structures they support the establishment of small and medium size local companies and play a crucial role in creating employment opportunities for local people. In this way, the cultural sector contributes to the development of the local economy and helps to ease economic inequalities and social tensions.

Within this context, cultural industries are amongst the sectors which have the highest priority in the development process of Istanbul. After a research and selection process to identify the creative sectors most likely to administer the locational development decisions for the Istanbul Metropolitan Area by their crucial importance, four sectors, have been identified. The strategies developed on these sectors are as follows:
• The Film Sector in Istanbul - The Post-Production Centre of the Region
• Culture and Art Festivals in Istanbul - The City of Authentic, Branded, and Traditional Festivals.
• The Fashion Design Sector in Istanbul - From the City of Textile to the City of Fashion Design.
• The Software Sector in Istanbul - The Software City which takes its creativity from its Young Population.

Developing the cultural industries by creating cultural focal points and constructing local development processes via the medium of ‘culture’, are among the strategies that are adopted by many cities in the world. The key locational indications of Istanbul are related firstly to the areas known as the ‘cultural triangle’ Figure 18) and secondly the area beyond the ‘cultural triangle’.

The cultural triangle - rests in a large area at the centre of the metropolis and includes the districts of Eminönü, Beyoğlu, Beşiktaş, Şişli and Kadıköy. The cultural triangle represents an infrastructure ready for the agglomeration centred spatial strategy of the cultural industries. Thus, it is crucial to conserve the unique structure of this cultural triangle; feeding the creative milieu and increasing its capacity.

**Figure 18. Cultural Triangle**
Beyond the Cultural Triangle - relates to the areas outside of the cultural triangle and the heart of the metropolis. Figure 19, illustrates the cultural industry preferences between areas located inside and outside the cultural triangle.

**Figure 19. Spatial Preferences of Cultural Industries**

The search into different areas located on the periphery of Istanbul is also of importance due to the need to service the neighbourhoods in the surrounding locale. It is observed that the spatial preference of the cultural industries does not have a static structure and clusters are expanding by 'springs'.

The agglomeration of the cultural industries includes a period of time- as well as all the agglomerations- since the formation of the sectoral and spatial clusters require a multi directional accumulation process. Therefore, the development of the cultural sectors outside of the cultural triangle has to be viewed as a long term project.

**Tourism**

Like in many developing countries, tourism constitutes one of the driving forces of the Turkish economy. The World Tourism Organization (WTO) anticipates that tourism will continue to be one of the most important sectors of the 21st Century since 1.5 million tourists are expected to realize trips to foreign countries. Whilst Turkey has witnessed strong tourist sector growth over the last decade, Istanbul has witnessed more steady growth (Figure 20).

The studies indicate that preferences have diversified in the developing tourism market with tourists now preferring the 'authentic' and the 'rare' thus following the trend of changing consumption patterns. Indeed, historical and cultural heritage and cultural activities are among the most important reasons for travelling with 37% of all international travels including the component of culture.
In this competitive environment, tourism potentials of Istanbul have to be evaluated by taking these new characteristics into consideration and tourism development policies have to be organized on ‘culture-led strategies’. Istanbul has unique historical, cultural and natural values, yet the city struggles to apply this potential for the development of the tourism sector. Much of the hotel bed capacity remains idle, especially in the winter. Therefore the main objective is to extend the duration of tourist occupation and strive towards year round tourism.

**Conservation Areas**

Since 1974, 204 sites have been classified (55,940 hectares) in Istanbul as conservation areas (10, 3% of Istanbul Metropolitan Area). 131 of these sites are ‘natural sites’ and they constitute 70, 6% (39,497 hectares) of the entire conservation areas in Istanbul (Figure 21). The ‘archaeological sites’ is the second largest category with 27 sites. This is followed by ‘mixed sites’ and ‘urban sites’ with 25 and 20 sites respectively.

Yarımburgaz cave which dates back to the pre-historical period is one of the most important natural sites in Istanbul. Both banks of the Bosporus are also registered as ‘Natural-Historical Sites’. Furthermore, the entire Historical Peninsula is classified as a ‘Historical-Urban Site’.

Since the early 2000s, NGOs, central and local governments as well as many other public institutions have been paying more attention to conservation issues. Rehabilitation of historic towns and the re-use of historic building stock have occupied a central position on the planning agenda. Despite this positive outlook the risks threatening the conservation implementations are still valid in Turkey. Thus, planning...
institutions have to be restructured according to international conservation principles and the link between theory and practice has to be strengthened. Furthermore, a planning culture has to be promoted to include a greater cross section of society.

Figure 21. Conservation Areas

Cultural Industries, Culture and Tourism Strategies in Istanbul Metropolitan Area
Strategies proposed by the Cultural Industries and Culture-Tourism Group (Figure 22) include the following:

- Promoting Istanbul as a Global Tourism Destination through Cultural Heritage and Museums
- Promoting Istanbul as a Global Tourism Destination through International Festivals of Culture and Art
- Promoting Istanbul as a Global Tourism Destination through Congress Tourism
- Creating a ‘Happening’ City
- Expanding Tourism Activities throughout Istanbul ‘Attract and Disperse Strategy’
- Expanding Tourism Activities throughout Istanbul: ‘Blue Escape and Green Escape Strategy’
- Re-thinking the Hotel Bed Capacity of the City
Figure 22. Cultural Industries, Culture and Tourism Strategies in Istanbul
4. SOCIAL LIFE SECTORS

4.1. HISTORICAL VALUES

During the fast urbanization period post 1950’s, local authorities have been unable to supply land with urban services and, the number of housing units constructed annually by the private sector in compliance with building codes has been below 10 units per 1000 population. As a consequence, illegal/informal housing has started to infiltrate the water basins, forests and high quality agricultural land. In addition, being situated in a dangerous seismic zone, unauthorized residential areas in geologically hazardous zones creates serious problems for the city.

4.2. HOUSING AND QUALITY OF LIFE

Identifying secure areas against earthquake for prospective residential developments, integration of natural, cultural and historic assets in neighbourhood designs are central in defining goals and strategies geared towards elevation of life quality in settlement and housing areas. Within this framework a two pronged investigation was under taken pertaining to ‘structure analyses’ of randomly selected buildings as samples, which are constructed for residential use and their ‘life quality assessment’. The overall aim of these analyses was to identify general characteristics and the life quality level of diverse residential areas in Istanbul.

Parallel to these quality investigations further studies are carried out in order to further identify illegally developed settlements, areas requiring rehabilitation and sanitation, over populated districts, environmentally degraded locations and other problem areas which are situated in water supply resources and river basins, forests, agricultural land as well as geologically inadequate land slide vicinities. Based on conclusions derived from those studies, suitable potential areas along with restructuring needed in physically weak and unsanitary areas are identified and amply evaluated for formulation of strategies giving orientation to the development of the housing sector and meeting residential needs.

Housing and Quality of Life in Residential Areas

The quality of life in Istanbul like other metropolitan cities around the world is closely related to the physical quality of the residential environment as well as the social and economic environment. Housing indicators such as the high rate of population growth, unbalanced income distribution and low income per capita, all point to the existence of a housing problem in Istanbul.

The research into residential areas and housing in Istanbul has concentrated on two aspects of quality of life, namely quality of the physical environment in residential areas and quality of life with respect
to social and economic indicators and the satisfaction of the inhabitants. The first aspect was analyzed using indicators related to the physical environment, such as the neighbourhood densities, construction intensity (Floor Area Ratios (FAR) and Building Coverage Ratios (BCR), building heights, land prices, legal/illegal developments, and housing developed on water basins, forest land, and geologically hazardous zones etc. For the first phase of the plan, the existing census data was used whereas for the second phase data was collected on sites that were randomly selected according to a sampling design based on land values and densities. The second aspect was analyzed using a household survey that was carried out in randomly selected housing units.

**Strengths of Residential Areas**

One of the basic characteristics of the residential areas in Istanbul is that they are densely populated and the building densities are comparatively much higher than metropolitan areas in Europe. Though this high construction intensity leads to a low quality of life especially in the low income residential areas, it has created a comparatively compact city. Owing to its location on a unique and sensitive natural environment, the compact nature of Istanbul should be viewed as a strength and maintained in the future.

Another important characteristic of the city, as a result of its compact structure is the proximity of different land uses. These land uses include a variety of residential areas of different density and land values as well as mixed uses of residential, business and commercial activities.

These overlapping social and economic activities can be viewed positively in terms of increased energy efficiency, reduce transportation costs and reduced pollution. Conversely, each area still requires extensive betterment of management. Existence of a historic housing stock is also an important asset. This housing stock which is of valuable heritage significance should be carefully nurtured and turned into a strength.

The existence of a strong experienced and dynamic construction sector is also an important asset and should be evaluated as a strength. Thus, if properly motivated and directed, the housing sector will be able to develop higher quality and more affordable dwelling units and residential areas.

**Weaknesses of Residential Areas**

Widespread illegal/informal residential areas, especially those on nature sensitive and geologically hazardous zones are the primary weaknesses of the metropolitan area. The forest areas and water drainage areas that provide the drinking water for the city have been placed under pressure due to the impact of illegal developments.
Another important problem in relation to the informal residential areas is their high building intensities. These areas, with their high population densities do not have adequate land necessary for urban services and public facilities such as schools, playgrounds, parks, health services etc.

**Figure 23.** Mass Housing High Rise – Ümraniye Sinan Neighbourhood

Traditional and formal residential areas in the city have been increasing in density by absorbing existing vacant land around them. Unfortunately, as a result the water drainage lines that were preserved as green areas in the past are being turned into residential sites which pose a serious threat for the future of the city. This weakness was further exacerbated in the 1990's through incentives given by the government resulting in the spread of mass housing projects (Figure 23). These residential sites have largely been developed for speculative purposes and therefore lack the necessary design qualities to develop their identity. The residential sites are usually, either a collection of identical high rise blocks or a collection of identical, single-family and densely built dwelling units (Figure 24/25).

**Figure 24.** Formal/Planned Residential Area Low Rise – Bakıköy Şenlik Neighbourhood

**Figure 25.** Informal/Upgraded Residential Area Low Rise – Beyoğlu Fetihtepe Neighbourhood
The single-family residential sites create additional problems due to their low-densities and sprawl type developments on the north of the city where forest and water drainage areas exist. Another feature of these residential sites is their creation of gated communities that pose a serious threat to the social fabric of neighbourhoods and may lead to further social fragmentation of the city.

**Key Goals for Residential Areas**

The main goals for the residential areas of Istanbul have been identified in parallel to the basic goals of the Habitat Agenda of the United Nations Human Settlements Programme working towards:

- Health and quality of life
- Environmental sustainability
- Economic and social vitality
- Participation in planning and management

These goals have been central in the analytical survey of the existing problems and the identification of the vision for the future of housing and residential areas in Istanbul.

**Vision for Residential Areas**

The vision statement for the future residential areas of Istanbul is the result of a process of workshops, where representatives of local authorities, non-governmental organizations, professional chambers and local government were invited to participate in identifying the strengths, weaknesses, opportunities and threats of Istanbul and to develop a common vision.

The vision is to create residential areas that:

- Provide opportunities for social and economic development
- Are secure against all types of natural hazards
- Are sensitive to natural, historical and cultural values
- Integrate inhabitants with the city
- Promote a sense of identity
- Reintroduce the neighbourhood concept
- Evaluate the historic housing stock
- Can compete with metropolitan cities of developed countries
- Give priority to public transport and pedestrian movement
- Provide quality of life
Spatial Surveys and Spatial Projection for Residential Areas
The spatial projection for residential areas is the result of various analytical surveys in which residential areas have been classified with respect to their various characteristics such as land values, densities, urban pattern and whether they are located on nature sensitive land or not. As the primary aim is to improve the life quality in the most problematic areas, surveys have concentrated on the identification of these areas within the Metropolitan locale.

The surveys have identified high density irregular developments located on geologically hazardous areas, watershed areas, forest land, etc as well as irregularly developed residential areas outside the nature sensitive localities which have the capacity to attract additional population.

Risk Analysis Maps (Figure 26) show the residential areas that are located on geologically hazardous land. Risk Analysis I shows the construction intensity (FAR) of planned residential areas and, Risk Analysis II illustrates the construction intensity (FAR) of unplanned (irregular) residential areas on geologically hazardous land. Both maps aim to identify the areas at greatest risk in Istanbul, whilst Figure 27 outlines the spatial distribution of residential areas.
Figure 26. Risk Analysis I and II

Risk Analysis I

GEOLOGICALLY HAZARDOUS AREAS the DISTRIBUTION of PLANNED RESIDENTIAL DEVELOPMENT AREAS

Risk Analysis II

GEOLOGICALLY HAZARDOUS AREAS the DISTRIBUTION of INFORMAL RESIDENTIAL DEVELOPMENT AREAS
Figure 27. Spatial Distributions of Residential Areas
As a result of these surveys the most problematic residential areas in Istanbul Metropolitan Area have been classified under four groups and development policies have been identified for each group. They are:

- Residential areas where given densities must be capped.
- Residential areas where priority is given to rehabilitation and increase in population density where applicable.
- Residential areas where priority is given to rehabilitation and relocation where necessary.
- Residential areas where the legal status in relation to sensitive land is applied.

These crudely defined problem areas are aimed to assist the policy makers in identifying the basic planning priorities and development strategies related to the residential areas in Istanbul. Spatial projections for residential areas are illustrated in figure 28. Further future detailed analysis to be carried out by the Housing and Quality of Life Working Group within the Istanbul Metropolitan Planning Office together with the help of the on site surveys and household surveys will provide more comprehensive recommendations.
Figure 28. Spatial Projections for Residential Area
5. FUNCTIONAL CONNECTIONS

In the Metropolis of Istanbul, in the last quarter of the century, where different income groups with diverse cultural and educational background live, a two-fold population growth as consequence of regional disparities in Turkey has been witnessed. The result being rapidly emerging new settlement areas, business centres production plants and employment possibilities. Nevertheless, transportation systems have failed to keep pace with such a drastic demographic and structural change. Therefore, traffic is the top priority issue on the metropolitan agenda requiring immediate and radical action for long term solutions.

5.1. TRANSPORTATION

In today’s present climate, transportation and traffic congestion are of major concern for Istanbul. Due to a lack of investment, incorrect implementations and uncoordinated decisions, transportation in Istanbul is under developed and insufficient. Since all activities in the city are related in one way or another to the transportation system, the status and the capacity of the system is mirrored throughout the city as a whole.

As witnessed in many other cities throughout the world, new highway investments alone are not efficient solutions for addressing transportation problems. The control of existing systems (Figure 29), the management of transportation demand and reliable public transportation system should be restructured to maximise efficiency accordingly.

A city such as Istanbul which is encountering problems in account of an insufficient infrastructure and increasing population should be supported by reliable public transit instead of increasing highway investments. In addition, efficient policies concerning marine and rail transportation would decrease private car usage.

Strengths, Weakness, Opportunities and Threats

The strength of the transportation system in Istanbul derives from its geographic location and opportunities provided via marine transit. Conversely, the very existence of authority conflict with multi-administrative units together with an insufficient transportation infrastructure (especially railway infrastructure) is key weaknesses of the transportation system in Istanbul.
Strengths of the transportation system are:

- The potential of marine transportation from the geographic location of Istanbul
- The city is located on the Anatolia-Thrace and Asia-Europe links which are effective for territorial and intercontinental relations
- The Marmaray Rail Tube Tunnel will provide the integration of city transportation as well as the railway network between other cities and continents
- The new railway project between cities and continents will provide an economical contribution to local transportation.

Figure 29. Current Linkages
Weaknesses of transportation are:

- Existence of authority conflict with multi-administrative units
- Unplanned and highway oriented developments (Figure 30)
- Insufficient infrastructure (especially railway infrastructure)
- Insufficient opportunities for use of marine transportation
- Failing to provide integration for public transportation modes and to develop related service facilities
- Inefficient usage of highway infrastructure for public transportation
- Inefficiency in demand management.

**Figure 30. Road Network of Istanbul**

Opportunities for transportation are:

- New developments concerning strategic land use plans and thereby considering the interaction of ‘land use-transportation’ for future developments
- The potential existence of marine transportation
- The benefits anticipated from the development of extensions of PAN-Europe 4th and 10th Railway Corridors
- The efficient usage of highway infrastructure for public transportation.
Threats to transportation are:

- Unplanned implementations and interruptions during the planned development period
- Because of the unplanned developments in the past, failing to prevent the urban expansion towards the north of Istanbul, life support systems such as forest areas, water basins as well as potable water dams have been damaged
- Interruption in and delays in the construction program of the railway system
- The land use development of the city was uncontrolled and inconsistent with public transportation in the past resulting in a threat for the future
- The damage to areas of outstanding natural beauty and historical places.

In taking a solution-based approach, it is important to create a new transportation authority working in coordination in order to prevent ‘authorization chaos’ among the administration units of the city.

**Plan Targets and Objectives Transition Process**

It is possible to evaluate the solutions to the transportation problems of Istanbul in two parts. The first part is the implementation of a well-planned transportation system in the future. The second part is that, as the transportation system is improved as planned, measures should be taken for increasing the quality of life.

To develop an appropriate city transportation system, well balanced land use planning, improvement of public transportation and the discouraging of private car usage should be taken into consideration as a whole. However, the development of reliable public transportation has the utmost priority. The reason for this priority is that it is impossible to reduce private car usage without providing efficient public transportation. Equally, transportation problems can not be solved without balanced land use.
The backbone of public transportation should be the rail-oriented transit (Figure 31). It is anticipated that the railway network should reach up to 300-500 km. However, even a low level rail network requires serious financial resources and a long construction period. Thus, it is important to increase construction based on detailed studies and to pre estimate the investment program without delay. At the same time, it is necessary to develop realistic financing models.

Public railway, marine and road transport should be implemented in accordance with land use decisions to achieve planned aims. Since urban transport problems cannot be solved purely by addressing the supply side, demand management policies should be implemented simultaneously. A balance should be constituted between the demand and supply of transportation means. Road, rail and marine transport systems in Istanbul are shown in Figure 30, Figure 31 and Figure 32, respectively.

**Figure 31. Rail Systems in Istanbul**

**Figure 32. Sea Transport in Istanbul**
To date, rubber-tired public transport has been the predominant mode of transit in Istanbul. Road utilization rate of private car and road public transport are illustrated in table 2.

Table 2. Road Utilisation

<table>
<thead>
<tr>
<th>Private Car</th>
<th>Road utilization rate by car</th>
<th>% 69</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Road utilization rate by passengers</td>
<td>% 31</td>
</tr>
<tr>
<td>Road Public Transport</td>
<td>Road utilization rate by bus</td>
<td>% 3</td>
</tr>
<tr>
<td></td>
<td>Road utilization rate by passengers</td>
<td>% 22</td>
</tr>
</tbody>
</table>

Observing the ratios in Table 1, private cars consume urban transport networks inefficiently. The car ownership rate stands at 130-150 vehicle/1000 persons, whilst road utilization equates to 690 vehicle/1000 people, reflecting an unequal distribution within the transportation network.

Additionally, pedestrians are highly excluded from the city due to inadequate sidewalks most of which are often occupied by parking private cars. Public transit oriented high occupancy vehicle lanes should be seriously considered, especially for cross-continental traffic. This will lead a decrease in operation and energy costs.

Recommendations for addressing transportation problems include increasing investments in rail-infrastructure, enhancing capacity, encouraging inter modal public transport, providing an effective road network and traffic system management.

Land Use and Transportation System

Land use and transportation are directly related to each other. Accordingly, on-going and future projects relating to land use should be taken into account when making transportation decisions. Transportation decisions should provide adequate principles and applications for sustainable and compatible urban development.

Public transport should prioritize rail systems to constitute a transportation system and activate marine transport. Furthermore, road systems, railways and marine transport systems should work in unison in delivering high quality urban passenger and freight transport services and systems.

Structural transformation of the city which is prescribed in plans has an important relationship with transportation investments. The central
business district is an area which affects the efficiency of transportation links between attraction centres, sub centres as well as industrial, logistic and residential areas along with quality of urban life and sectoral transformation rate.

**Organizational Objectives for Development of an Integrated Metropolitan Public Transport System**

The organizational issues and objectives deemed as essential in achieving a high quality Metropolitan public transport service will be met by:

- Carrying out measures which can elevate the rail road public transport to provide a level of transport integration the metropolis requires
- Increasing the share of sea transport in an integrated public transport system
- Performing effective traffic management systems and traffic control
- Improving transport comfort
- Determining weak points in road network and improving them

In addition, Improvement of transportation and land use decisions by considering both areas simultaneously will be met through:

- Improving transportation demand policies and promoting continuity throughout Istanbul
- Linking important trip generation focal points with transportation strategies
- Reducing environmental damages caused by the transportation system

**5.2. URBAN LOGISTICS**

Encompassing primarily trade and industry, urban logistics seeks for all business and supply sectors to provide immediate, cost effective, client flexible, standardized and qualified services and elaborates on infrastructure strengthening aims oriented towards making Istanbul a logistics centre in order to increase her competitiveness in global market. Almost 60% of all logistics activities corresponding to approximately 30 billion US Dollars are performed in Istanbul. Thus, an already dense traffic is further inflated by activities of fruit and vegetable wholesale markets, solid waste facilities, production plants, companies, customs warehouses, organized industrial sites, retail trading distributors, ports and harbours, container storage fields, trucks parking areas, railroads operators and international liners etc. Proposed logistic zones designed to alleviate transportation congestion are illustrated in figure 33 together with the Ro Ro sea transport and Ro La rail linkages.
Logistic nodes, transportation networks, the relation between these and logistic demand are the focus of the groups study. Istanbul is an important centre of many sectors such as trade, industry, tourism for Turkey and regional countries. Logistic movement taking place in Istanbul need to be studied carefully in terms of form and usage.

**Logistics Nodes in Istanbul**

The logistic nodes in Istanbul are made up of the following sets:

- **Organized Industrial Zones** - There are 8 Organized Industrial Zones (OIZ) in the province of Istanbul: Dudullu, İkitelli, Tuzla Deri, Tuzla Organize Sanayi, Tuzla Mermerciler, Tuzla Boya Vernik, Tuzla Kimya and Beylikdüzü.

- **Small Industrial Sites** - 113 small industrial sites in Istanbul include 35 000 businesses where 150 000 people are employed.

- **Cargo Terminals** - Topkapı Cargo Terminal consists of 140 businesses, employs about 1250 people and has a daily economic turnover of approximately $ 1 400 000.

- **Food Terminals** - Food terminals in Istanbul are located in Bayrampaşa and Erenköy fruit and vegetable terminals, Rami and Mega Centre dry food terminals and Yenikapı seafood terminal. The average daily traffic of these terminals is about 17 000 vehicles.

- **Customs Warehouses** - There are 424 customs warehouses under 16 Customs Offices in Istanbul.

- **Storage of Chemical Products** - Special storage areas are required for explosive and flammable materials. The areas in Küçükçekmece and Tuzla districts are not being used and therefore they occupy space idly in urban areas.
Logistics Terminals in Istanbul
The logistic terminals in Istanbul include the following:

**Ports** - The most important four ports of Istanbul are Ambarlı Port, Istanbul Passenger Port, Zeyport and Haydarpaşa Port.

**Airports** - Atatürk and Sabiha Gökçen Airports are located in Istanbul. In addition, Çorlu Airport also assists in freight transportation to Istanbul.

**Railway Freight Stations** - Halkalı and Haydarpaşa Stations are available for international and intercity cargo transportation.

**Customs** - Halkalı and Erenköy Customs are important for logistics activities in the Istanbul Metropolitan Area and Marmara Region due to their positions and services they provide.

**Freight flow in Istanbul**
The freight flow in Istanbul is made up of the following segments:

**Petroleum Distribution Logistics** - Petroleum and gasoline is transported to 4700 stations in Istanbul from Ambarlı and Tüpraş Facilities with 600 vehicles travelling 180 km per day. Volume of freight flow is 20,000 tons per day, of which 12,000 tons is delivered to fuel stations and 8000 tons to the airports.

**Cargo Distribution** - Cargo sector, which includes small parcel and mail distribution, employs about 40,000 people. Istanbul has a 57% share in Turkey’s total annual turnover of $1,400,000. The daily average number of cargo distribution vehicles in Istanbul averages 3500.

**Retail Sector** - With 13 hypermarket chains and over 40,000 employees, the retail sector has an important place in logistics movements.

**Solid Waste Logistics** - There are 6 waste transfer stations, one compost facility and one sanitary landfill disposable on each side (European and Asian). A daily average of 4500 vehicles carries waste.

5.2.1. LOGISTICS SOLUTIONS

Logistics solutions proposed for the Istanbul Metropolitan Area is summarized as follows:

**Shifting of Freight Transportation to Railways**
It is proposed that trucks and other heavy vehicles be carried on Ro-La trains between terminals to be established on the Western and Eastern ends of the city by shuttle services on the Marmaray line, which is designed according to the principle of carrying passengers during the day and freight at night. For this purpose, two main terminals at Gebze on the East and at Halkalı on the West (according to the needs of the
system), with intermediate loading / unloading stations should be established. It will then be possible to carry 20000 vehicles per night in each direction. Halkali Station should play the role of central station of Istanbul for major freight and passenger transfers.

Road transportation between Thrace and Anatolia, and especially the international transit traffic that passes through Istanbul, should be shifted to Ro-La line with priority. At a later stage, delivery vehicles should also be included in the Ro-La system in order to minimize urban road traffic. To operate Ro-La system efficiently, it should be connected to the logistics zones that are planned for Tuzla on the East, in Hadımköy on the West and in Silivri at the second stage.

Besides existing organized industrial zones and proposed logistics zones, rail lines should also be extended to areas where major industry is present in the medium and long term in order to expand the Ro-La system.

Betterment of Ro-Ro Vessels in Sea Transportation

There are two private companies in Istanbul that have the capacity to transport 350 trucks per day between Ambarlı and Bandırma. A private line also operates between Tekirdağ and Bandırma with a capacity of transporting 80 trucks per day. In addition, the Istanbul Sea bus Corporation operates a ferry line between Eskihisar and Topçular that carries an average of 1000 trucks per day.

The Istanbul Sea bus Corporation is planning to start Ro-Ro trips between Ambarlı–Bandırma and Ambarlı–Mudanya. It is anticipated that the daily potential will increase 2 to 3 times with the development of these lines. Instead of trips parallel to the shore, lines connecting the Southern and Northern Marmara provide great benefits to operators in costs and time.

Another benefit of establishing Ro-Ro lines is their contribution to increasing the use of sustainable transportation systems. In developed nations such as the European Union, the rate of increase in road traffic is reduced to zero; hence the negative effects of air pollution, risk of accidents and noise are minimized.

Establishment of Specialized Logistics Zones

Specialized logistics zones (Figure 34) akin to examples like Paris and Barcelona should be established in order to allow the sector to grow and achieve competitiveness. According to demand, an area of 300 to 1000 Hectares on each side of Istanbul should be dedicated and developed as ‘Logistics Zones’ of Istanbul.
To achieve optimization of freight flow between logistics zones, ports and road terminals, Ro-La and Ro-Ro systems should be integrated with each other. Cargo that arrives from both international and national sources by sea, rail or road should be moved primarily to the Ro-La system in Istanbul and routing of freight movement in the East-West axis over the Ro-La line should be promoted.

Cargo coming from and to the Aegean Region should be transported to Mudanya and Bandırma via Ro-Ro ships that are expected to commence service and truck traffic from the Aegean Region should be shifted to the Ro-Ro line. The traffic that comes from railways in the Aegean Region via Bandırma should be transferred to Ro-La after the Ro-Ro and the possibility of shifting this traffic partly from road to rail should be developed.

**Regulation of Fuel Delivery Traffic and Pipeline Transportation**

The following are proposed to regulate fuel delivery traffic in Istanbul:

- Short-distance filling stations should be developed
- A fuel pipeline should be developed from Ambarlı and Tüpraş to Atatürk, Sabiha Gökçen and Çorlu airports and to other nodes
- Existing idle pipelines should be used for fuel transportation and/or new lines should be built
- Capacity of existing fuel transfer stations should be increased
Since the transfer facilities in Dilovası are located in a critical position close to the transportation axes connecting to Anatolia rendering them vulnerable, security measures should be increased to required levels.

The afore mentioned facility should be moved closer to Tüpraş.

Work authorization permit formalities at the transfer facilities in Dilovası should be finalized.

Efficient Use of Ports

The container traffic of Istanbul ports in 2005 was 1,126,000 TEUs. According to various estimates for year 2015, this figure is anticipated to increase 2 to 3 fold. Therefore, container traffic of Istanbul in year 2015 is estimated at between 2,500,000 and 4,000,000 TEUs.

Physical arrangements and reservation of required area is necessary for warehouses, CFS areas and trailer parks.

In this context the following measures are recommended:

- The existing railways of Istanbul are insufficient. Ambarlı Port cannot overcome this deficiency due to limited physical space. Land located 5-10 km behind the port should be included in the port area to overcome this deficiency.
- To make up for the deficiency of Ambarlı Port and to integrate services in this area with the port, it will be an important step that the area located at 500-600 meters depth of the neighbourhoods behind the port be designated as reserve area.
- In order to minimize the traffic load generated by Ambarlı Port, the port should be connected to the Halkalı-Edirne railway line at Bahçeşehir and the possibility of transporting cargo arriving from the Marmara Sea through this line should be created.
- The above mentioned connection should be extended to the logistics zone to be developed in Hadımköy and the zone should be connected to Ambarlı Port.
- In addition, other ports in the region should be restructured in the same way.
Airports

Suggested solutions for problems encountered at airports in Istanbul can be listed as follows:

- The area on the East of Atatürk Airport, including the World Trade Centre, should be appended to the airport borders
- A logistics zone similar to examples in other countries should be established in Atatürk Airport
- Sabiha Gökçen Airport and its surrounding area should be preserved to fulfill future expansion needs and illegal urbanization should be prevented. New cargo facilities should be integrated with ports via road (TEM Highway) and rail (Bosphorus Tube Crossing)
- Coordination and integration should be formed between Atatürk and Sabiha Gökçen Airports (Figure 35)
- The proposed solution for the next 10 years is to move cargo facilities in Atatürk Airport to somewhere else within the airport
- Proposed locations for cargo facilities at Atatürk Airport are to the Southern area where current functions exist and the unoccupied land on the East around World Trade Centre.

Figure 35. Airport Coordination and integration
Solid Waste Management
The following suggestions have been developed for solid waste logistics in Istanbul:

- The current solution of burying the waste is very costly and has severe undesired effects on the environment. As a principle, instead of developing new storage areas, the system should be upgraded to EU standards
- Technologies for recycling and utilizing waste should be implemented
- Waste collection activity, 70% of which is currently performed during business hours, should be shifted to nights.

Moving Customs
Since 3000 - 4000 trailer trucks travel to Halkalı and Erenköy Customs causing an additional burden on urban traffic, these units should be moved to the proposed logistics zones. The land that will be evacuated by customs should be reserved for the infrastructure of the Marmaray urban, intercity and international railway transfer stations.

Logistics Planning for Disasters
Logistics planning is needed for transportation of food and technical material to places of need during natural disasters such as earthquake and flood that can affect large swathes of Istanbul. For this purpose, two ‘emergency logistics centres for disasters’ should be developed, one in Halkalı on the European Side and one in Tuzla / Aydınlı region on the Asian Side. The centres would be close to main arteries, on easy to reach areas, where basic materials and equipment that need to be transported in the first 10 hours after the disaster can be dispatched.

6. NATURAL RESOURCES
Natural Resources theme is composed of five sub themes; namely, Earth Sciences, Agricultural Land and Soil, Forest Areas and Ecology, Earth Resources and Environmental Management Sub groups. An analysis and synthesis of collective themes and there impact on the natural environment and life support systems in the Province of Istanbul was undertaken as part of the process for developing proposals grounded in thorough and extensive evaluations.
6.1. UNDERGROUND STRUCTURE (Land formation and Structure)

Geology
The terrain in and around the Province of Istanbul contains a wide variety of rock units formed over a long period of time from the Early Palaeozoic Era to present day. This area bearing signs of a very complex structure is out of, yet in a close proximity to tectonic belts where present structural characteristics are still active.

The rock formations named as the 'Istranca Birliği' contain schist, quartzite, and migmatite and are widely visible on the northern part of the Çatalca Peninsula, especially between Tekirdağ and Edirne. Within the provincial boundaries of Istanbul, it can only be seen on the western and northern parts of Çatalca Sub-district. On the other hand, the rock formation named as the 'Istanbul Birliği' consisting of components from the Palaeozoic and Mesozoic eras which do not display metamorphism, appears on both sides of the Bosporus and covers immersed areas on the Kocaeli Peninsula.

Geomorphology
Both the Çatalca and Kocaeli Peninsulas, which are separated by the Bosporus, appear to be in the form of a low plateau eroded to sea level. The province, which stretches from Yaliköy to Silivri on the west and between Ağva and Tuzla on the east, comprises mainly of plateaus (75%), whereas mountains and plains cover the remaining quarter of the land (16% and 9% respectively). The geomorphology of the areas where the city has evolved and is expected to grow further, does not indicate any significant constraint on developments.

Whilst almost 50% of the provincial land is categorized as having 0-10% slope range, 32% of the land falls in the category of 11-20% slope range and another 11% falls in the 21-30% slope range.

Water Resources
Surface Water Resources (Hydrology) - On the Çatalca Peninsula; Pabuçdere, Uzundere, Kazandere, Sazlıdere, Alibeyköy dams and a series of minor historical dams in the 'Belgrad Ormanları' are major man - made surface water reservoirs. Conversely, on the Kocaeli Peninsula; Elmalı, Ömerli and Darlık dams are major man made surface water reservoirs. Additionally, there are three important lagoons on the Çatalca Peninsula namely Terkos, Büyükçekmece, and Küçükçekmece lakes. Terkos and Büyükçekmece are utilized as surface water reservoirs (Figure 36).
There are numerous rivers and streams fed by 7 major water resource basins, which cover approximately 46% of the surface area of the Province of Istanbul. These rivers and streams flow into the 7 major surface water reservoirs utilized for urban uses. The basins on the European side being Alibeyköy, Terkos, Sazlidere, and Büyükçekmece with the Ömerli, Elmali, and Darlık basins on the Asian side. They provide an average of 750 million m$^3$ of water annually, which is equivalent to 72.4% of all water resources currently available. 22.7% of the water supply is sourced from Ömerli, 15.6% is obtained from Terkos, and 11.6% is coming from Büyükçekmece basins with the remaining 50% obtained from the other basins.

In addition to the increasing number of inhabitants in Istanbul, improvements in the quality of life have also resulted in a significant increase in the demand for water. The current water supplies in Istanbul have fallen short of satisfying the increasing demand, thus, new projects are being initiated for the purpose of bringing water to the city from neighbouring provinces. To illustrate, Istranca streams in Kırklareli on the west and the Melen River on the east, have been considered as new sources of water, which entail significant conveyance investments and operational costs (Figure 37).

In addition, pursuing such investments will have ecological impacts on surrounding areas along the route of conveyance. Moreover, withdrawal from one basin will decrease the original discharges and may adversely affect the ecology of those rivers and streams. Therefore, any unplanned growth in the closest basins to the city should not be tolerated and current water basins must be preserved to decrease the need for extensive water conveyance from other provinces.
Groundwater Resources (Hydrogeology) - In Istanbul, where thousands of unregistered wells are believed to be operating illegally, the share of the ground water resources of total water supply is about 5%. This value is, expectedly, much higher in rural areas. Regarding their capacities, the groundwater reserves in Silivri and Çatalca sub districts and around the vicinity of Bakırköy sub district on Çatalca Peninsula are of importance. The Kocaeli Peninsula, on the other hand, would appear to be less fortunate in terms of availability of groundwater reservoirs.

Istanbul does not have strategic water resources for periods of emergencies such as drought, war, disasters, etc. In this respect, groundwater reservoirs (aquifers) carry crucial importance. However, the ground water reservoirs in the areas where the city has expanded have either been exhausted or polluted due to uncontrolled and improper uses. Therefore, in order to preserve the aquifers against over-utilization and pollution, it is essential to ensure that planning decisions are effective and that public administrations are empowered so as to strictly implement the ‘Groundwater Act’.

For the historical and cultural identity of Istanbul, spring waters carry special meaning and importance. The Hamidiye spring water on the Çatalca Peninsula and Taşdelen and Yakacık spring waters on the Kocaeli Peninsula have been carrying on their historical importance to present day. Aydos, Alemdağ and Kayışdağ to the east and Kemerburgaz to the west stand out as the regions where spring waters of high quality are available.
Seismology

Seismic Characteristics and Earthquake Risks - With regard to the potentiality of earthquakes in Istanbul and associated risks involved, an area covering a 100 km radius (between in 40 - 42° north latitudes and between 27 - 31° east longitudes) is evaluated by comparing the records of two different periods; one from the historical (pre 1900) period, and the other from the instrumental (post 1900) period. The data was excerpted from a variety of sources through a series of filtering processes. The available historical earthquake records show that the middle branch of the Northern Anatolian Fault (NAF), which is proclaimed to be located in the Marmara Region, is very active in the Marmara Sea. In the provincial boundary of Istanbul, there is no active fault.

Natural Hazard Areas in the Province of Istanbul - The Seismic Risk Map, which is an effect as prepared by the Ministry of Public Work and Settlement has been used as a base in researches and is updated by incorporating the other seismic and geologic characteristics of the study area. This map is obtained by classifying the expected maximum horizontal acceleration values on rock with regard to 10% exceeding probability in 50 years. According to the map (Figure 38) which has classifications from 1st to 4th degrees, 16% of the areas of Istanbul are classified in the 1st degree risk area and the remaining 42%, 30% and 12% of the areas are categorized in the 2nd, 3rd, and 4th degree risk groups respectively. During any earthquakes in the 1st degree risk area, 0.4 g (400 cm/sn²) and greater horizontal acceleration values are expected.
Engineering Geology

Landslide Areas - There are active and potential landslide areas causing earth movement, especially in the districts of Büyükçekmece, Beylikdüzü, Avcılar, Taşoluk, Karacaköy, Ambarlı and Gürpınar, which need more detailed examinations. In addition to current landslide areas, there are also historical landslide areas, which are reactivated today due to slope increasing excavations for constructions.

Active and passive landslide areas are adversely affected from constructions at the edge of tenure plots and planned plot boundaries. In order to rehabilitate these areas and to make them accessible for safer development, comprehensive safety measures, beyond relations of tenure or land use planning, need to be taken. Most of the problems caused by the developments in these areas are yet to be solved.

However, rare examples such as the Ambarlı Port district where the landslide problems have been solved and stability is achieved have become places where the land values are remarkably high due to the characteristics of the project. In these areas, the most complex and expensive measures are taken applying appropriate techniques and technology.

Consequently, when planning in active and passive landslide zones for the purpose of settlement, comprehensive and integral measures are an absolute necessity.

Shores - In order to prepare strategic plans for the management of 647 km of shore lines and adjacent areas in Istanbul, socio-economic characteristics of settlements, meteorological conditions and wind and wave affecting these areas are researched. In addition, characteristics of sea waters and pollution levels with their sources are determined. In Istanbul, there are 2 commercial ports (Haydarpaşa and Ambarlı), 7 marinas, 40 natural or man-made harbours for fishery, 51 shipyards (48 of which are in Tuzla, 2 in Haliç, and the remaining 1 in Pendik), 50 ports for intra-city commuter boats, 19 ports for ferryboats, 7 establishments for liquid fuel filling, 2 passenger terminals, 4 Ro-Ro ports, and 3 industrial ports for loading and unloading. Most of these establishments are encountering problems resulting from the fact that the wave and sea data was over looked prior to implementation of these projects.

The Black Sea shores are not suitable for construction and operation of marine establishments in account of geology and geomorphology of the sea bases as well as current wave conditions. However, the Marmara Sea shores appear to be safer and less demanding for construction purposes, as long as wave conditions are evaluated thoroughly and necessary measures taken.
Risks and Precautions for Safe Settlement Areas (Earth Science Synthesis)

There are five categories of risks related to the natural characteristics of earth (geology, hydrology/hydrogeology, seismic-tectonic, erosion, and fire sensitivity) within the provincial boundaries of Istanbul. In response to the potential threats that these risk categories have posed, or are expected to pose, data on landslides, rock fall, swelling soils, flooding, earthquake-tsunami, heavy erosion and fire sensitive zones have been investigated and evaluated.

Analyses of suitability for settlement (Figure 39) have been prepared in line with the official classifications of the General Directorate of Disaster Affairs. These analyses are based on extensive studies including inventory research and site surveys relating to earth-sciences. According to the analyses of suitability for settlement, 81% of the provincial land covering 4311 km² is classified as the area requiring detailed geological surveys (AJE) to be considered for settlement purposes; 6% of the land, which is nearly 325 km², is categorized as the area suitable for settlements after the necessary measures are taken (ÖA); 11% of the land covering 592 km² is set aside for the preservation of the sensitive water resources in the form of buffers around streams and lakes, and is classified as prohibited lands for any developments (YYA); and lastly, 1.8% of the total provincial land, making up 95 km², is classified as high risk areas which are not suitable for any settlement (YUO).

Special precautions must be taken in order to avoid opening the active and potential landslide areas for any form of settlements in the Province of Istanbul, especially within the boundaries of the Büyükçekmece, Küçükçekmece and Bakırköy sub districts. In the cases of existing built up areas, or decisions made for future development, necessary technical and technological preventive and safety measures must be made obligatory irrespective of the cost involved.
Figure 39. Synthesis of Earth Science and the Geological Suitability of the Settlement Area in the Province of Istanbul
6.2. UNDERGROUND RESOURCES

There is a rich natural earth resource potential within the Province of Istanbul. These resources are however finite and if exploited will create further environmental damage to an already constricted environment. Figure 40 maps the existing and potential mining areas in the province of Istanbul.

**Figure 40. Existing and Potential Mining Areas in the Province of Istanbul**

![Map of Istanbul showing existing and potential mining areas](image)

Legend:
- Mining areas which must inevitably be preserved
- Mining areas which have the priority of preservation
- Surface water basin boundary
- Settlement areas boundary

While some of these resources are used directly to satisfy the local demands in Istanbul, some other industrial raw materials such as glass sand, moulding sand, ceramic sand, ceramic clay and bentonite, are utilized by the industrial enterprises around the country. Indeed, from time to time, they are exported to other countries. On the other hand, the lignite coals extracted from many different locations along the sea shore corridor between Şile and Karaburun have been utilized to satisfy the energy demands in the Trakya Region.

With regard to the data provided by the General Directorate of Mining Research and Exploration, there are 228 granted licenses in the Province of Istanbul, 36 of which are issued for coal, 2 for graphite, 55 for quartz sand, 13 for quartzite, 33 for clay, 5 for bentonite, 4 for aluminium, 50 for marble, and 30 for sand - gravel mining sites. Of these, only 131 are in operation and 91.7% are in forest areas. In these mining operations, a total of 3673 workers are employed and a total of 78,023 million tons of annual production realized.
6.3. AGRICULTURAL RESOURCES

Studies undertaken providing a detailed analytical survey of agricultural areas (Figure 41/42) and soil resources together with an existing inventory of soil resources and other agricultural data were collected and fed into the Environmental and spatial Development Plan.

Figure 41. Agricultural Land Classification of Istanbul Province

Figure 42. Agricultural Land Use in Istanbul Province
Additional information on the regional agricultural profile was extracted from the universities, The Chamber of City Planners, The Chamber of Agricultural Engineers, The Chamber of Environmental Engineers, Representatives of the Ministries, Municipalities of Istanbul, Civil Society Organizations, Urban planning Bureaus and some Public representatives. Additional official organizations such as the General Directory of State Hydraulic Works, State Institute of Statistics, regional directories of the Ministry of Agriculture and Ministry of Environment and Forestry etc all contributed in the synthesis process (Figure 43).

**Figure 43. Synthesis of Farming Areas and Natural thresholds**

Conducted works since 2005 were based on 2 scales, namely 1/100.000 and 1/25.000. On the 1/100.000 scale, the requested information and optimization demanded in the Istanbul Environmental Plan concerns basic knowledge on:

- Climatic data and related analyses
- Soil inventory concerning present land use categories
- Quantitative and qualitative dispersion of the land use classes
- Genetic distribution of soil orders
- Pastures and grassland areas
- Protected areas and wetlands
- The socio-economical profile of the agricultural enterprises and other rural information such as regional basic eco-systems.
In a more detailed scale (1/25 000), additional information concerning studies and investigations in field and office were extracted from different sources and optimizations were established. Data also relating to agricultural areas of dry farming and agricultural land of absolute irrigation; soil fertility parameters such as nitrogen, phosphorus, potassium and pH values; agricultural areas with special importance such as eco-agricultural production and eco-tourism were collected and shown on the map as respecting plots of land. Land survey works were accompanied by soil samples and their physio-chemical analyses based on remote sensing technologies. The mapping works were created in a GIS modelling structure utilizing relevant hardware and software support.

Over the past year or two, knowledge has been accumulated in the area of regional sustainable development in rural areas. The necessary support for the threshold analysis was created on different optimization works comprising tables, maps and the final comments. One of the most important contributions was the climatic information package covering precipitation, cloudiness, temperature, wind and moisture. In terms of land evaluation, soil classifications were formed on the land use and more importantly, on the land use capacities.

On a detailed scale, additional information was mapped covering areas such as soil fertility, slope analysis and land erosion status etc. The culmination of these works was the creation of an agricultural threshold analysis based on the following modelling as reflected in the related map.

6.4. FORESTRY RESOURCES

For the purpose of providing the sustainability of forest resources in the Istanbul metropolitan area, numerous pieces of work have been undertaken in relation to Forest boundaries, Forest types, The functions of the forests (Figures 44 & 45), The interaction between the forests and their surroundings, Ecosystems, Flora-Fauna diversity, Recreation areas in forests and their tourism potentials, Hunting and Fishery, Pressures on forest ecosystems and Pollution.
In this context of determining and evaluating the biotopes (ecosystems) which have different characteristics, according to their importance levels, and researching their deterioration, a comprehensive picture evolved.

The metropolitan area of Istanbul consists of the Çatalca and Kocaeli plateaus which are 100-300 m above the sea level. These plateaus are carved by valleys, especially by the old valley of the Bosphorus, which are covered with forests and macchias. The plateaus of Catalca and Kocaeli are the peneplane's which are built over the Palaeozoic,
Mesozoic and tertiary formations at about invariable niveau. Over them rise quartzite monadnacks of Devonian age such as Camlica, Alemdag and Aydos.

Due to the geomorphologic characteristics of the metropolitan area of Istanbul, there are two ecologically different natural regions. One of them is restricted to the northern part of the metropolitan area, which is humid and wet. In winter, the northerly winds are prevailing. The second is to the southern part of the metropolitan area where the climate is relatively warm and dry.

The original natural vegetation of the metropolitan area of Istanbul consisted largely of forests of broad-leaved deciduous trees where oaks-hornbeam and beech were largely dominating. The beech forests are well developed on the north facing slopes. The wet woodlands are restricted to river valleys and flood plains and are largely dominated by ash, lime, alder, poplar and willow etc. In some places far away from the main roads and on steep slopes, the natural vegetation is well developed and relatively rich in woody plant species.

The woodlands and forests of the metropolitan area of Istanbul cover 257,000 ha of land. 24 district services are responsible for the management of forests in Bahçeköy, İstanbul, Çatalca, Kanlica and Şile. In general the forests of the metropolitan area have three main functions covering economical, ecological and social. In relation to the economical function of the forests in the metropolitan area, wood production is the most important. Economical functions comprise of all products originating from plants and animals as well as minerals and water.

Ecological function of the forests can be summarized as nature conservation, preventing soil erosion and hydrological function. In relation to nature conservation, the most important categories are natural parks and sensitive ecosystems. Under the heading of social function, aesthetical and recreational functions are highlighted. Hygienic and educational functions of the forests and woodlands of the metropolitan area of Istanbul are also of great importance. For these functions, recreational areas and urban forests represent the best example.
Besides the recreational function, wood production is the most important function of the forests in the metropolitan area of Istanbul. The wood products are used for building, fuel and industry. Forests are productive and managed in accordance with 10 year plans. The managed forests (Figure 46) can be grouped as high forests and coppices. The dominating species of the high forests are oaks, pines and beech. As co-dominant species chestnut, hornbeam, ash, alder, lime and maple also occur. The coppices contain mainly oaks, hornbeam and chestnut.

The pine plantations are also widespread in the metropolitan area making up about 13 percent of the forest area. Maritime pine and stone pine are the dominant species in these plantations, which are very vulnerable to fire and pest infestation. Apart from the wood quality of stone pine, its cones as by-products are quite important and in the year 2005 the pine cone production was 247 kg.

The locations of each forest district are mapped by studying the present reports and plans thoroughly and the gaps related to information and data are completed whilst the evaluation is conducted via the GIS media. With the help of maps at 1/25,000 scale, the functions of forest areas and their productivity are determined. These maps also represent the basic data for the determination of potential recreational areas.
6.5. ENVIRONMENTAL PROBLEMS

Environmental problems in relation to water, soil, air and noise pollution along with solid waste management issues, are of ultimate importance for Istanbul. Water resources are endangered due to urban expansion practices such as industrial plants, heating systems and transportation vehicles which together constitute the main contributors to air pollutants. The urban expansion process therefore has a significant effect on the environment, for which the group is engaged in finding solutions and providing recommendations accordingly. A further focal point of interest of the group is service quality enhancement in solid waste management, which consists of waste collection methods and means, transportation systems, transfer stations, material recovery and recycling facilities as well as sanitary landfills.

Air Pollution

Besides natural and topographical structure, human activities altering the natural circulation of the city both increase the amount of the air pollutants and suppress the dispersion of those pollutants (Figure 47). For example, the Istinye Creek surrounded by the Derbent, Pınar and Poligon districts has been subjected to severe air pollution as a result of topographical conditions and high density residential activity. Both stationary and non-stationary air pollution sources are affecting the water basins at different scales according to their geographical location.

Figure 47. Air Pollution Levels

[Image of air pollution levels map]
Noise Pollution
Noise pollution is becoming an increasingly important environmental concern in cities all over the world. All precautions need to be observed particularly in vulnerable zones. Production of a noise map for the City of Istanbul would be very helpful in planning and land use applications.

Taking into account The Environmental Management Groups core areas of interest (water, soil, air and noise pollution together with solid waste management issues), the group has focused on:

- Examination of main causes and level of pollution and their environmental impacts in all (water, air and soil) within the planning area
- Determination of acceleration rates of pollution
- Periodical measurements at sources of pollution
- Evaluation of the pollution and/or quality measurements in ground and surface water, drinking water, as well as municipal and industrial waste water along with pollution map preparation in case of insufficient data availability
- Searching for industrial facilities, vehicles and settlements which emit certain type of pollutants (SO2, NOX, CO). Environmental risk assessment according to limit values in national and international legislation and regulations
- Determination of solid waste amount and composition with disposal methods and interaction between proposed landfills and the environment
- Assessing noise pollution generated from transportation, industrial activities and settlements

Under taking legislative and regulatory researches and proposing necessary precautions

Water Pollution
Existing water resources are the Terkos, Alibeyköy, Büyükçekmece, Elmalı, Ömerli, Sazlidere and Darlık Lakes and Dams (Figure 48), are the core suppliers of surface water for the Istanbul Metropolitan Area.
The quantity of water supply to Istanbul is not increasing thus will not be able to accommodate future needs. Figure 49 illustrates half year figures for 2006. These resource basins have been located within the area approximately 250 km in length and 100 km wide. The total area of the Darlık Basin and some part of the Terkos, Elmalı, Ömerli, Sazlidere basins are covered by forests.

Note: Only the first 6 months of the year 2006 is taken into consideration.

Due to rapid urbanization and industrial facilities located in or near water basins, the magnitude of the pollution has now reached a critical point. Büyükçekmece is a good case in point (Figure 50) where pollution has reached an unsatisfactory level.
Solid Wastes
Everyday, more than 10,000 tons of solid wastes are collected throughout Istanbul. Half of this amount is organic waste. Municipalities are organizing the solid waste collection in Istanbul. 32 municipalities are bringing solid waste from their territory to transfer stations from which they are conveyed to the landfills (Figure 51). Ümraniye has produced the biggest amount of solid waste in Istanbul (7.05%). There is a need to manage the disposal of solid waste more efficiently.
By taking into account pressures inflicted by humankind on natural resources and the environment, a natural threshold synthesis was outlined (Figure 52) which identifies eight key areas of:

- Absolutely protected natural resource areas
- Natural resource areas with priority protection
- Limited natural resource areas
- Mining areas which must inevitably be preserved
- Mining areas which have preservation priority
- Surface water basin boundaries
- Forest boundaries
- Settlement boundary areas

By understanding the land structure and usage, natural resources can be managed within the principals of sustainability thus developing a more healthy relationship between the natural environment and human intervention.
Figure 52. Natural Threshold Synthesis
7. SYNTHESIS - ENVIRONMENTAL AND SPATIAL SUSTAINABILITY

7.1. NATURAL THRESHOLDS

Projections for Istanbul’s demographic and economic structure and spatial development dispositions denote that the special ecological structure and the life support systems of Istanbul is under immense pressure and is disappearing at an alarming rate. The relationship between the natural areas and the quality of human life is of crucial importance for Istanbul’s vulnerable geography and requires multidimensional and holistic approach to resolving conflicts within this relationship. Through this process, the search for sustainability in general and crucially environmental sustainability is a necessity. Within this context, natural thresholds of the city have been taken into consideration by focusing on the following issues listed below:

- Determination of the present situation of the natural resources of air (air quality), water (water resources, water quality, waste water management), soil (soil quality, agricultural land use), flora/fauna (biodiversity, vulnerable ecosystems), energy (heating, transportation, production) and waste management in Istanbul
- Determination of the environmental sustainability principles and from these principals;
- Evaluations of the spatial sustainability for Istanbul in order to guide the lower scale studies for a healthier city structure
- Determination of the environmental sustainability strategies

Through the analysis and the evaluation process of the environmental structure of Istanbul, the “Environmental and Spatial Sustainability Synthesis for Istanbul” has been prepared and manageable spatial groups based on environmental sustainability have been defined (Figure 53).
Figure 53. Environmental and Spatial Sustainability Syntheses for Istanbul
Data covering water resources, soil and land resources and ecological structure and biodiversity, has been the basic components of the analysis studies. The data was transferred to the “Natural Structure Assessment Matrix” which formed the framework of the study. Through this matrix, natural structure sensitivity analysis was formed, which mapped the nature and vulnerability of the natural environment through progressive steps of sensitivity from those which have inevitable importance to those that can tolerate the realization of human activities. Within the holistic approach of the spatial sustainability synthesis, the following outcomes were presented:

- areas that are naturally / ecologically integrated, were determined
- data of the natural structure was combined with the data of the risky areas and examined together
- the life support systems and ecological corridors were determined
- the effect of the present use patterns on the ecological system were studied within the macro scale

As an outcome of the analysis and synthesis process, the strategic principles determined in order to provide sustainability in Istanbul and to improve the quality of life is as follows:

- preservation of the natural areas and ecologic resources
- reducing unit energy consumption and emissions
- closed environmental cycles
- improving human habitats
- precautions for natural and artificial risks
- costing for the nature
- monitoring the ecological issues, creating social consciousness for nature and improving the governance systems for ecological issues

Through the analysis and synthesis processes, six groups of spatial organization were defined and each principle is taken into consideration for each related group. The groups of spatial organization are as follows:

1. “Areas that should have their functions preserved” - Areas, having crucial importance for the self sufficiency of the metropolitan area and that would not have their original function once damaged. The planning approach for these areas should be aligned with the strategy of ‘preserving natural areas and resources’.


2. “Sustainable development areas with special measures” - Areas that have lower total natural productivity than areas that should have preserved functions. These areas reduce and delay the impact of human pressure and have a mission of acting as a buffer zone between protected land and current-developing settlement.

3. “Areas to be developed with regard to sustainability” - Areas that might have urban development, which need to be aligned with sustainable development principles. Within the planning and designing of these areas, factors to be considered are, closed environmental cycles, reducing of the unit energy consumption and emissions, improving the human habitat and life quality and preserving natural areas and resources.

4. “Problematic areas in terms of environmental sustainability” - Areas, for which emergency precautions should be taken in order to provide environmental sustainability and reduce effects.

5. “Existing settlements” - Apart from the areas which are problematic in terms of sustainability, important reasons such as the need for improving the structure of present residential areas, the level of risk from natural disasters are core considerations in the design for these areas.

6. “Natural areas which will be rehabilitated” - areas where open mining activities are conducted and the areas where the natural structure is destroyed beyond repair.

7.2. MACRO-FORM

The macro-form model was developed in order to create the spatial dimension of the approaches developed during the analysis and synthesis processes, with the aim of determining a healthier structure with effective functional connections in Istanbul. The model proposes an east-west direction development axis, as a basic determinant and restriction in order to attain/achieve sustainability in Istanbul. Another basic principle of the model is the division of the Metropolis into defined sub-regions and the integration of these sub-regions and their sub-centres. In addition, by connecting the main service functions and sub-centres to the main transportation lines, a more healthy and functional organism can be realised. The restrictions that the natural structure composes, demonstrate that it is difficult to determine the zones suitable for settlement in Istanbul and it is therefore prudent to concentrate/focus on improving the quality of the present settlements whilst taking necessary technical precautions and reducing the pressure on the natural areas.
Risks to Macro-form and Feasible Strategies

Bottleneck Risk: Istanbul’s urban structure is characterised by two sub-centers namely the European and Anatolian Sides of the city divided by the Bosporus sea. The Bosporus, acts as a natural threshold which physically separates the two sub-centers. Thus, the sub-centers are only currently serviced by sea transportation and crossing the two bridges. This creates an ineffective urban transport system at risk of bottleneck. To address this risk, the bottleneck has to be minimized through the main macro-form system. Two main strategies can be considered for the minimization of this risk:

- Alternative Strategy 1 – Expanding the main urban structure in a westerly direction which will serve to reduce the inner movement pressure on the Bosporus
- Alternative Strategy 2 - A powerful transportation system for the Bosporus crossings through the integration of railway, sea transportation and tube tunnel

Development Form Risk: Fostering healthy development by implementing a model which prevents development particularly to the north of the Metropolis where important natural areas are located. In addition, prevention of development on the geologically vulnerable areas at risk of earthquake, landslide and flood must be considered.

Density Distribution Risk: By adopting a multi-centered structure, the new development model would aim to prevent focal points of extremelhigh densities

Macro-form Strategies
The macro-form strategies have been identified as follows:

1. Healthy structure and organization of the main body of the Metropolis
   - The infrastructure is the key consideration whilst guiding linear development urban structure process
   - Planned densities and balance between residential and commercial areas.

2. Spatial positioning of the vision components
Development of new functional areas as
   - integrated sub-regions of finance - management centres and prestige residential areas,
   - science - training - production sub-regions,
   - Culture - tourism - congress sub-regions.
3. Regional System Integration
Decentralization of the functional areas which are discordant with the vision of the Metropolis, to the Marmara Region:
- Approaches which can reveal the region’s potentials and sources
- Decentralization of the functions of the Metropolis which are not economic
- Research for the organization of new functions in the Metropolis

4. Determination of a Healthy Macro-form Model
Determination of urban sub-regions through sustainability:
- Clearly defined sub-regions and sub-centres
- A strong robust transportation system, predominantly public transportation
- Spatial positioning of the main functional areas integrated with the transportation system
- The implementation of the given criteria and approaches during the infrastructure, mass housing etc. projects through a holistic approach

5. Hastening of Urban Life
- Integration of different transportation modes and hierarchical organization of the transportation lines

6. Completing the Transformation Processes for Earthquake Readiness
- New mass housing projects in development areas of the Metropolis
- Decentralization of approximately 200,000 people out of the areas where earthquake risk is high
Macro-form Model
Population size of the Metropolitan Area is the basic determinant for the size of the settlement area of the Metropolis. In this context population projections and scenarios have a crucial importance in determination of the macro-form model.

The analytical comparison of the population movements and the natural thresholds in the framework of sustainability suggests that a growth in population exceeding 16-17 million, would create critical problems and cause the loss of the life-support systems. These facts indicate that the population size of the Metropolis should be limited to 15-16 million. If the population size grows in excess of recommended figures beyond the capacity numbers, the economic - ecological balance will be destroyed and Istanbul will not reach a healthy structure and socio-spatial polarization will occur.

Through the macro-form studies, the projections show that the population growth rate would be %0 on year 2045. Macro-form Model 4-Alternative 3 illustrates that the Metropolitan Area will reach its capacity population by 2020.

Of the alternative growth models explored, Macro-form Model 4-Alternative 3 (figure 54) appears to be the most suitable model for Istanbul’s physical structure. Model 4 - Alternative 3, which will be the fundamental model for Istanbul’s plans, has been created through scientific and technical approaches with projections and evaluations having been made.
Figure 54. Istanbul Metropolitan Macro-form Model Development Trends

- Population growth rate reaches zero, as the population size approaches the capacity population.
- Istanbul Metropolitan Area will reach its capacity population size before year 2025.
- As from year 2025, Istanbul’s population size is going to be between 16,000,000 and 18,000,000.

<table>
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<th>Year(Y)</th>
<th>Population(P) million</th>
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<tr>
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<td>15.776.539</td>
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<tr>
<td>2025</td>
<td>16 &lt; N &lt; 18</td>
</tr>
<tr>
<td>2045</td>
<td>16 &lt; N &lt; 18</td>
</tr>
</tbody>
</table>

Foresights and Evaluations

**FORESIGHTS**
- Powerful decentralization policies would reduce the development pressures on Istanbul.
- As the population size approaches its capacity, Istanbul’s attraction power and pushing power for population movements would reach an equilibrium.
- Plan will be implemented powerfully and illegal developments will not happen with present illegal development remaining stable.
- New investment and development policies will direct the growth / development to west.

**EVALUATIONS**
- Istanbul Metropolitan Area’s will grow / develop linearly.
- Pressure on the watersheds / water basins will be controlled.
- Pressure on the forest areas will be controlled.
- Completing the transformation process for earthquake.
- Low and medium density settlement areas on the west of B.Çekmece.
7.3. PHYSICAL DEVELOPMENT AND LAND USE

Basic Principles and Planning Approach

Istanbul, has a linear settlement system based on a fragile geography made up of forest areas, water basins and agricultural lands. This fragile ecological structure should be protected in order to nurture Istanbul’s sustainability. Natural, economic and social sustainability is a prime objective of this plan. The macro-form proposes the spatial organization and development of focus points/centers spreading from the central business district (CBD) on a linear axis in an east-west direction.

Priorities in determining the macro-form are, prevention of development on the north direction due to the sustainability principles, reducing the pressure on the present CBD, reducing the traffic weight that the journeys between Anatolian and European Sides cause and forming a multi-centered structure.

Istanbul needs to undergo structural transformation to become a contemporary metropolitan city capable of competing with other metropolises. The basic expectation is to sustain the advantages of Istanbul’s economic power within this transitional period while Istanbul overcomes the negative effects of its development process. With this expectation, achievement of sectoral transformation is a crucial need.

Istanbul’s Structural Transformation Through The Process of Integration to The Global Network

The goal of integration into the global network can be achieved by integration with the global and with the EU market through the application of the principles of sustainability. It is envisaged that Istanbul will have a central role in greater/extended global regional management services and will take an interest in the greater regional economy as a whole.

The greater/extended region involves cooperating with Europe, The Balkans, The Black sea Basin, The Caucasus, Turkic Republics, Middle East and The Mediterranean Basin. Istanbul is supposed to strengthen its economic, social, historical, cultural, diplomatic, communication and transportation connections with the aforementioned region, serving as an international regional centre.

Sectoral Structure

Global metropolises are particularly focused on production of information and technology developing their economy on services, finance and information sectors, rather than industrial production. To form a competitive character in the global market, Istanbul has to achieve a sectoral transformation process and change the character of its sectoral structure. In this context, the aim is to transfer the concentration of the employment from the industrial sector over to the services sector. The foreseen that by the year 2023, employment population will be 40% with
80-85% making up the services sector employees and the remaining 15-20% consisting of those employed in the industrial sector. In order to achieve this goal, the land use structure on the Metropolitan Area would be changed into a multi-centered structure offering high quality public services and life standards which would enhance the efficiency of services sector.

Financial and Administrative Services
To promote the level of Istanbul among the hierarchy of global metropolises and support its position as a regional strategic metropolis, it is necessary to develop financial and administrative services. These services would reflect international activity dynamics and would be integrated into the global economic network complemented with an efficient communication and transportation infrastructure.

Information Economies
Another outstanding component of the structural transformation process is the development of an information/knowledge production structure. In this context, specialization in education (especially graduate level education) and development of incubators, laboratories, techno-parks where knowledge can be implemented, are key components for Istanbul. Furthermore, production types which use and develop information technologies should be the preferred choice as opposed to traditional production types.

Cultural Industries
Developing cultural industries based on information, thinking and design issues, is another component of the sectoral transformation process. The cultural industries sector provide added value together with a competitive edge and in therefore of crucial importance among the global economies.

Decentralization of Industry
To manage the sectoral transformation and strengthening of the aforementioned sectors, industrialization policies should be supporting these goals. Decentralization of the industrial production areas which are located in the inner city is crucial to the principles of sustainability, for managing the goals concerning the population size and the sectoral transformation of the plan. Through the decentralization process, it is anticipated that the management centers of the industrial units would remain in Istanbul with the production sections moving out of the Metropolis. Within this context, Istanbul’s character of being an economic management center would improve and strengthen, while the employment structure of the Metropolis would move in the direction of finance and services sectors.
Logistics
The logistics sector affects the efficiency of the processing of all the sectors and should be evaluated in and by its relation to all the other sectors. Qualified, flexible, low cost transportation of raw materials, product collecting and distribution movements on a national and international level, is of crucial importance for the Metropolis's competitiveness through other metropolises. Through the planning period, the development of an international - regional and national logistics center in Istanbul which would serve for the metropolitan region and the neighboring countries is an objective of this plan. With this in mind, the plan proposes clearly defined relations of the logistics focal points and the logistics terminals with an emphasis on intensifying the transportation of cargo by railway and sea transport modes as opposed to the traditional use of highways.

The speed and the efficiency of cargo and passenger movements play a crucial role in making use of the advantage of being close to the European market. The money and the time that would be saved by prudent integration of high technologies to the logistics sector, increasing the organizational capacity of the system and maintenance of short delivery periods, would make Istanbul a centre of preference for foreign countries. This would be most evident in Istanbul's future role as a logistics center for the movements for Mediterranean, Black Sea, Middle East markets.

Analysis of the present logistics areas and constructions identifies the is a need for a harbour with a higher capacity and a wider hinterland. The results of the geological studies and the plan decision that proposes the concentration of the industrial areas on the west side of the Metropolis and the decentralization of the industrial areas will be in the west direction, to Thrace settlements Corlu - Cerkezkoy, points to a new harbour being located in Gumusyaka. It is proposed that the harbour in Gumusyaka be functionally integrated with a railway system and the airport in Corlu and also organized within a wide hinterland.

Spatial Structure
In relation to spatial structure issues, there are two key policies guiding the economic transformation of Istanbul. The first policy proposes that the capacity realised through the freeing up of industrial areas be utilised by knowledge economy, cultural industries and services sector. Areas where capacity is at its highest and most dense levels, have been identified as the development areas of the CBD and it is proposed that these areas form the administration centres.

The second policy relates to the transformation of specific locations in Istanbul. It is proposed that Silivri, Kurtkoy and Agva settlements, which are located close to the city borders on the west and the east, are transformed into attraction centres where knowledge economy can be developed. The main functions located in these centres would include
universities, science and technology development areas, health centers, and conference halls etc. The Black Sea mining areas where production processes are coming to an end together with the Cebeci stock quarries, will diversify into locations providing facilities to support seasonal or daily sports, recreation and entertainment areas.

The encouragement of aggregation of economies and the concentration of the production services, acts as a bridge in the decentralization process of industry from Istanbul to the region.

**CBD and Its Environment**

CBD and the other city centre development are defined and driven by the core goal of Istanbul which is to strengthen its position among the hierarchy of metropolises and to develop and promote the identity for Istanbul as a global regional centre of excellence.

Transformation of the areas which become vacant through the decentralization of the industrial areas, has a crucial role in actualizing the goals of the plan. The decentralized areas will be functionalized by cultural industries, knowledge economies, education and finance sectors. New transportation routes and the orientation of the present routes which will help synergise the transformation will be detailed with the 1/25.000 scale master plan. The services sector employment, replacing the industrial employment will be the key indicator of the changes effecting the employment structure of Istanbul.

The CBD’s character and development can be viewed as one attraction centre which begins at the Historical Peninsula and is most concentrated between the Maslak - Buyukdere axis. Here, high level services sector especially located on the north of the city, cause dense traffic between the two sides of the city and threaten the natural areas. The present situation and the development tendencies of the CBD, does not complement the sustainability of CBD and natural areas. Policies for easing the conflicts between CBD and natural areas focus on easing the concentration of the centre, defining the functions location preferences and decreasing the traffic densification on bridge crossings.

Within this context, the aim is to prevent further future development on the Maslak axis and to focus on rehabilitating the current high density structure. Thus, the plan proposes to shift the CBD development and its transportation web, away from the historical centre in a westerly direction. By taking the afore mentioned measures to ease the pressure on the present CBD, the Historical Peninsula, Bosporus locations and conservation of the historical structure and the forest areas can be better protected.
**Sub-Centers**
The plan proposes the establishment of sub-centers and commercial services areas which would serve to decrease the pressure on the CBD, other central districts and the coastal settlements. The sub-centers will be dynamic, attractive and competitive in character and integrated among the hierarchy of centres. Within this context, Bakirkoy, Kagithane, Media Express Way are determined as sub-centers, while Beylikduzu, Ispartakule and Ikitelli are determined as local centers. In addition, Bayrampaşa Market House, Giyimkent, Tekstilkent, Keresteciler Sites are supposed to commerce and services areas.

Decentralization of industrial areas in the district of Kartal, the transportation projects supporting this location, its proximity Sabiha Gokcen Airport and opportunities of connection to European Centre by sea route together with its proximity to industrial areas in Gebze gives Kartal a potential of being a sub-center.

**Attraction Centers**
Another important policy of the plan is the creation of new attraction centres and development areas on both European and Anatolian Sides. This will create a multi-centered structure and establish a hierarchy of centres that considers the population and employment balances.

It is proposed that areas on the west of Cekmece on the European Side and areas on the east of Sabiha Gokcen Airport on Anatolian Side form new attraction centers. Depending on the sustainability principle, Istanbul cannot sacrifice its forests and water basins. However, for the new development areas that are located on the west, limited use of the agricultural land with can be considered taking into account restrictions posed by the threat of earthquakes.

Knowledge economy structures such as universities, RE-DE intuitions, technology developing parks and health areas are planned to be within the attraction centres. This will raise the capacity of proficiency of the centres. In order to create strong connections on the national and global scales, Corlu Airport on the west and Sabiha Gokcen Airport on the east will be further utilised.

The attraction centre located on the west side of the Metropolis are planned to carry a population sized of approximately 2.100.000 including all the functions whilst maintaining strong connections to the city centre. It is anticipated that the west side attraction centre will support the decentralization of industry and play a critical role for Istanbul’s structural transformation. Conversely, the attraction centre located on the east of the Metropolis will have a primary focus development of knowledge based economies and related functions.
Quality of Life and Accessibility
Improving the quality of life and then sustaining the level of quality is one of the important aims of this plan. Orientation of the CBD to the west, creating the attraction centers on both sides of the Metropolis and creating a hierarchy of centres and a balanced distribution of the population through multi-centered development would deliver the main determinants of quality of life such as social and spatial equity and accessibility and healthy environments. In addition, policy that takes into account earthquake threat is required in order to maintain the improvement of quality of life.

Transportation System
Within the plan, the transportation system is perceived as tool for structuralization of the macro-form. Therefore, a comprehensive public transportation system of mostly railway, more efficiency with the sea transportation, an integrated transportation system with the highway, railway, airway and sea transportation is required.

The proposed transportation system gives the priority to the movement of the people rather than vehicles, is economical, fast and safe. The transportation system is supported by the decisions pertaining to decreasing the house-work distances and protecting the forest and the water basins on the north.

Managerial Structure
As Istanbul’s functional connections pass over its legal borders, there is a requirement for arrangement of the legal borders. This will help create holistic cross-border solutions. Consequently, through the plan period, there is a need to clarify the management considerations of areas such as Corlu, Cerkezkoy, Marmara Ereglisi and Gebze settlements as they influence outcomes for Istanbul. Conversely, for the maintenance of the sustainability principle, a water basins management model is proposed in order to manage the rehabilitation processes within the water basins.
7.4. PLAN APPLICATION
The basic problem in the metropolitan planning process of Istanbul is the monocentric spatial organization of the central service functions. The Anatolian side of Istanbul still has a lack of central functions; Kadıköy does not have sufficient infrastructure to go beyond being a sub-center. The differentiation between Anatolia and Europe sides of Istanbul leads to the traffic congestion on the bridges passing across the Bosphorus. So long as the monocentric spatial organization of the functions goes on, this problem can not be solved. Therefore, it is essential to balance the traffic circulation by developing attraction centers and sub-centers on both sides of the Bosphorus.

Spatial Positioning
Taking into account the land use decisions with strategic evaluations determining the spatial development of Istanbul, the sub-regions are determined as the basis for the later master plan process (figure 55). On the European side, four sub-regions have been identified as:

- Zeytinburnu-Historical Peninsula and Ayazağa Axis
- Between Lake Küçükçekmece and Zeytinburnu
- Between Lakes: Lake Büyükçekmece and Lake Küçükçekmece
- West Corridor.

On the Anatolian side, two sub-regions have been identified as:

- Kadıköy-Üsküdar and
- Kartal-Pendik-Tuzla.
Figure 55. Proposed sub regions for Istanbul
European Side Sub - Regions
Zeytinburnu-Historical Peninsula and Ayazağa Axis

Zeytinburnu- Historical Peninsula and Ayazağa Axis sub-region is the area where the mono-centric activities of Istanbul converge. The area starts from Zeytinburnu moving through Eminönü, Karaköy, Beyoğlu and Büyükdere Boulevard all the way through Beşiktaş, Zincirlikuyu, Maslak and Ayazağa. Because of the fact that a strong centre has not developed on the Anatolian shore, the unbalanced business settlement area allocations contribute markedly to transportation problems across the whole Istanbul. In addition, the demand for qualified office places of the internationally competitive service sector can not be met in the existing CBD.

The overloading of existing CBD creates irreparable problems. The previous experiences resulted in an increase in disordered high-rise structures built on a fragmented property pattern. In spite of the fact that these structures are qualified as buildings, they have a poor relation with the existing infrastructure. Lack of public spaces, poor accessibility, extra load on existing urban infrastructure, increase of density in nearby settlements and extra traffic load are all negative effects pertaining to previous experiences whose repetition should be avoided.

It is essential for Istanbul to transform the industry oriented character, which has devastated the natural structure in an irreparable way, into a structure which is competitive on a global scale. This is only possible if the service sector develops in a qualified way. In the framework of the plan, the aim is to transform the production areas around the Historical Peninsula and CBD into potential investment areas for education, cultural industries and service sector areas. In this respect, Kâğıthane and Alibeyköy have been chosen as transformation areas to divert the CBD functions in a westerly direction, which are presently oriented to the north.

It is essential to make metropolitan scale interventions, to take actions related to the Historical Peninsula; such as clearing the production facilities eroding the historical building stock, increasing the quality of the living areas, decreasing the difference between night and day uses and re-using the waterfront areas around Haliç.

Daily needs of (especially) Gaziosmanpaşa, Güngören and Bayrampaşa districts must be met outside the Historical Peninsula in the sub-centers on the western side. This situation is overlapping with the object of the plan to gradually switch the CBD development to the west.
Between Lake Küçükçekmece and Zeytinburnu

Between Lake Küçükçekmece and the Historical Peninsula lies the axis of Atatürk Airport, İkitelli Industrial Zone and Yenibosna Road and between this axis and the Bayrampaşa Industrial Zone there is high density building stock. İkitelli Industrial Zone, which has not filled its capacity and does not have qualified industrial production, will be improved and gradually turned into a services area. Supplementing the metropolitan area developing with sub-centers, İkitelli will be a sub-center with the rail systems proposed in the plan. Besides, the need for spatial, social and economical rehabilitation in the settlement system' the districts Esenler, Bağcılar, Bahçeli, Gaziosmanpaşa, Güngören and Bayrampaşa is emphasized in the plan.

This sub-region is connected to the CBD with the proposed transportation scheme, and functional integration with the whole metropolitan area is provided by the airport and the coast road. Besides, it is anticipated that making 4 connections to the railway line in an east-west direction from Halkalı, Küçükçekmece, Bakırköy and Kazlıçeşme will help the development of sub-centers serving for the whole metropolitan area.

The Zeytinburnu district which is situated in the east part of this sub-region is the exchange and intersection point of the transportation network which enables the central functions to be switched to the west. Therefore, developing complementary spatial organization in the west part of the city will enable Bakırköy to function effectively as a metropolitan scale sub-center.

Besides, the aim is to switch the central functions to the west from the north of the Haliç by the help of the railway systems on Kağıthane and additionally directing to south, to Bayrampaşa Industrial District to supplement its transformation and to connect with railway and seaway systems in Kızılçeşme.

Between Lakes: Lake Büyükçekmece and Lake Küçükçekmece

This sub-region, which is situated between the Lakes and includes the Sazlıdere water basin, is the main draw for the large scale industrial demand and settlement pressure. On the other hand, it is essential for the urban sustainability of Istanbul, to clear the industry and the pressure of settlement development on the north of TEM where the natural resources are greater. With this in mind, Kıraç has been identified as the area to redirect Industrial investment away from Hadimpöy. It is envisaged therefore, that Kıraç will be the industrial area whose quality of existing production infrastructure will be increased and Hadimpöy will specialize in logistics and infrastructure establishments enabling direct post-production freight movements at the metropolitan scale.
It is envisaged that in the railway transportation which is subjected to line amendment and capacity increase by the Marmaray project, İskenderun will play host to the central station by being freight and passenger transfer point. The logistic activities proposed for Haydarpasa will be extracted from the road network of the metropolitan area and will be directed to the railway systems.

The development of the West Corridor, which is formed by Yakuplu, Büyükçekmece, Gürpınar, Mimarsinan, Kumburgaz, Çelaliye, Selimpaşa, Kavaklı, Silivri and Gümüşhaka settlements which are situated on the extension of Istanbul on the west through Silivri, is planned to avoid the development pressure on Büyükçekmece and Küçükçekmece water basins and forest areas to the north. Conversely, it is essential to overcome the pressure of the new settlement areas proposed by the development plans of 1st degree municipalities which entered the metropolitan municipality boundaries by the Law 5216.

**West Corridor**

This sub-region to the west of the Büyükçekmece which is the meeting area of the metropolis with rural area, will be the ‘Attraction Center’ subjected to improvement and allocation of corroborative and complementary functions that serves for the increase of the competitiveness of the economical activities in the metropolitan area. Hospitals with high-tech equipment, universities, techno-parks, fairgrounds, recreation and sports areas will be the primary functions among the needed spatial organizations of Information Technologies. In this sub-region, to develop small scale new settlements living with their sub-centers in control, which will be qualified mass-housing districts with restricted expansion areas, is the basis for the plan.

It is envisaged that the functions proposed for the West Corridor will serve the industrial areas in Çorlu and Çerkezköy by increasing their qualities and to transform their production structure to an ecologically friendly one. Çorlu Airport to serve the whole metropolitan area. It is proposed that the northern part of this sub-region is developed for ecotourism and other ecological activities. Thus, these use-limited and controlled activities will help to protect valuable agriculture and water resources on the north from the expansion of residential development.

**Anatolian Side Sub - Regions**  
**Kadıköy-Üsküdar**

The importance of the functional togetherness of Kadıköy and Üsküdar will increase after the completion of the Marmaray Project. It is envisaged that the spatial organization subjected to the transformation of the Haydarpasa Port Area will be the intersection point of mass transportation modes which will supply continuous transfer to the sub-
centres proposed on the Anatolian shore. Like Kartal, the Haydarpaşa Port Area is considered to be an effective Sub-Center for Anatolia. The potential on this area will be activated to include commercial, residential, cultural and recreational activities. The Istanbul Metropolitan Area accommodates half of the foreign trade of Turkey, therefore it is important that the Haydarpaşa Port remains active in order to safeguard trading activities for not only the Istanbul Metropolitan Area but also the region and the country.

The primary issues of the Plan are to start to develop a supplementary infrastructure that will share the load on Ambarlı Port on the West at Gümüşyaka. Parallel to this process to reach the stated principles, it is of paramount importance that logistic areas specified on the Metropolitan Area are developed and to progress in implementation of the proposed railway systems until the end of the Marmaray Project. For this reason, it is necessary for the principles of the plan to give priority to the investments in logistics and to increase the activities serving for the development of the sector.

**Kartal-Pendik-Tuzla**

Macro land use decisions related to the Anatolian shore are shaped on the Kartal Pendik Tuzla sub-regions. The plan proposes to develop logistic centers on these areas. One of the basic principles of the plan is to develop spatial infrastructure to realize the freight movements between East and west of Istanbul over seaways and railways.

Proposals for a Techno Park serving the industrial zones in Gebze will constitute a global scale competitive production pattern in the East part of Istanbul. In addition, by integrating with a railway system working continuously between east and west, Sabiha Gökçen Airport in Kurtköy can reach metropolitan scale service. By developing university infrastructure, sports areas and fairgrounds integrated with transportation and logistic activities, Pendik and Tuzla can be transformed into attraction centers.

Another important and determining land-use decision of the Metropolitan Plan is the development of Kartal Sub-center. It is anticipated that the proposed Kartal sub-center will contribute to the avoidance of the mono-centric structure of the Metropolis by providing office areas specialized on service sector, public places and cultural structures.

The Metropolitan Master Plan for Anatolian Part proposes further diversification of the E-5 TEM connection roads with the development of a new crossroad in an east-west direction between Maltepe and Kurtköy. This road, which will increase the efficiency of the proposed railway systems and serve for the integration between modes, will be taken as the axis for the main
functions and investments to take place in the transformation process of the settlements between E-5 AND TEM.

A basic problem in the metropolitan planning process of Istanbul is the monocentric spatial organization of the central service functions. The Anatolian side of Istanbul still has a lack of central functions; Kadıköy does not have enough infrastructure to go beyond being a sub-center. The differentiation between the Anatolia and Europe sides of Istanbul leads to chronic traffic congestion on the bridges passing through the Bosporus. So long as the monocentric spatial organization of the functions goes on, this problem can not be solved. Therefore it is essential to balance the traffic circulation by developing attraction centers and sub-centers in both sides of the Bosporus.

The magnitude of Sultanbeyli and Sangazi on the East and Hadımköy, Arnavutköy, Taşoluk, Boğazköy, Bolluca, Haraççi and urban developments taking place on forest and water basin areas threatens the life resources, economic relations and social structure of the whole Istanbul Metropolitan Area. Thus, in order to avoid urban development harmful to nature in east side is one of the priorities of the plan and it is important therefore to locate controllable uses, to construct the technologic and information infrastructure which will serve for the transformation of existing production pattern.

The functional togetherness of the Anatolian and Europe sides will be possible by the development of sub-centers having high quality service areas connected to the railway systems. Being bound by international engagements, the surveys needed for the international traffic flows and implementations are under the disposal of the central government in the framework of Istanbul Metropolitan Municipality metropolitan plan decisions.

The tendency, developed by the plan and in the framework of the sanctions of EU countries, is towards widely used modern transportation and logistic models, especially the Ro-Ro and Ro-La methods, which are both ecologically sensitive and would improve the functioning of the metropolitan system, proposed mainly for passenger and freight transportation and transit passing, to be recognized by the central government and the solutions proposed by the plan to be taken into consideration in this respect.

In relation to transit transportation, in order to avoid the Istanbul Metropolitan area being used as a stop of route, transfer points connected to logistic centers at both wings are proposed. With an approach parallel to the logistics and transportation policies of EU, different modes of transportation will be integrated and the balance will be maintained by developing Ro-La systems with
railways and Ro-Ro systems with seaways. In this way, besides directing the flows to Ro-Ro and Ro-La transportation modes, it is proposed to construct transportation links based on Ro-Ro systems in south-north axis, realizing the accessibility to Anatolia through the Marmara Sea.

Therefore, the plan proposes that pressure of additional transportation vehicles with tyre wheels on Istanbul Metropolitan area will be avoided by solutions based on railway systems and mass transportation. Urban traffic will be relieved by transformation to a poly-centered metropolitan structure, and rational solutions giving priority to the railway systems and sea transportation that guarantee ecological, social and economic sustainability.

8. PLAN APPLICATION COMPONENTS

8.1. PLANNING AIMS, POLICIES AND STRATEGIES

The following aims are recommended in order to protect and safeguard the future of the Istanbul metropolis:

Adaptation and orientation in line with the dynamics of the global arena and European Union accession process

- Sustainable and harmonious growth of Istanbul taking into account social, economic and cultural dimensions

Protection of the ecological balance and the fostering of sustainable and disaster resistant development

- Active conservation under the "use - protect" framework
- Appropriate steps to be taken for decreasing the pressure of urban growth on the protection areas
- Protection of the mining areas and stone quarries whilst maximizing their utility
- Having urban agriculture and peripheral ecologic production as part of the sustainable development goals package
- Addressing the problems in relation to low scale production foundations through spatial and sectoral planning
- Protection of the water basins
- Fostering eco-tourism and eco-agriculture on water basin areas, absolute protection and short distance protection belts whilst cleansing the urbanized land on these areas and evaluation of earthquake risk to the dams and water basin areas
• Establishing buffer zones through plan decisions with consideration for endangered and risky areas
• Evaluation of filled and alluvion areas in the coastal areas within the context of disasters such as earthquakes and tsunami
• Establishment of the analysis of the macro-form and urban structure in relation to earthquake mitigation and other natural disaster risks
• Organisation of the wharfs and harbours within the context of first aid and discharge during disasters

Giving Istanbul a metropolis status as a World Culture City

• Protection of the historical, cultural and natural values of Istanbul
• Protection of Bosporus’s and the Historical Peninsula’s historical and cultural structure, their universal identity, landscape and silhouette
• Development of the tourism sector whilst increasing its proportion within the urban economy and improving overall quality of the sector
• Reducing the pressure of construction in the historical areas
• Diverting the traffic away from the historical peninsula

Development of economic relations between Istanbul and other global regional cities and increasing Istanbul’s effectiveness among the other cities in order to establish Istanbul as global and regional city

• Making Istanbul a centre where the management and decision mechanisms connect and integrate with each other
• Development of the city economy focusing on services sector, information and communication economies and cultural industries
• Reorganization and development of national and international relations within the region
• Nurturing the local potentials of the region
• Fostering socio-economic partnerships of Istanbul with its environmental counterparts
• Encouraging education, information and services sectors whilst fostering a policy of national and international decentralization of industry
• Encouraging investments in order to establish the transformation of industry into services sector
• Restructuring the economic sectors of the Metropolis
• Fostering the dynamism of information society and information technologies
• Removal of industry and warehouses away from the historical areas
• Establishing new attraction centres and their hierarchy in order to form social, economic and spatial balance
• Establishing the hierarchy of centres and settlements under the framework of development potentials and inner dynamics
• Establishing a work-life balance in terms of population and employment
• Fostering a better balance of land use distributions in order to minimize the distance for home to work

Improving quality of life in Istanbul
• Development of spatial strategies
• Development of institutional, management and economic solutions systems
• Integration of the peripheral ecologic belts and urban life through the principle of use-protect balance
• Establishment of night-day population balance in city centres
• Creating the needed financial resources in order to establish metropolitan public services
• Fostering a social dimension during the physical transformation processes
• Transformation of the unplanned and unhealthy settlements into healthy settlements and developing long term financial options
• Establishing the balanced distribution and improving the quality of cultural and social functions
• Establishing sports centres, cultural centres, exhibition and entertainment centres of international standards
• Improving the quality of transportation services
• Integration of different transportation modes
• Establishing the underground network and integrating it with the other transportation modes
8.2. VISION

Findings from each sector covering economic, environmental and social fields were used to inform the ‘vision’ for Istanbul providing valuable sign posting for future sustainable development of the metropolis.

Vision Components
I. To harness a strong and competitive economic development / growth process
II. To maintain and uphold social justice and urban integration
III. Orientation of spatial development through sustainability principles
IV. Re-structuralization of the management of the Metropolis through strategic planning principles

Vision Component I:

To harness a strong and competitive economic development / growth process

To Bring The Competitive Superiorities Of The Metropolis Foreground

- To promote Istanbul’s historical importance of being “the gateway between the east and west”
- To support the sectors that have (or the potential to have) competitive excellence
- To highlight cultural tourism and promote the role of the Metropolis as a Intercultural Dialog Center
- To emphasize the potential of being a financial and administrative center
- Develop the potential of being a cargo and passenger transferring center
- Create a Learning Metropolis by developing necessary innovative and knowledge generative characters
- As a metropolis facing up to various threats, turning the opportunities into tangible forms and developing risk management capabilities
- To share the process of developing successful competitiveness among the whole of society
- Create new planned expansions and prioritise investments in order of efficiency
- Supporting the mechanisms that integrates the activities of private sector, public sector and other related actors
- Develop and promote the important activities in Istanbul in order to improve profilen of Istanbul
To develop Istanbul As an International Main Door for Investors, Tourists and Visitors

- Improve Istanbul’s international accessibility
- Monitoring of the development on tourism and other investments, support while needed
- Develop the competitive capacity on Work and Congress Tourism and Cultural Activities fields
- Improve the strength and attractiveness on tourism and cultural activities infrastructure
- Create attractiveness of the Metropolis for investors

Developing Spatial and Infrastructure Projects in order to Attain a Higher Competitive Capability

- Implementation of sustainable spatial development principles for supply of housing and office space
- Developing the transportation and communication networks among the other global centers and Istanbul’s own regional hinterland
- Determination of critical infrastructural projects and establishing priorities for investments and increasing environmental - social utilities
- Create mechanisms for improving urban life conditions and developing a healthy and qualified environment
- Strengthening public spaces design and management

Increasing Overall Proportion of Employment and Reducing the Inequality Within The Employment Market

- Increasing the skills associated with key employment sectors
- Improving professional education and increasing accessibility to all members of society in order to improve the quality of employment
- Supporting flexible and family type of employment structures within both the public sector and private sector
- Providing an infrastructure conducive to encouraging disadvantaged groups to partake in attainment of employment qualifications to increase overall competitiveness
- Increasing the employment proportions in undeveloped areas, supporting business enterprises and supporting the participation of the working class in urban life
Supporting Companies - Enlargement and Competitiveness

- Increasing the opportunities for suitable and accessible commercial area supplies for SMEs
- Enabling the accessibility of financial opportunities for companies
- Enabling education, research and accessibility to technological resource opportunities for the companies
- Maximizing the commercial potentials of the established and efficient companies
- Strengthening companies located on the center of the Metropolis
- Encouraging companies in order to develop approaches for improving the quality of employment

Increasing The Entrepreneur and Innovative Potentials of Companies

- Supporting technological development
- Monitoring the innovations of the companies in the field of production and servicing
- Sectoral intervention in order to surmount the insufficiencies on marketing issues of the companies
- Supporting partnerships between companies and the educational institutions
- Supporting the companies maximise efficiency of their infrastructure systems

Creating Consensus On Long Term and Sustainability Approaches for Economic Development

In order to maintain an economic buoyancy conducive to global markets,

- Collectively performed strategic approaches by the key actors
- Developing action tools and creating the needed resources for implementation
- Presentation of the annual monitoring and evaluation results to administrative bodies of the Metropolis
Vision Component II:
Maintain and Uphold Social Justice and Urban Integration / cohesion

Elimination and/or significant Reduction of Factors harbouring Inequity
- Widespread education opportunities for all
- Developing disadvantaged groups employment capabilities
- Widespread communication opportunities for all
- Supporting the integration of ‘physically challenged people’ into economic activities
- Providing diverse housing opportunities for different social groups

Creating Employment Opportunities for Unskilled Labor or Limited Skilled Labor
- Developing flexible employment ‘home help’ forms
- Supporting alternative style working opportunities

Creating Financial and Knowledge Support for Formation and Operation of SMEs

Developing Opportunities for Taking Advantage of Urban Services and Opportunities
- Developing social programs for improving living conditions
- Developing adaptation mechanisms for new comers

Vision Component III:
Orientation of Spatial Development Through Principles of Sustainability

Determination of Structural Arrangements on Metropolitan Scale
- Enabling of spatial development that protects forest areas, water basins and agricultural land
- Creating land use approaches in relation to policies on a national and regional scale that would discourage and reduce the migration to Istanbul
- Creating a coordinated approach among the municipalities for macro land use decisions of the Metropolis
- Planning the rural and the urban areas as a whole
- Strengthening of the legislation for protection of forest, water and agricultural areas
• Through dialog and agreement, devise and utilise the mechanism that would prevent attempts to develop on the protected areas
• Limiting and curtailing the spatial sprawl of Istanbul
• Fostering a multi-centered development structure
• Creating high density settlements around the centers of the Metropolis, in order to limit the spatial sprawl
• Development of land use decisions and transportation system in a holistic approach
• Considerations for earthquake in land use decisions at both macro and micro levels
• Renewal of high density housing and commercial areas where transportation, infrastructure and problems pertaining to day to day life occur
• Determination of opportunity areas for projects that would improve the life quality and image of the settlements
• Organized development of the settlement areas
• Creating a network of water and green belt areas in order to reduce natural and man made risks
• Using sustainable design and implementation techniques
• Increasing the portion that public management delivers from the urban value produced by spatial development processes
• Improving and strengthening the legal and management tools in order to better implement land use decisions

Creating Safe Environments Against Natural Disasters and Especially Earthquake
• Refining the settlements located on the geologically risky areas
• Decreasing the density of vulnerable areas
• Preventing unplanned, high density construction

Sensitive Development for Areas of Natural Importance
• Rehabilitation of the high density construction / settlements located on the water basins
• Rehabilitation of the construction / settlements located on the river basins
• Rehabilitation of the construction / settlements on the forest areas and 2B areas
• Rehabilitation of the construction / settlements located on the natural conservation areas
Sensitive Development for the protection of Historical and Cultural Values

- Rehabilitation of illegal construction / settlements located on the Bosporus
- Rehabilitation of the destructive components located on Historical Peninsula, Princes Islands and within historical housing stocks

Increasing The Efficiency of The Housing Sector

- Improving the partnerships between municipalities and Real Estate Development organisations
- Supporting Real Estate Development Partnerships in order to develop projects in existing settlements
- Producing small and inexpensive housing for middle and low income groups, in the inner city
- Using Mortgage System for small and inexpensive housing
- Enabling professional education for construction workers
- Developing a dissuasive taxing system in order to deter harbouring of empty properties and land

Increasing The Spatial and Living Standards Through Transformation Projects

- Fostering ‘Housing Development Administration’ of Turkey’s authorities for planning and implementation, to be used for the renewal of the existing settlements within the partnership of municipalities
- Creating hierarchical focal points of public services
- Using urban design approaches in order to increase the spatial standards

Central Areas
Strengthening The Inner City In Detail

- Developing and implementing Spatial Transformation Projects in order to improve the life standards and attractiveness of Central Areas
- Strengthening transportation between the central areas and other locations of the city

Industry Areas
Encouraging High Technology and Added Value Industry Types

- Developing industry - university partnerships
- Increasing the efficiency of techno-parks in industry-university partnership
Encouraging The Development of SMEs Activity Areas as a Potential For the Development of High Technology Industry

Rehabilitation and Reorganization of Industry Sector's Structure

- Use of the potential capacities of the Organized Industrial Zones located in Corlu-Cerkezkoy and Gebze Settlements with the added function of acting as industrial buffer zones
- Reorganizing industrial production by implementation of a priority Zones approach in order to give industrial areas a healthier structure
- Reorganizing the areas that have the potential for transformation due to their insufficiency, discord and increase of value, as Differentiation Zones

Transportation

Development of an Integrated Public Transportation System

- Implementation of the approaches to increase efficiency of public railway transportation throughout the Metropolis
- Increasing the proportion of sea routes contained within the integrated public transportation system
- Efficient Traffic System Management and Traffic Control
- Improving the comfort conditions of transportation
- Strengthening of the weaknesses within the transportation network

Development of Transportation Decisions Through Interaction with a Holistic View in terms of Land Use Decisions

- Development of sustainable Transportation Demand Management Policies
- Identifying key focal points of transportation with due consideration of transportation strategies
- Minimizing environmental damage caused by transportation

Logistics

Restructuring of Logistics Relations in The Metropolitan Region

- Construction of Logistics Terminal Regions on both sides of Istanbul and moving the customs houses to these regions
- Concentration to the Ro-La System for Logistics Carryings
- Arranging the Ro-Ro relations between Ambarlı Harbor and the other harbors of Marmara Sea
- Integration of the Ro-Ro and Ro-La systems
- Improving Logistics Planning for disaster situations
Strategies for Increasing Harbor Capacities
- Expansion of service areas of Ambarlı Harbor
- Development of a transportation connection between Ambarlı Harbor and the Logistics Terminal Region to the western side

Improving The Airports
- Allocating a reserve zone for Ataturk Airport’s expansion
- Creating a protection zone for Sabiha Gokcen Airport’s surrounding environment in order to prevent illegal construction
- Transformation of Corlu Airport from military to civic and commercial use
- Coordination and integration between Ataturk and Sabiha Gokcen Airports and another probable airports

Distribution of Liquid Fuel
- Construction of a pipeline between Ambarlı, TUPRAS and the airports
- Establishing transfer establishments from Dilova to TUPRAS
- Creating short distance filling terminals

Public Services
- Improving the public - private partnerships in order to improve the technical and social public services standards
- Identifying efficient, innovative and resource developing solutions
- Improving the service level in a hierarchical order in line with their strategic importance
- Developing the implementation of public spaces in order to maximize safety and comfort

Green Areas
Increasing The Quality of Green Area
- Prioritizing the criteria for the improvement of green areas in transformation projects
- Creating “Urban Forest Belts” around the forest areas for daily use with an ecological approach
- Establishing a strong Maintenance and Management Service for green areas
Environmental Protection

- Supporting core principle of costing in environmental considerations
- Establishment of monitoring, research and development and early warning systems in relation to environmental protection
- Developing public programs in order to improve the environmental consciousness of society
- Encouraging and developing structures that promote environmental governance

Preventing Water Pollution

- Establishing one core administrative body responsible for the water basins
- Clarification of the planning legislation of the water basins
- Preparation of the Istanbul Water and Sewerage Administration Master Plan, in order to prevent construction on the water basins
- Reclaiming the natural ecosystem characteristics of the water basins
- Renewal of the sewerage system
- Tighter regulations pertaining to the purification for industrial waste water

Preventing Air Pollution

- Reducing the unit of energy consumption and emissions
- Developing the system of monitoring air pollution and identification of pollution sources
- Decentralizing industry to the the city periphery (where possible)
- Developing public transportation awareness
- Creating natural gas usage awareness
- Developing the techniques of running on fuels and mainstreaming the usage of air filters
- Disperal of high density traffic from the city centre to the periphery
- Developing a transportation reduction approach which considers the relationship between business-residence traffic
- Forming air corridors by utilising the city’s dominant wind directions
- Enhancing forestation and green areas
- Education and public awareness of air pollution
- Forming a City Inventory for Istanbul
Solid Wastes

- Gathering solid waste separated at source by utilising a dual system and evaluation of solid waste in recycle centers
- Use of Thermal Transformation Institutions to evaluate the solid waste that is not gathered separately at source
- Maximising performance of the two current storage areas whilst establishing a third area and the planning of transfer points
- Organizing temporary filling areas for construction waste and demolition waste and establishing Recycling Institutions
- Reaching EU standards to identify solid waste management solutions

Noise Pollution

- Developing “Planning of Noise Control” for Istanbul
- Implementation of procedure pertaining to the “Strategical Noise Map” as stipulated by the Council of the European Union

Protection of the Forest Areas

- Absolute protection of the forests around the water dams
- Solving inconsistency between the civilian cadastral and the forest cadastrals
- To adhere to the Forest Law and Mine Law inside the forest within the province boundary
- Rehabilitation of the open mining areas that have ceased operation with afforestation
- Ensuring that unqualified forest areas (2B Areas) obtain title deed in order to protect them from clearance
- Urgent afforestation of the bare areas that belong to forest areas

Protection of the 1st Class Agriculture Areas

- Executing the authorities of the “Meadow and Pasture Law” in every particular
- Transition of poly-cultural agriculture in rural areas
- Long term planning considering the effects of micro-climate and irrigation including; vineyard, orchard, greenhouse and recreation areas
- Protection of forest components such as shrubbery and bushes which are the source of biological variety and combat soil erosion
- Policing fertilizing activities in agricultural land
• Planning of organic agriculture in suitable areas, according to the “Regulation of Organic Agriculture”

• Augmentation of interior field development services and land consolidation

• Developing the production of ‘fishery’ based products

Underground Sources

• Due to the limited qualified materials (rock and agrega) around the city, working pits may continue to mine on the pre condition that appropriate environmental considerations are taken

• A more organized and modern approach for areas outside of the city pertaining to the extraction of qualified materials

• Classifying stone quarries, mining areas and sources of energy and raw material around the city according to their importance of “protected” or “unimportant” and Reserve Areas

• Establishment of “Wreckage Utilizing and Operating Stations” that supply recycling, outside the city

Design

3 Dimensional Urban Design Project That Develops Spatial Quality of the City

• Projects with distinctive approaches for Inner City

• Refreshing strained relationships between urban spatial and social society via the Urban Design Project

• Restoring cultural areas that are of strategic importance

• Developing a “Silhouette Plan” according to framework of the Urban Design Project

• To regulate construction within important zones of the Urban Design Project, by taking “Urban Settlement Permit” prior to taking construction permit
**Vision Component IV:**
Reconfiguration of the Urban Administration according to Strategic Planning Principles

Re-determination of Istanbul Greater Municipality’s boundary on the “Functional Metropolitan Region” scale that encompasses the entire social-economical set up of the Metropolitan Area

Giving authority to Istanbul Greater Municipality, as a local public administration, for entire planning decisions that are within the Functional Metropolitan Region

Transition from hierarchical public administration to multilateral governance
- Sharing local public administration’s information about the strategy of “Making Sustainable and Global City” for Istanbul with NGO’s
- Transferring to new governance approaches in order to encourage continual and close cooperation among the central and local governments
- To establish a framework of governance that emphasizes the cooperation between the partners

Qualifying Local Administration through “Continuous Learning Organization”
- Transition to a management approach in which local administration will be an effective member of global network relations utilising these relations for development of a “Learning Organization” culture
- According to the approach of “Learning Organization”, evaluating/utilizing “Capacity Building” approaches which present new roles that are required in today’s global environment
- Encouraging non-governmental representatives to utilize the “Capacity Building” approaches for the same reason

Transition to a Management Approach That Captures Both Entrepreneurial and Managerial Aspects
- Developing an e-government system that serves the networking relations
- Generalizing effective, accountable, transparent, entrepreneurial and productive management approaches

By applying the vision recommendations to the Istanbul metropolis, the future of the city and its inhabitants can be better protected through the application sustainable development principals. Thus safeguarding the future existence of the magnificent metropolis for future generations.